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# INDEX

Topic no	Topic Covered	Page No
<b>GEOGRAPHY</b>		
1.	NEW POLICY TO HELP INDIAN COMMUNITIES DISPLACED BY ANNUAL RIVER & COASTAL EROSION DRAFTED	5-6
2.	REVIVING ADI GANGA: CENTRAL FUNDS, INTERNATIONAL PROJECT GIVE HOPE	6-7
3.	VENICE'S FAMOUS CANALS ARE NOW DRYING	7-9
4.	CYCLONE FREDDY TRAVELLED FROM AUSTRALIA TO BATTER MADAGASCAR, ONE OF THE MOST CLIMATE-VULNERABLE NATIONS	9-11
5.	INS SINDHUKESARI	11-13
6.	OCEAN ENERGY SYSTEMS	13-14
7.	EARTH'S INNERMOST INNER CORE	15-16
8.	IMD IS ALREADY SENSING HEAT WAVES	16-18
9.	THE YELLOW RIVER HAS BEEN KNOWN AS 'CHINA'S SORROW'	18-19
10.	COCONUT	20-21
<b>ENVIRONMENT</b>		
11.	NORD STREAM SPILL IS BIGGEST METHANE LEAK EVER, BUT MINUSCULE COMPARED TO GLOBAL RELEASE OF THE GREENHOUSE GAS: UNEP	22-23
12.	ACCESS AND BENEFIT-SHARING: PAPER PROPOSES 8 PRINCIPLES ON USE OF INDIGENOUS MEDICINE	23-27
13.	BLUE FOODS CAN HELP INDIA IMPROVE NUTRITION, LIVELIHOOD: STUDY	27-30
14.	GREAT BACKYARD BIRD COUNT	31
15.	HUMMINGBIRDS	32-33
16.	SLOTH BEARS	33-35
17.	PLASTIC WASTE IN URBAN DRAINS CAN LEAD TO AN EXPLOSION OF MOSQUITOES	35-36

18.	GREAT NICOBAR PROJECT	36-38
19.	E-WASTE (MANAGEMENT) RULES 2022	38-41
<b>ECONOMY</b>		
20.	RUPEE TRADE FACING FRICTION AS BANK'S WARY OF US SANCTION	41-42
21.	OBICUS	42
22.	CARBON CALCULATOR	43-46
23.	MERCURY POLLUTION	46-48
24.	NET-ZERO BUILDINGS	49-51
25.	ECONOMIC TERMINOLOGIES IN NEWS	51
26.	BLUE ECONOMY TO BE NEXT GDP MULTIPLIER: CAG GC MURMU	51-53
27.	GREEN ENERGY CORRIDOR PHASE II	53-54
<b>POLITY</b>		
28.	A LEGISLATOR HAS TO OBEY PART WHIP – UDDHAV THACKERAY TELLS SC	54-55
29.	CAG OF INDIA SELECTED AS EXTERNAL AUDITOR OF INTERNATIONAL LABOUR ORGANIZATION	55-58
30.	NATIONAL SCIENCE AND TECHNOLOGY MANAGEMENT INFORMATION SYSTEM	59-60
31.	FSSAI NOTIFIES COMPREHENSIVE GROUP STANDARDS FOR MILLETS	60-61
32.	CAVEAT PETITION	61
33.	THE NATIONAL COMMISSION FOR SAFAI KARAMCHARIS (NCSK)	62-64
<b>SCIENCE &amp; TECHNOLOGY</b>		
34.	\$5 BILLION DEFENCE EXPORTS TARGET	64-66
35.	NEUTRINOS ARE THEIR OWN ANTI-PARTICLE	66-68
36.	ATACAMA LARGE MILLIMETRE / SUBMILLIMETRE ARRAY (ALMA) TELESCOPE	68-70
37.	ISRO SUCCESSFULLY CONDUCTS KEY ROCKET ENGINE TEST FOR CHANDRAYAAN-3	70-71
38.	'ORGAN ON A CHIP': A TECH WHICH MIMICS DISEASE SYSTEMS IN LABORATORY CONDITIONS	71-73

<b>GOVERNMENT SCHEMES</b>		
39.	ADOPT A HERITAGE SCHEME	73-74
40.	BUDGET FOR COOPERATIVES TO ACHIEVE INCLUSIVE GROWTH	74-75
41.	INTERNATIONAL INTELLECTUAL PROPERTY INDEX	76
42.	GOVT PLANS 10 'CLEAN PLANT CENTRES'	77-78
43.	E-SANJEEVANI IS A GREAT BOON	78
<b>INTERNATIONAL RELATIONS</b>		
44.	WORKING MECHANISM FOR CONSULTATION AND COORDINATION MEETING: INDIA AND CHINA	79
45.	MUKAAB CITY	79-81
46.	NEW PRESIDENT FOR WORLD BANK	81-83
47.	FRIENDSHORING	83-84
48.	U.K., EU START 'NEW CHAPTER' OVER N. IRELAND TRADE PACT	84
<b>HISTORY</b>		
49.	UNION GOVT TO MARK SANTHSEVALAL MAHARAJ JAYANTI	84-85
50.	KERALA MURAL PAINTINGS	85-86
51.	150TH ANNIVERSARY OF CALCUTTA TRAMS	87-88
52.	1300-YEAR-OLD BUDDHIST STUPA FOUND IN ODISHA'S JAJPUR	88-89
<b>ART &amp; CULTURE</b>		
53.	DICKINSONIA FOSSIL FOUND IN BHIMBETKA IS OLD BEEHIVE	90-91
54.	MOHINIYATTAM	91-93
<b>INTERNATIONAL AWARDS</b>		
55.	MARCONI PRIZE 2023	93

## **Topic 1. NEW POLICY TO HELP INDIAN COMMUNITIES DISPLACED BY ANNUAL RIVER & COASTAL EROSION DRAFTED**

*Important for subject: Geography*

National Disaster Management Authority (NDMA) is working on the first Indian national policy for rehabilitation and mitigation of people who are affected by coastal erosion.

### **Regarding the draft policy**

- It was reported that the Union Ministry of Home Affairs had instructed the NDMA to develop a policy that was based on the 15th report of the Finance Commission in 2021 where it was the first time that it focused on rehabilitation and relocation for those displaced by the coastal erosion and river in light of the ever-growing threat from climate changes.
- In the past, the majority of the policy-making in our country deal with displacement following sudden, events that have rapid onset, such as flooding and Cyclones.

### **The key features are:**

- The 15th report of the Finance Commission considers two aspects that are related to this new policy.
- In the first place, it introduces mitigation measures to stop erosion of the National Disaster Mitigation Fund (NDMF) which has the allocation of 1,500 crore in 2021-26.
- Then, regarding the repatriation of those displaced by erosion, the Government provides the sum of Rs 1,000 crore during the same time in the National Disaster Relief Fund (NDRF).
- It is part of the reconstruction and recovery window, which was first introduced for the in the history of NDRF beginning in 2021.
- The NDMA will oversee the allocations and expenditures under the NDRF and the NDMF on a national scale to help with rehabilitation and mitigation.
- District disaster authorities are the sole agency for implementing the measures, assisted by other district agencies as well as the panchayat level committee.
- The DDMA will develop mitigation plans for rehabilitation and mitigation and then send them to SDMAs. The plans will be evaluated by the NDMA before being presented to the home ministry.

- A high-level panel of the Ministry will then be able to approve the distribution of funds. DDMA's will also be accountable for managing, coordinating and evaluating the work with the oversight of national and state counterparts.
- Complete hazard assessment performed by central authorities like The National Centre for Coast Research, National Centre for Sustainable Coastal Management,
- Central Water Commission and, the high-resolution LiDAR data that is available from the National Remote Sensing Centre should be made available to SDMA's.
- These documents should be made available with ease of access formats such as geographical information system (GIS) types through the NDMA.
- The policy is based on mapping the coastal and river erosion impacts, and creating databases of various issues faced by vulnerable and vulnerable habitations.
- This draft also suggests assessments of vulnerability and impact of areas that are at risk from coastal and erosion of rivers to be carried out regularly, and will be led by SDMA's, in conjunction with the state departments as well as DDMA's.

## **Topic 2. REVIVING ADI GANGA: CENTRAL FUNDS, INTERNATIONAL PROJECT GIVE HOPE**

### ***Important for subject: Geography***

The National Mission for Clean Ganga has allotted 700 crore rupees to restore the old river known as known as the Adi Ganga (the first channel of the River Ganga passing through the city of Kolkata) and has been added to an Multi-country project for fighting pollution.

### **More details on the announcements:**

- The changes come following an earlier decision by the National Green Tribunal has directed to the West Bengal government to fully rejuvenate the state in 2025.
- The participants at an international conference on water held at Sylhet, Bangladesh by the non-profit organization Action Aid Action Aid decided to consider possible possibilities for a pan-south Asia project to tackle the issue of pollution of one river that flows through India,
- Bangladesh, Nepal, China and Malaysia. Adi Ganga was chosen from India.
- Apart from Adi Ganga, Buriganga in Bangladesh, Puyang in China, Bagmati in Nepal and Klang in Malaysia were also chosen for pollution study

- Information about the river Adi Ganga Adi Ganga (also called Gobindapur Creek (also known as Gobindapur creek and Tolly's Canal) is a river which was part of Hooghly River in the Kolkata region of India.
- Adi Ganga was the river's main channel until the 17th century.
- The source of the river Saraswati near to Sundarbans Around 1750 the canal was constructed to link the main flow of the river to the lower section of the River
- The resulting Hooghly was transformed into its main stretch of river which later Adi Gangaturned into an additional tributary.
- Yet, Adi Ganga continued to flourish until it reached the the 1970s. Since then, the quality of its water gradually declined until it was transformed into an untreated sewer that was quickly encroached upon, and eventually full just to the the municipal corporation of the city.
- The choke from Adi Ganga significantly impacted on the drainage system of the region.
- According to State pollution control board's statistics, the level of dissolved oxygen in the river is zero for the Adi Ganga river.
- After passing through the Kolkata city the river fades away into concrete buildings, roads and halls.

#### **The effort to cleanse up the water:**

- In 1998, the Calcutta High Court directed removal of all encroachments within one month, however the report, issued within two years in the case, revealed that the encroachments continued to be present.
- The expansion of the Metro Rail in 2009 from the Tollygunge tram depot to Garia in the southern region of the city was a reversal of issue as 300 pillars that supported the rails were placed to the center of the canal.

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### **Topic 3. VENICE'S FAMOUS CANALS ARE NOW DRYING**

#### ***Important for subject: Geography***

A high-pressure system has stalled over Venice which has resulted in low tides. This has resulted in low levels of water as well as dry canals.

- However, experts believe that the primary cause of the problem is the drought-like

conditions that are prevalent across Italy.

- Aside from that, tourists have also been dissatisfied because Gondolas, which are long flat bottom boats that go through those famous bridges in Venice cannot traverse the dry-up roads.
- Note: In the year 2019, the city of Venice was submerged by high tides.
- Acqua alta refers to the term used to describe extreme high tides in Adriatic Sea.
- Winter and late autumn are the best seasons to enjoy the high tides or Acqua high tides in Venice.
- The phenomenon typically occurs between spring and autumn during which the tides of the night are boosted by the current seasonal winds, which hinder the normal reflux.
- The primary local winds in the region include that of sirocco as well as the Bora.

### **City of Venice**

- It is located in the northern part of Italy Venice is a city in northern Italy. Venice is a city with a distinct geographical area.
- It is an collection of 118 tiny islands that are spread across the lagoon, which is a form of water body separate from a larger water body by a landform.
- In total, 70,176.4 acres. The Venetian lagoon is separate by it by the Adriatic Sea.
- The islands are situated inside The shallow Venetian Lagoon which is an enclosed bay which is located between the mouths of the Po and the Piave rivers.
- The lagoon and a portion in the town are classified as an UNESCO World Heritage Site.
- Venice was named "La Dominante", "La Serenissima", "Queen of Venice", "Queen of Adriatic", "City of Water", "City of Masks", "City of Bridges", "The Floating City", and "City of Canals".

### **Water Crisis in Italy**

- Since the summer of last the region has been experiencing an acute deficiency of drinking water within its lakes and rivers.
- Italian Alps have experienced more than half the usual snowfall this winter. This is concerning since snow is a significant source of water during the spring and summer

months in the summer, when it melts, it guarantees water supply in the seasons when they are most needed.

- In the meantime, Italy's longest river is the Po is a river that flows through the Alps up to the Adriatic It has 61 % less water than usual at this time of the year.
- In addition, Italy's largest lake, Lake Garda, is also struggling with low levels of water.

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#### **Topic 4. CYCLONE FREDDY TRAVELLED FROM AUSTRALIA TO BATTER MADAGASCAR, ONE OF THE MOST CLIMATE-VULNERABLE NATIONS**

*Important for subject: Geography*

Cyclone Freddy was a landfall on the coast of Madagascar's south-eastern region.

- Madagascar was also struck by the tropical storm Cheneso in January 2023.
- There were 6 tropical storm system (tropical storm Gombe on March 8 and tropical storm Jasmine on April 26) in addition to the ITCZ which impacted Madagascar between January through April.
- Madagascar is also suffering from the most severe famine in recent past.
- The World Food Programme (WFP) described it as the world's first famine caused by climate change.

#### **About Cyclone Freddy:**

- Freddy traveled around 7,200 kilometers in the southwest Indian Ocean to Madagascar in 15 days.
- It marks the very first time in 2000 that a cyclone been able to travel this long from the southern parts of the Indian Ocean to the southern-western areas in the Indian Ocean.
- It is quite unusual for cyclones to last for prolonged periods of time and to travel for such distances.
- The storm brought speeds of 130 km per hour on landfall. It has brought torrential rain to the south-eastern region of Madagascar.
- The cyclone is moving toward Mozambique.

### **The role of the Intertropical convergence Zone (ITCZ):**

- The rains began by forming an intertropical convergence zone (ITCZ) in the middle of January.
- ITCZ is the region close to the equator in which the northwest and northeast trade winds join to form a band of cloud with occasional thunderstorms and rain.
- It was the ITCZ allowed for two back-to-back tropical hurricane models: tropical storm Ana during the final day of the month.
- Cyclone Batsirai during early February.

### **Tropical Cyclones:**

- Tropical cyclones can be violent storms that begin over tropical oceans and eventually move on to coastal regions.
- It is a massive disaster caused by powerful winds, extremely large storm surges and heavy rain.
- The wind blows counter clockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.

### **Terminology:**

- It is different from the location of the HTML0 from one to another. They are known as Cyclones in the Indian Ocean
- The Atlantic Typhoons are a stormy area with hurricanes within the Western Pacific and South China Sea and Willy-willies in Western Australia.

### **Conditions favorable to the formation:**

- A large sea with temperatures more than 27 deg C;
- The presence that of Coriolis force;
- Minor variations in vertical wind speed; a pre-existing low-level cyclonic low-pressure circulation
- Upper divergence over the system of sea levels.

### **Characteristics:**

- It is believed that the energy that builds up the storm originates directly from the

condensation that occurs within the awe-inspiring cumulonimbus clouds which surround the center of the storm.

- With the constant supply of moisture from the ocean the storm gets reinforced.
- The longer they are on the ocean the stronger they get.
- Once the land is reached the water source is shut off, and the storm is dispersed. The location where an erupting tropical storm crosses the coastline is known as the landfall point of the cyclone.
- The cyclones that typically cross the 200N latitude become recurved and are more destructive.
- An maturing tropical storm is distinguished by the large spirally circulating wind that circles the center, referred to as the eye. The diameter of the circulation system can range between 150 to 250 kilometers. The eye is an area of peace and slowed air.
- The area around in the the eye is the eye's wall in which there is an intense spiral upward ascent of the air to a greater elevation, reaching the topopause. The winds reach their maximum speed in this area, reaching speeds of up to 250 km per hour. The region is prone to torrential rain.
- From the eye wall rain bands could radiate, and trains of cumulus and cumulonimbus cloud could drift towards the outer area.

### **Topic 5. INS SINDHUKESARI**

*Important for subject: Geography*

In Sindhukesari, one of the very first Indian submarine docking within Jakarta, Indonesia.

- The submarine, operating, traveled throughout in the Sunda Strait and embarked on the first docking in Indonesia for Operational Turnaround.
- It greatly expands the that the submarine can operate in. arm in the vicinity of crucial shipping routes and the strategically important Malacca Strait.

#### **About INS Sindhukesari:**

- It is a Kilo-class 3,000-ton diesel-electric submarine.
- It was developed in the context of Project 877 and constructed as part of a deal that was signed between Rosvooruzhenie, Russia, and the Ministry of Defence (India).
- Features:

- It is capable of transferring 3000 tons.
- It can reach a maximum dive depth of 300m and a speed that can reach 18 knots, and is able to run on its own for 45 days while accompanied by a crew of 53.

### **Strait of Malacca**

- Strait of Malacca connects the Andaman Sea (Indian Ocean) and the South China Sea (Pacific Ocean).
- With a length of around 800km It is one of the longest crossing around the planet and allows for more than just transport and movement of people within the community around, but also an intersection of cultures, trade ideas, knowledge, and ideas between the West and East.
- It is located through Sumatra to the west and Indonesian Island of Sumatra in the West, and the peninsular (West) Malaysia and extreme southern Thailand to the east. It has an expanse of approximately 250,000 sq miles (65,000 square kilometers).
- The name of the strait comes from the port that traded in Melaka (formerly Malacca)- that was a major port during the 17th as well as 16th centuries along the Malay coast.
- As the bridge connecting and the Indian Ocean and the South China Sea, the Strait of Malacca is the most direct sea route between India as well as China as well hence is among the most frequented shipping routes across the globe.
- Singapore one of the world's largest ports, is located near the southernmost point of the strait.
- The worldwide shift of strength of the economic system from West towards the East and the rapid growth of investment, trade and production across regions which span the Indian and
- Pacific Ocean regions has given an increasing importance to the Pacific Ocean region.

### **Sunda Strait**

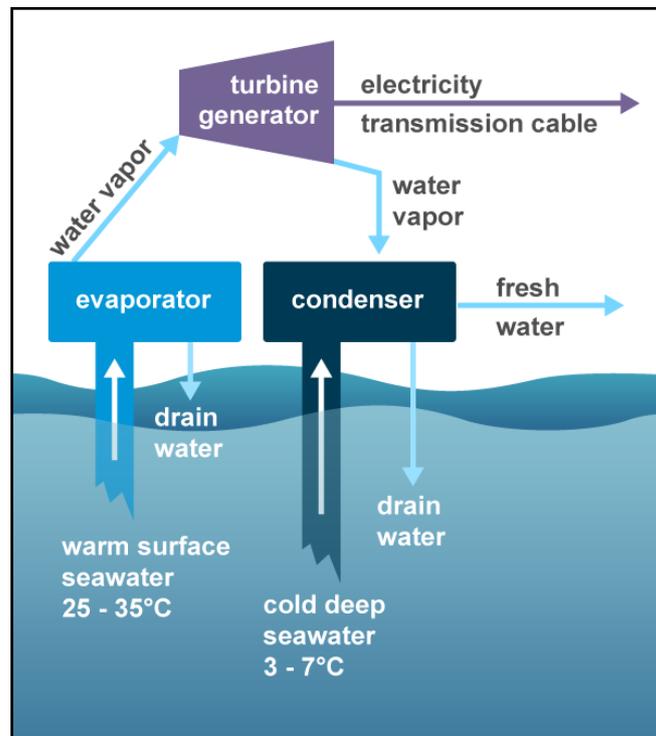
- It connects it to the Java Sea (Pacific Ocean) with the Indian Ocean (south).
- Sunda Strait, Indonesian Selat Sunda is a channel, 16-70 miles (26-110 km) large, spanning between two islands: Java (east) (26-110 km) wide, between the islands of Java east Sumatra.
- The Sunda Strait is an important route connecting with Indian Ocean with Asia,

especially eastern Asia.

- The strait is located with a roughly east-west/north-west orientation with a minimum size at 24km (15 miles) at its north eastern tip in between Cape Tua on Sumatra and Cape Pujat on Java.
- It is extremely deep in its western part However, when it narrows towards the east, it gets less deep, reaching a deepness of just 20 meters (65 feet) in certain areas of the eastern part.
- It can be incredibly difficult to navigate due to the shallowness, extremely large tidal currents, sandbanks and artificial obstructions, such as oil platforms offshore of on the Java coast.
- The strait's shallowness, narrowness and the absence of precise charting makes it ineffective for large, modern vessels, many of which utilize instead the Strait of Malacca instead.

## Topic 6. OCEAN ENERGY SYSTEMS

*Important for subject: Geography*



National Institute of Ocean Technology is currently overseeing the creation of the first desalination plant powered by ocean energy, located at Kavaratti island in Lakshadweep. The plant is currently driven by diesel.

### **Ocean Energy:**

- Ocean energy is a renewable form of energy that can be harnessed by the potential of waves, currents as well as temperature gradients, tides along with salinity variations.
- Ocean energy can be extracted in the following ways:

### **Tidal Energy**

- The divergence in the water level between low tide and high tide is an energy source that could be utilized.
- Similar to the hydropower that is generated by dams, tidal water is stored in a barrage along an estuary at high tide. It is then forced through turbines during low tide.

### **Wave Energy**

- Energy from waves can be created by the movement of a device, whether floating on the ocean's surface or anchored on the sea floor through the force created by the waves of the ocean.
- The kinetic energy pushes fluid through turbines, and produces electric power

### **Current Energy**

- Kinetic energy can be derived from the ocean currents, as well as other tidal flows using submerged turbines which look very similar to miniature wind turbines.
- Similar to wind turbines, the motion of the currents in the sea rotates the blades of the rotor in order to produce electric energy

### **Ocean Thermal Energy Conversion (OTEC)**

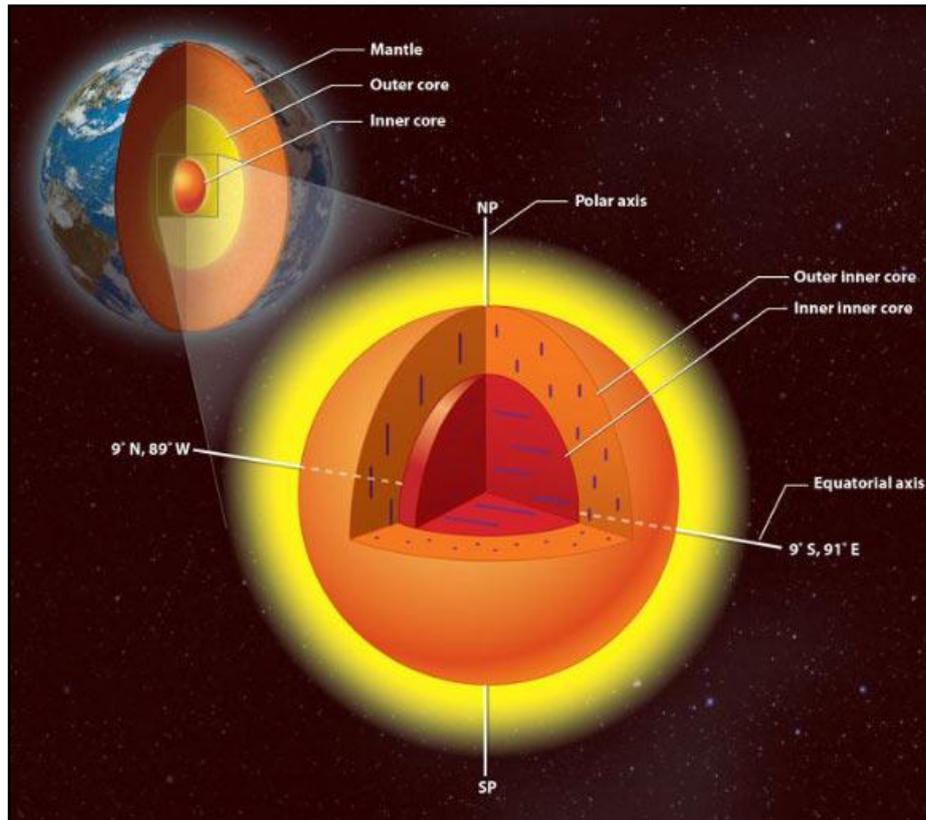
- OTEC, also known as ocean thermal energy conversion, uses ocean temperature variations, ranging from surface to depths of less than 1000 meters to extract energy. Even a temperature differential of 20 degrees Celsius can produce energy in a timely manner.

### **Osmotic Energy**

- This method generates energy through the flow of water over the membrane that separates fresh and saltwater lake reservoirs.

## Topic 7. EARTH'S INNERMOST INNER CORE

*Important for subject: Geography*



Seismologists from The Australian National University (ANU) recently revealed evidence of five distinct layers of earth in the middle portion of Earth known as "the innermost inner core".

### **The Earth's most inner central (IMIC):**

- It's a 400-mile (644-kilometer-wide) ball of steel.
- IMIC is present in its solid state in the form of an alloy made up of nickel and iron because of the high pressure in the middle of Earth.
- Its temperature is estimated to be about 5,500-6,000 degrees (Celsius/9,930-10,830 Fahrenheit), similar to the sun's surface temperature.
- It exhibits a distinct anisotropy. This is an attribute of a substance that permits it to acquire distinct characteristics based upon the angle from the direction it is approached.
- The idea of the innermost portion inside the central core suggested at the time of 2002 by seismologists working from Harvard University-- Miaki Ishii and Adam

Dziewonski.

### About the inner core of Earth:

- It is an solid ball of metallic made mostly of iron.
- It is a solid because of the pressure generated by the weight placed on it by the other layers of topsoil.
- It's distinct from the outer core which is liquid.

### Radius:

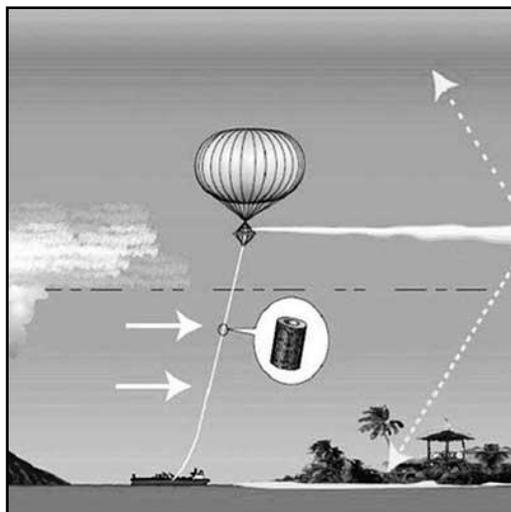
- Inner cores have an average diameter of 1220 km.
- The line separating the outer and inner core is 5150 km, or 5150 miles below that of Earth.
- This boundary is referred to as "the Lehman Seismic Discontinuity.
- Temperature Inner Core temperatures can rise to extreme levels, which are estimated to be between 7,200 and 8,500oF (4,000-4,700oC).

### Properties:

- It is expected to have extremely high electrical and thermal conductivity.
- The inner core produces the magnetic fields of its own, and is able to spin a bit faster than the other planets.

## Topic 8. IMD IS ALREADY SENSING HEAT WAVES

*Important for subject: Geography*



In the week ending on February 21st, the India Meteorological Department (IMD) advised that the maximum temperatures across west, northwest, and central India will be about 3-5 degrees C more than the average for the past few years.

### Source of the heat wave

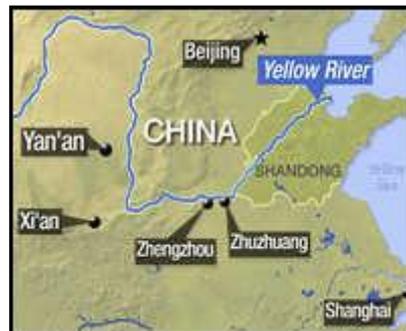
- They are produced because of one of two causes either because warm air is flowing into the area from another or because of something that is producing local heat waves.
- Locally, air is warmed up when you are in a region where the air is heated by the higher temperatures on the land or the air that is sinking from the top is compressed on its route and produces hot air close to the surface.
- An research study that was published in Nature Geo science offers some insights into how various processes can contribute to the creation of a heat wave.
- In the spring, India typically has air that is flowing into it from the north-west and west. As a result of climate change in the Middle East, it is evident that the Middle East is warming more rapidly than other areas with the latitudes similar to the Equator and is a major source of warm air that is blown through India.
- Additionally, air flowing in from the northwest flows through the mountains in Afghanistan in addition to Pakistan and Pakistan, which means that certain portions parts of the compression happens on the slopes to the east as it enters India with a radiant warmth.
- The air that flows in from the oceans is predicted to bring cooler air because land is warmer than oceans. It is believed that the Arabian Sea is warming faster than the majority of ocean regions.
- The powerful westerly winds of the upper atmosphere that originate out of across the Atlantic Ocean over to India in the spring manage the near-surface wind.
- All times that winds move from the west towards the east. The air in the descending direction compresses, and then warms to create certain heat waves.
- It is believed that the "lapse rate" - the speed that temperatures drop from the surface into the upper atmosphere is declining with climate change. Also, global warming causes warming of the upper atmosphere more quickly than the air close to the surface. This implies that the lower air is warming because of global warming and, consequently, produces heat waves as it is lowered and expands.

### Heat Waves:

- The term "heat wave" refers to a time of unusually high temperatures over the average maximum temperature that occurs during the summer months during regions like the North-Western as well as the South Central parts of India.
- It is a condition that affects temperatures in the air which causes death for the human body in the event of exposure.
- In the IMD, IMD declares a heat wave whenever the maximum temperature exceeds the threshold of 40 degrees Celsius in the plains and 37degC on the coast and 30degC in the areas with hills.
- A heat wave can also be declared when the temperature increases by 5 degrees Celsius and 6.4degC over normal.
- The term "severe heat wave" is defined when the temperature reaches over 6.4degC above the normal.
- The third aspect of a heat wave occurs when a region has a maximum temperature of greater than 45degC, and as high as 47degC during any one day.

### Topic 9. THE YELLOW RIVER HAS BEEN KNOWN AS 'CHINA'S SORROW'

*Important for subject: Geography*



The erosion and deforestation of the Loess Plateau caused the Chinese to build levees in order to manage the river increasing the risk of flooding

- The majestic Yellow River, the 'mother river of Chinese civilisation is also called the 'River Of Disaster and China's mourning' because of the massive floods it caused in its basin since the beginning of time until the end of the century.
- Geologists as well as paleontologists and researchers from the environmental sciences of Jiangsu Normal University, the Chinese Academy of Science as along with

researchers from the Coastal Carolina University in the United States visited several sites along the river.

- They also looked at sediment and records from the past to determine that the River was able to flood every four years before humans started altering the natural environment.
- Over 6000 years (3500 before the Common Era), when humans introduced settled farming to the region the river started to flood 10 times.
- The authors pointed out their focus on the Chinese habit of constructing embankments of mud especially at the time of the Imperial Period to 'tame the river's flow, which only exacerbated the situation.

### **Yellow River**

- Yellow River or Huang He is the second-longest river in China, after the Yangtze River, and the sixth-longest around the globe with an estimated length of 5,464 kilometers.
- The originates within the Bayan Har Mountains in Qinghai province of Western China, it flows through nine provinces before it runs to the Bohai Sea near the city of Dongying in Shandong province.
- The river has always been vital to the progress of northern China and is considered by experts as the cradle of civilization..
- Most fatally was the 1332-33 floods in the Yuan dynasty as well as in 1887, the flood in the Qing dynasty that killed between 1 million to 900 million as well as a Republic of China era 1931 flood (part of a huge number of floods in that year) which killed between 1-4 million people.
- The reason for the flooding is the huge quantity of loess with fine grain transported by the river through to the Loess Plateau, which is constantly deposited on the lower part of the channel. The accumulation of sediment causes natural dams to slowly build up.
- These subaqueous dams are erratic and, in general, undetectable. The massive quantity of water has to find a way to the ocean, forcing it to follow the path with the least resistance.
- If this occurs then it explodes across the plain North China Plain, often taking a new route and flooding the majority of farmland cities, towns or cities in the route.

## Topic 10. COCONUT

*Important for subject: Geography*

Coconut Development Board, in conjunction with International Coconut

- Community (ICC) is organizing an 2-day International Conference on Trade and Marketing of Coconut Products, in Hyderabad.
- Production ranking: India is the most largest producer of coconuts in the world, having 30.93 percent of global production closely followed by Indonesia and Philippines. India is 2nd in productivity
- **Distribution:** The traditional areas of coconut cultivation in India comprise the state in Kerala, Tamilnadu, Karnataka, Andhra Pradesh, Orissa, Goa, West Bengal, Pondicherry, Maharashtra and Islands of Lakshadweep and Andaman and Nicobar. There are however, several states like Assam, Gujarat, Madhya Pradesh, Bihar, Tripura, Manipur, Nagaland and Arunachal Pradesh have been identified as non-traditional locations to cultivate coconut.
- Climatic Conditions A tropical plant However, it has been observed to thrive under different agro climate conditions.
- Rainfall and temperature: mean average annual temperatures of about 27°C. It is evenly distributed annual rains ranging between 100cm and 300 cm.
- Altitude: 600 m above sea level.
- Soil types: Laterite, Alluvial, and the coastal sandy soils.

### **Coconut Development Board**

- Coconut Development Board (CDB) is an statutorily-created body created under the Ministry of Agriculture and Farmers Welfare in order to facilitate the development of industry and coconut cultivation with a particular focus on improving productivity and diversification of the product.
- Headquarters: Kochi in Kerala
- Regional Offices at Bangalore, Chennai, Guwahati and Patna.
- State Centres: Pitapally in Odissa, Kolkata, Thane, Vijayawadah and Port Blair.
- Market Development cum Information Centre:
- technology Development The Centre is located at Vazhakulam located near Aluva

located in Kerala and the field office in Thiruvananthapuram located in Kerala.

### **FUNCTIONS OF THE BOARD**

1. The adoption of measures to facilitate the development of the coconut industry, among other things.
2. Giving technical assistance to those working in coconut industry and cultivation.
3. In addition, we provide financial assistance and other services to increase the coconut plantations.
4. Promoting the use of advanced techniques for processing coconut and the products it produces.
5. Incorporating measures to encourage price for the coconut as well as its other products.
6. Recommending ways to improve the commercialization of coconut products and the coconut.
7. Recommending measures to regulate exports and imports of coconut products and coconut imports.
8. Setting specifications, grades, as well as standards applicable to coconut as well as its products.
9. Financing appropriate schemes to boost the production of coconuts and to increase both the yield and quality of coconut.
10. Insisting, encouraging, and promoting and financing technological, agricultural and economic studies on coconut products and other related items.
11. The collection of statistics about coconut as well as its derivatives, and publishing these.
12. Publicity activities, as well as publishing periodicals and books about coconut and the products it produces.

**Topic 11. NORD STREAM SPILL IS BIGGEST METHANE LEAK EVER, BUT MINUSCULE COMPARED TO GLOBAL RELEASE OF THE GREENHOUSE GAS: UNEP**

*Important for subject: Environment*

A huge plume of intense methane gas was released to the air following the incident in September 2022.

**Report results:**

- A UNEP-led study concluded that the failure of Nord Stream natural gas pipeline beneath the Baltic Sea is the most significant single event that caused the enormous release of climate-altering methane. The incident, however, is a "drop in the ocean compared to the amount of methane released globally".
- The methane emissions released during the incident amounts to less than 0.1 percent of total methane emissions from human activity.
- It is also equivalent to the methane emissions that the petroleum and natural gas industries produces every day.
- International Methane emission observatory (IMEO) is creating a global methane emission database with unmatched precision and granularity. This will encourage action to decrease methane emissions.

**Methane emissions:**

- In the month of October, 2023, researchers had discovered more than 50 super-emitters of methane gas with heat trapping properties in central Asia and west Asia and in the south western United States.
- A majority of these websites are associated with the fossil fuel and agriculture industries.
- Methane is responsible for only a tiny fraction of human-generated greenhouse gas emissions when compared with carbon dioxide. It is believed to be eight times more efficient than carbon dioxide in capturing the heat in the atmosphere over the course of 20 years that follow its release.
- Methane remains in the atmosphere for just 10 decades, unlike CO<sub>2</sub>, that lasts for hundreds of thousands of years.

- This suggests that a substantial reduction in methane emissions could drastically reduce global warming towards the middle of this century.

### **International Methane Emissions Observatory (IMEO)**

- It was developed by the UN Environment Programme (UNEP) with the support of the European Union
- It was launched in the last G20 Summit.

### **Objective of the IMEO**

- The Observatory aims to provide reliable data to measure progress made by the country in meeting the methane reduction commitments and to advocate for the best methods.
- The initial focus will be at methane emissions from fossil fuel industry before expanding to other sectors that emit methane, such as waste and agriculture.
- It will also track the commitments of countries participating as part of the Global Methane Pledge, a US led effort by the EU to reduce methane emission by 30 percent in 2030.

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## **Topic 12. ACCESS AND BENEFIT-SHARING: PAPER PROPOSES 8 PRINCIPLES ON USE OF INDIGENOUS MEDICINE**

### ***Important for subject: Environment***

A group of activists, practitioners researchers, lawyers, and human rights defenders have suggested a set of moral guidelines that will help guide Western research into psychedelics and practices with indigenous traditional medicines.

- The eight ethical guidelines that each begin with the letter "R" could address the growing concerns in many indigenous countries concerning the cultural appropriation and use of their traditional medicine.
- The guidelines are proposed because the usage of psychoactive drugs for therapeutic purposes is increasing.

### **The 8 Rs:**

- Reverence, Respect, Responsibility, Relevance, Regulation, Reparation, Restoration,

and Reconciliation.

**They were classified into four broad categories:**

1. Acknowledgement
2. Knowledge-Translation and Education
3. Intellectual Property
4. Belonging

**What exactly are Psychedelics substances?**

- Psycho drugs (serotonergic hallucinogens) are potent psychoactive compounds which alter mood and perception and impact a myriad of cognitive processes.
- They are usually considered safe from a physiological standpoint and do not result in dependency or addiction.
- There were 367 clinical studies registered on psychedelics by 2022.
- A rising number of states and cities across the US have also legalized their usage. Traditional healing remedies such as Ayahuasca are growing in popularity. But, the economic benefits are not distributed to the regions and communities from which these medicinal plants originate.

**The guidelines are needed:**

- The earnings alone from the psychedelic market is predicted to increase to 6.85 billion by 2027.
- Traditional Indigenous medicine was not secured by laws.
- From 2022, there will be only two constitutions remain in force: Bolivia (Art. 42) and Ecuador (Art. 57) provide specific regulations for Indigenous traditional medicine.
- While Western psychotherapeutic facilitators and practitioners are able to earn an average of \$10,000 per ceremony, indigenous practitioners can earn anywhere from \$2 to \$150 per hour for their services in their own communities of origin.
- Demand from the world is forcing people to unsustainable harvesting of Iboga, a plant that is that are used to produce ayahuasca as well as the hallucinogenic cactuspeyote.

**Does there exist a global structure?**

- Yes. There are frameworks which mention indigenous rights to practice and

development of traditional medicinal practices and associated practices.

- They include Article 8 (j), Article 16 and Annex 1 of the Convention on Biological Diversity (CBD) along with the articles 7, 12 and 12 from the CBD's Nagoya protocol on access and Benefit-sharing (ABS).
- But, some countries such as the US where research into psychedelics based on traditional indigenous medicine is conducted are not signatories of the CBD and thus are not participants in the Nagoya protocol regarding ABS.

### **What is access and benefit-sharing?**

- Access and Benefit Sharing (ABS) refers to the method by how genetic resources can be access and the benefits resulting from their use are distributed between the nations or individuals that use them (users) as well as the individuals or nations that supply the resources (providers).

### **What's the reason?**

- The accessibility and benefit-sharing rules from the Convention on Biological Diversity (CBD) are designed to ensure that biological access of genetic resources are made easier as well as that benefits that accrue through their use are equally shared with the suppliers.
- In some instances, it also contains valuable traditional knowledge that is related to genetic resources that originate from local and indigenous community (ILCs).
- The benefits that are shared could be in the form of money like exchanging the royalties for resources used in the creation of products for commercial use and non-monetary benefits, like the improvement of research capabilities and skills.
- It is crucial that users and providers are aware of and accept institutional frameworks, like those set out in the CBD as well as in the Bonn Guidelines.
- They help governments establish individual frameworks that assure that access and benefit sharing is done in a fair and equally.

### **What is the process?**

- The access and sharing of benefits is built upon the prior informed permission (PIC) being granted by a service provider to the user and on negotiations between the two parties to establish mutually agreed upon terms (MAT) to ensure the fair and

equitable distribution of genetic resources as well as the benefits.

- The term "prior informed consent" (PIC): is the consent granted by the relevant authority of a country that provides the service to a user prior accessing genetic resources according to a suitable institution and legal framework of the country.
- Terms of mutually agreed upon (MAT): is an agreement between the suppliers of genetic resources as well as users on the terms and conditions for access and usage of the resources, as well as the benefits that are to be shared among the two parties.
- The conditions are stipulated in article 15 of the CBD, which was adopted in 1992 and establishes a global set of guidelines that govern accessibility to the genetic resources and also the equitable and fair distribution of the benefits resulting from their usage.

### **Who are the people at stake?**

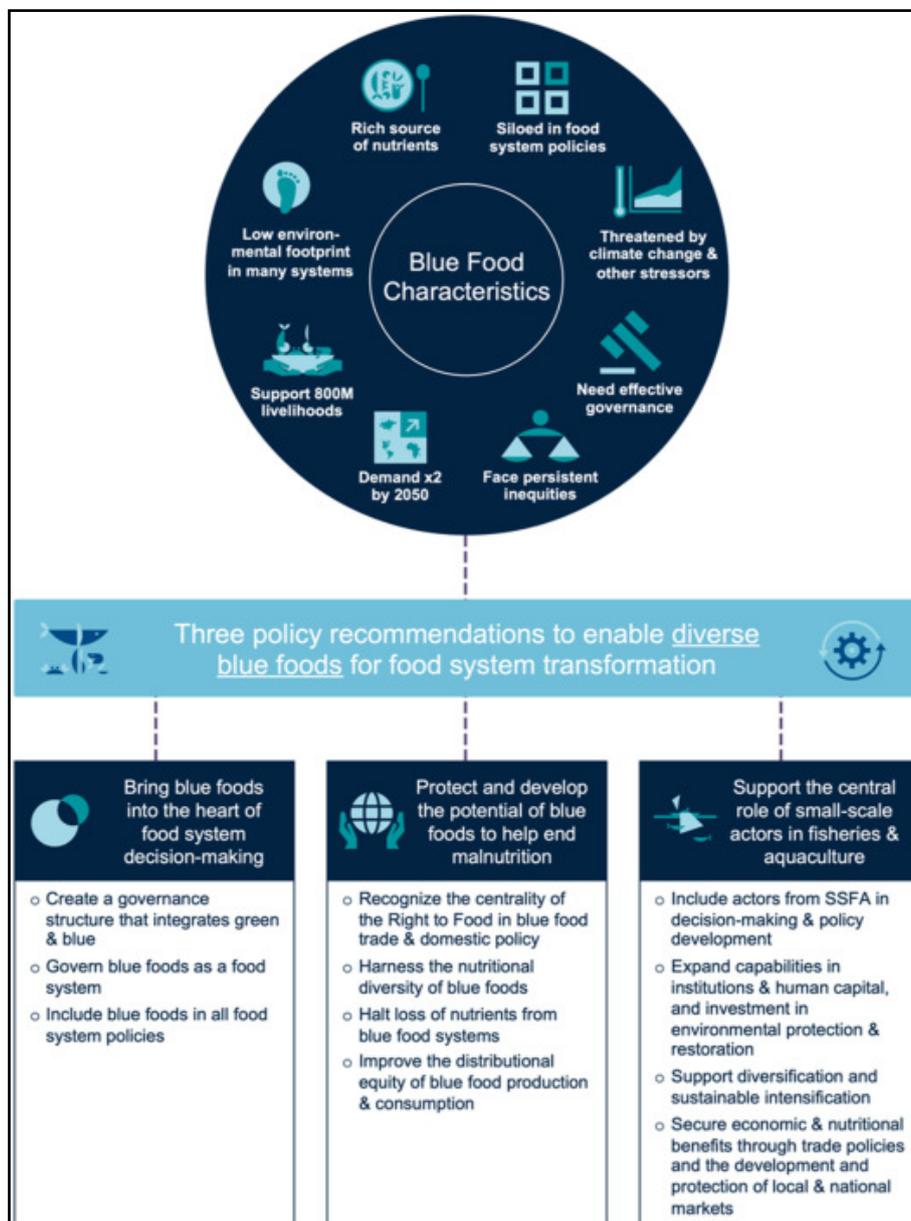
- The providers of genetic resources are: States have sovereign rights to natural resources within their authority.
- They are required to establish conditions to facilitate access to these resources to ensure sustainable use.
- The providers agree on to terms, which may include the PIC or MAT that allow access to the resources and sharing the benefits equally.
- Laws in the country of the provider could permit other parties like the indigenous communities and local groups (ILCs), to also negotiate terms for benefits sharing and access.
- Participation by ILCs is essential in situations in which traditional knowledge linked to the genetic resource is used.
- Genetic resources users: Users are responsible for sharing the benefits of genetic resources with the suppliers. They are seeking the use of genetic resources to serve a wide variety of reasons that range from basic research to the creation of innovative products. They're a diverse group that includes botanical gardens, researchers from industries including the pharmaceutical, agriculture and cosmetics industries collection houses, research institutes and collectors.
- National Focal Points In order to facilitate accessibility users need an unambiguous and transparent procedure that clarifies who to reach out to and what procedures and requirements are in the countries of the provider for access. National Focal Points are

responsible to make this information available.

- **Compliant National Authorities (CNAs):** CNAs are organizations created by governments. They are accountable for providing accessibility to the users who use their genes and representing providers at the national or local level. National implementation guidelines define the manner in which CNAs function within a particular country.

### Topic 13. BLUE FOODS CAN HELP INDIA IMPROVE NUTRITION, LIVELIHOOD: STUDY

*Important for subject: Environment*



Blue foods that comes from marine ecosystems may help to reduce nutritional deficiency and boost the creation of jobs and export earnings in India according to an upcoming study.

- In comparison to terrestrial meat Blue foods produce lower emissions.
- They can also improve the well-being, health and the livelihoods of rural communities.
- India can benefit from aquatic food to combat B12 and omega-3 deficiency.
- Four ways that blue food can aid in achieving the food system goals across all nations: ensuring that critical nutrients are available, Offering healthy alternatives to meat from the wild, Reduced environmental footprints of food and beverages.
- The protection of blue food contributes to the economy, nutrition and livelihoods in changing climate.

### **What is Blue Food?**

- They are food sources that are derived from marine or aquatic animals and plants, as well as algae which are grown or harvested in marine and freshwater environments.

### **Examples**

- Seaweeds, Sea Cucumber
- Bivalves (mussels, oysters, etc.)
- Fishes like tilapia and carp, catfish, salmon and many more.
- It also includes Capture Fisheries.
- Capture fisheries encompass the harvesting of all sorts of living resources that naturally occur in freshwater and marine environments.

### **Advantages:**

- They provide more nutritional benefits relative to terrestrial food.
- A variety of blue-farmed species are rich in vital nutrients such as omega-3 fats, vitamins, and minerals.
- Sustainable as they release less greenhouse gases.
- Aquaculture as well as marine farms clear the space that was required to feed the increasing population with conventional farming.
- They can tackle the issue of real hunger as well as the hidden hunger both.

- They help in fulfilling these SDGs (SDG2 Nutrition, and SDG14 Sustainable management of resources from the ocean).
- Foods with blue colouring versus. red meat:
- Countries that have a high amount of consumption of red meats, that is, over the recommended limit for healthy and sustainable for the environment has a higher risk of cardiovascular diseases.
- The Indian consumption of red meat was about 50 grams per person daily, which isn't too high. Furthermore, the country doesn't suffer from excessive levels of cardiovascular disease.
- The promotion of blue-coloured foods instead of red-meat consumption could help be a solution to environmental and health concerns for around eighty percent out of 23 countries that have high risk of developing cardiovascular disease.
- Over 91 percent of nations with vitamin B12 deficiency also have the highest levels of omega-3 deficiency.

### **Issues in blue food production**

- Around 90 percent of the world's marine fish stocks are currently being exploited to the maximum or overfished, as per the World Bank.
- There are problems with illegal fishing, overfishing and other non-sustainable aqua production of food.
- The dangers of Invasive species.
- Capital intensive sector and technology.
- Strategies and policies in connection with blue economy:

### **Draft Blue Economy Policy:**

- The Ministry of Earth Sciences (MoES) has rolled out the draft Blue Economy policy, inviting input and suggestions from various stakeholder.
- It's in conformity with the Indian Government's Vision of New India by 2030.

### **Key Highlights of the Policy**

- It classified "blue economy" as one the 10 fundamental aspects of national growth.
- It focuses on policies that span several important sectors to ensure a an overall

increase in India's economy.

**It acknowledges the following seven thematic areas:**

- National accounting framework to support the blue economy as well as ocean governance.
- The coastal marine spatial plan and tourism.
- Aquaculture, marine fisheries and processing of fish.
- Manufacturing emerging industries technology, trade services, and the development of skills.
- Shipping, logistics, and infrastructure and trans-shipments.
- Deep-sea and coastal mining as well as offshore energy.
- Security, strategic aspects along with international cooperation.

**Pradhan Mantri MatsyaSampada Yojana:**

- Nodal Ministry/ Department: Department of Fisheries
- Tenure: 2020-2025
- Intended Beneficiaries are
- Farmers, Fishermen fish sellers, and fish workers

**Fisheries Development corporations**

- Self-Help Groups (SHGs)/Joint Liability Groups (JLGs) in the fishing industry
- Fisheries cooperatives and federations as well as cooperatives
- Private and entrepreneurial firms as well as entrepreneurs
- Fish Farmers Producer Organisations/Companies (FFPOs/Cs)
- SCs/STs/Women/Differently abled persons.

## **Topic 14. GREAT BACKYARD BIRD COUNT**

*Important for subject: Environment*

Bengal reports 489 species in Great Backyard Bird Count 2023

- West Bengal reported the most species which was followed by Uttarakhand and Arunachal Pradesh in the Great Backyard Bird Count (GBBC) 2023 in 35 States and Union Territories from February 17-20.
- Kerala On contrary, had the highest amount of checklists of birds.
- The GBBC 2023 GBBC proved that the birds of India thrive in varied habitats from urban areas to the rural. A significant increase in participation across the country has helped India to upload the second-highest quantity of checklists following those of United States of America and the third-highest number of species from any country.

### **Great Backyard Bird Count**

- The Great Backyard Bird Count (GBBC) is a yearly citizen science initiative which takes place over the course of four weeks during February.
- The goal for the GBBC will be to encourage birdwatchers of all ages and levels of skill in collecting information on the bird population and their distribution across the globe.
- During the GBBC participants are required to count the birds within their own backyards, in the local park, or in any other place for a minimum of 15 minutes, and make a report on the internet.
- The data gathered during the GBBC aids conservationists and researchers understand the changes in the bird population and aid conservation efforts.
- The GBBC was launched in 1998. Since then, it has been a wildly popular event with tens of thousands participants from more than 100 countries attending every year. Apart from collecting vital information The GBBC also offers an opportunity to get people connected with nature and to learn more about the birds that live in their vicinity.

## Topic 15. HUMMINGBIRDS

*Important for subject: Environment*

### **Hummingbirds:**

- Hummingbirds are tiny brightly coloured birds recognized for their fast wings beats as well as their capability to hover mid-air.
- They can be located in the Americas across the Americas, all the way from Alaska up to Tierra del Fuego, and are a favourite photographer's and birdwatchers' favourite.
- There are more than 300 varieties of Hummingbirds with a range of dimensions and colours.
- The most tiny hummingbird species, called the bee hummingbird is just 2.25 millimeters (5.7 cm) in length, while the largest species, called the gigantic hummingbird can reach 8.5 inches (21.6 centimeters) long.
- Hummingbirds are famous for their extraordinary flying capabilities. Their wings beat as high as the speed of 80 times per second and allow them to stay in one place as they fly backwards and rapidly change direction.
- Additionally, they are capable of flying over long distances and some species moving thousands of miles every year.
- The energy requirements for hovering are high. With respect to weight, hummingbirds possess the most metabolic rate of vertebrates.
- Hummingbirds consume a lot of nectar that flowers produce and provide their bodies with energy that they require to maintain their high metabolic rate. They also consume insects, small bugs and spiders to get protein.
- Hummingbird species are found throughout the year throughout the year in rainforests in high altitudes for instance, in the Andes with altitudes from 1,500 to 5,200m in which the partial oxygen pressure in the air decreases which is which is a situation that is hypoxic challenge to meet the energy demands of hummingbirds' metabolism.
- In Andean Hummingbirds that live at elevations above sea level, scientists discovered that the oxygen-carrying protein in blood hemoglobin showed an increased oxygen-binding ability, and this adaptive effect could result due to evolutionary changes within the hemoglobin protein through specific amino acid modifications as a result of

natural selection.

## Topic 16. SLOTH BEARS

*Important for subject: Environment*

### WHAT IS A SLOTH BEAR?

**Scientific Name:**  
*Melursus ursinus*

**Family:**  
Ursidae

**Lifespan in the Wild:**  
16 years on average

**Length:**  
5 to 6 feet

**Weight:**  
90 to 140 kgs

**Habitat:**  
Grasslands, scrublands, dry and moist tropical forests

**Geographic Range**  
India, Nepal, Sri Lanka, and presumably Bhutan



Estimated Sloth bear population in India is

## 6,000-10,000

**IUCN Status**

LC NT **VU** EN Cr EW EX

Vulnerable

**Behaviour:**  
Solitary, except during the breeding season

**Diet:**  
Insects like ants, beetles, and termites, fruits, and honey

**Threats:**  
Human-wildlife conflict, habitat fragmentation, hunting and poaching

**Conservation Measures:**  
Protected under CITES Appendix I and Schedule I of the Indian Wildlife (Protection) Act, 1972

An upcoming study revealed that maintaining the forest cover and preventing habitat fragmentation while minimizing human disturbance is vital to the long-term conservation of bears in protected reserves of wildlife across India.

- Researchers from Bengaluru's Centre for Wildlife Studies, the National Centre for Biological Sciences (NCBS)-Tata Institute of Fundamental Research (TIFR) along with The University of Florida studied sloth bears in the forest corridor in Madhya Pradesh.
- The findings have been published in their most recent research paper, titled 'Safe spaces in the forest Mechanistic spatial models to predict the risks of conflict between bears and humans within India' in the journal Biotropica.

- In the latest study the researchers conducted surveys of indirect signs (documenting pug marks and the faeces) to discover the locations where sloth bears can be found and the reasons for this. They then merged these findings with information about bear attacks on human beings who were interviewed of local communities.
- The attacks of bears on humans were more likely to occur in areas with dense forests, rough terrains and areas with a high level of bear activity.

### **Sloth Bears:**

- It is an Myrmecophagous bear species.
- Distribution:
- They are indigenous to the Indian subcontinent as well as 90% of population is located in India with small populations found in Nepal as well as Srilanka.
- It is found in a vast variety of habitats, including humid and dry rainforests, tropical savannahs grasslands, and scrublands below 1,500 meters (4,900 feet) in the Indian subcontinent and less than 300 meters (980 feet) within Sri Lanka's forests that are dry. It is extinct in the region of Bangladesh.
- The sloth bears are prevalent across the country, with the exception of Jammu as well Kashmir and the north eastern States.

### **Characteristics:**

- They are creatures that are nocturnal.
- It feeds on fruits termites and ants.
- Sloth bears don't hibernate.

### **Protection Status**

- IUCN Red List: classified as "insecure"
- Wildlife Protection Act of India 1972 included in Schedule I

### **Threats:**

- Conflict between humans and animals Over the last couple of years, there's been an increase in incidents of human-slosh bear conflicts in states such as Gujarat, Rajasthan and Maharashtra as well as other states.

- Exploitation: Sometimes, they are captured in a pet home and then kept that could lead to abuse and neglect.

## **Topic 17. PLASTIC WASTE IN URBAN DRAINS CAN LEAD TO AN EXPLOSION OF MOSQUITOES**

### *Important for subject: Environment*

A study carried out by researchers in Thiruvananthapuram, Kerala, suggests bisphenol A or BPA could indirectly assist in spreading vector-borne illnesses both in animals and humans.

- A study has shown that the chemical created by humans is able to dramatically reduce the time of breeding of mosquitoes in the southern house (*Culex quinquefasciatus*) which is which is a major carrier of West Nile virus, Rift Valley fever virus, and the avian pox virus in subtropical and tropical countries and consequently assist in the rapid growth.
- This is of concern because the majority of urban wastewater canals, that serve as places for mosquitoes to breed, are filled with BPA-rich plastic garbage.
- Southern house mosquitoes in the opposite thrive in the presence of the compound.
- There are larvae of mosquitoes are able to be tolerant of BPA without causing fatal consequences up to a level that is 5 mg/L which is much greater than the levels normally observed in the natural environment.
- The research findings are expected to have wide-ranging implications because BPA is produced in large amounts throughout the world and the industrial discharge of BPA is a well-known surface freshwater contamination.

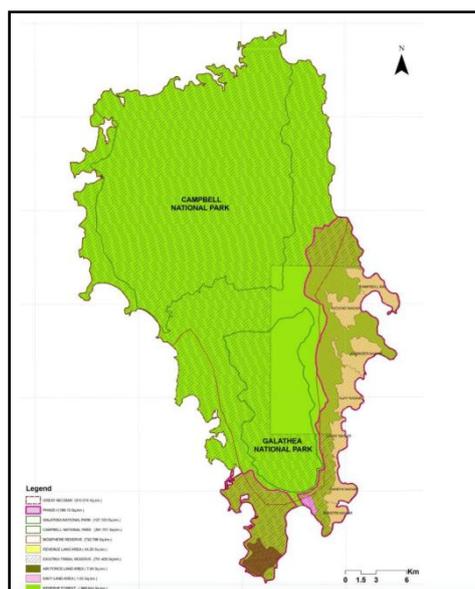
### **BisphenolA (BPA)**

- BisphenolA (BPA) BisphenolA (BPA) is an organic compound and is one of the most basic and most well-known bisphenols.
- It is created by the condensing of acetone and phenol and acetone, with an estimated 4 million tonnes of it being produced globally in 2015.
- It is a colourless solid that is well-soluble in organic solvents but not very solubilized in water (0.344 percent wt at 83 degrees Celsius).
- BisphenolA (BPA) can be described as a chemical manufactured in large quantities, mainly for the manufacture of plastics made from polycarbonate.

- It's used in many items like shatterproof windows water bottles, eyewear and epoxy resins that cover the top of some food cans made of metal bottles, tops of bottles, along with water pipes.
- The most common method of exposure BPA for the majority of people While dust, air, and water are all potential sources of exposure, BPA in beverages and food is the primary source of the exposure to humans.
- Bisphenol A is able to be absorbed into food through the protective epoxy resin coats of canned foods as well as from consumer items like polycarbonate tableware and food storage containers, bottles of water, and baby bottles.
- The amount to the extent that BPA dissolves from polycarbonate bottles to form liquid can depend more depending on the temp of the bottle or the liquid as well as the age of the container.
- BPA is also present in breast milk.
- BPA is an disruptor of the endocrine system.
- Generally speaking, BPA works on a hormonal level, causing hormonal imbalance and causing estrogenic effects through the binding of hormone-related receptors (ERR).
- The resulting effects are many of which hormonal-related abnormalities have been reported in the majority of cases.

## Topic 18. GREAT NICOBAR PROJECT

*Important for subject: Environment*



Referring to the need for a "strategic" imperative, the Union Home Ministry wanted the 8.45-square-km airport portion in the Greater Nicobar Development Project to be kept secret.

- However The Environment Ministry, in an unusual move, has decided to halt any discussions regarding the clearance of forests for the whole 166.10-sq km plan that was recommended by the legal Forest Advisory Committee (FAC) within which the airport is.

### **Information About Great Nicobar Development project**

- The concept of a "green field city" has been suggested, which includes An International Container Transshipment Terminal (ICTT) The proposed airport is a greenfield airport for international use,
- A power plant, as well as A township for personnel who will manage the plan.
- A total of 166.1 square kilometers along the island's southeast and southern coastlines have been identified to development along a strip of coastal that spans between 2 and 4 kilometers.
- Around 130 square kilometers of forest have been approved to divert the flow of water, and 9.64 thousand trees are expected to be cut down.
- It will also be managed by the Indian Navy, while the airport will be equipped with dual civilian and military duties and cater to tourists too.
- Public transport, roads water supply and facilities for waste management, as well as several hotels are being planned for visitors.

### **Project Implementation Timeline**

- The development activities are scheduled to start in the financial year 2022-23. The port is scheduled to be operational in 2027-28.
- The project is planned to be completed in three phases over the next 30 years.
- A total of 15,000 more employment opportunities in direct work and 1.5 million indirect employment are expected to be in the island during the course of its development.

### **Forest Advisory Committee**

- Forest Advisory Committee is a statutorily-created organization established pursuant

- to the Forest (Conservation) Act 1980.
- It is under the supervision under the Ministry of Environment, Forests & Climate Change (MoEF&CC).
  - The apex body is an body charged with the adjudication of requests from industry groups to tear down forest land to make commercial profits.
  - It examines issues related to the use of forest land to non-forest purposes like mining towns, industrial projects, townships.
  - It also provides advice to officials on the matter of forest clearances being granted. But, its function is advisory.
  - Every request that is over 40 ha of forest land are being referred by The Central Government to the Forest Advisory Committee (FAC).
  - FAC can also recommend any conditions or limitations on the use of forests for any other use that it believes would reduce adverse environmental impacts.
  - The MoEF & CC could approve the application after considering the recommendations provided by the FAC.
  - FAC is led by the Director General Forests, Ministry of Environment and Forests as Chairperson, along with 3 other officials.
  - It also includes three non-official members, who are experts of them in Mining, Civil Engineering and Development Economics.

### **Topic 19. E-WASTE (MANAGEMENT) RULES 2022**

*Important for subject: Environment*

The government announced that the E-Waste (Management) rules 2022 on November 2nd 2022. The guidelines will take over the existing E-waste (Management) Rules, 2016 which will come into effective on April 1st 2023. The rules will be the first step in the brand new extended Producer Responsibility (EPR) program to recycle e-waste.

#### **E-Waste (Management) Rules, 2022**

**The main feature of new rules is that it follows:**

- It is applicable to every manufacturer or producer, recycler dismantler, recycler, or manufacturer who is required to sign up with CPCB.
- A person or entity is not permitted to be able to conduct commercial activity without

- registration and not conduct business with an non-registered company.
- The authorization is now replaced with registration on the internet portal which only producers, manufacturers recycling, refurbishers and manufacturers are required to sign up.
  - It is a requirement for the EPR framework, which includes the requirement for "Registration of Stakeholders"(manufacturer manufacturer, producer, recycler recycling, and manufacturer).
  - A " digitalized system strategy' also being proposed in the proposed new rules (2022) which will tackle the issues of ineffective monitoring systems, insufficient transparency, poor compliance, and funneling processes to informal sectors (which is in violation of law).
  - A standard online portal will also help reduce the incidence of paper trading or false trails. This refers to that it is a practice to falsely reveal 100 percent collection on paper while weighing or collecting scrap to achieve targets.
  - It also briefly discusses the two elements, namely "component recovery' as well as 'residual disposal'.
  - Component Recovery refers to efficient and effective recuperation of rare earth elements so that they can reduce the dependence on natural resources.
  - Residual disposing means the secure disposal of the 'residual material' in the recycling of electronic waste.
  - Schedule I has been extended to include the 106 Electrical and Electronic Equipment (EEE) are now included in the EPR program.
  - Producers of EEE who have been notified EEE are provided with annual E-Waste Recycling goals based on the production of EEE previously purchased EEE or based on the sales of EEE depending on what the situation might be.
  - Control of solar PV panels and cells has been added in the new rules.
  - The amount of recycled will be calculated based on the final product to ensure that there are no fraudulent claims.
  - The provision for generation and exchange of the EPR Certificate was introduced.
  - The provisions to provide environmental compensation as well as audit and verification are being introduced.
  - As per these rules there is a section for reducing the risk of the use of hazardous

substances that are used in the manufacture of EEE is in place. It requires that all producers of EEE and their components be sure it is the case that products are free of mercury, lead, or other harmful substances that exceed the limit of concentrations that are prescribed.

### **E waste**

- The International Telecommunication Union defines e-waste as any electronic and electrical devices (EEE) and its components that have been removed by their owner as garbage without any intention of reuse.
- This waste can be divided into six types The first is freezing and cooling equipment like refrigerators, freezers, other equipment like monitors, televisions, laptops notebooks, tablets and notebooks.
- It also includes fluorescent lamps and various other small and large equipment such as clothes dryers, washing machines dishwashers as well as microwaves, vacuum cleaners, and microwaves.
- The e-waste stream is made up of many substances, including harmful substances such as lead polychlorinated benzene (PCBs) and Polybrominated Biphenyls (PBBs) mercury as well as polybrominated biphenylethers (PBDEs) brominated fire retardants (BFRs) as well as useful substances such as steel, iron, aluminum, copper, and plastics.
- The decomposition of e-waste can be costly and only a handful of developed nations can afford to do it.
- The laws to regulate e-waste have been in force throughout India since 2011. They require that only dismantlers who are authorized and recyclers can collect the e-waste. E-waste (Management) Rules in 2016 was promulgated in the year 2017.
- India's first electronic waste clinic for separation, processing and disposing of household waste and commercial facilities has been announced to being installed within Bhopal, Madhya Pradesh.

### **Extended Producer Responsibility (EPR)**

- It is a policy-based approach that gives producers the responsibility of a large extent, whether financial or physical in the handling or disposal of products that are post-consumer.

- The attribution of this responsibility can in principle create incentives to stop the production of waste at their source. It could also encourage product designs that is sustainable and help in the attainment of recycling goals for the public and materials management objectives.

## **Topic 20. RUPEE TRADE FACING FRICTION AS BANK'S WARY OF US SANCTION**

### ***Important for subject: Economy***

There is an absence of clarity for banks regarding how to use the International Trade Settlement mechanism in rupees (INR) and those that are exposed towards the U.S. are wary of holyions The Chairman of the Indian Engineering Export Promotion Council (EEPC) stated.

- In the spring of last year it was announced that it was announced that the Reserve Bank of India (RBI) established an International Trade Settlement mechanism in the rupee. It was a move that aims to ease trade between countries with sanctions like Russia.
- Indian trade settlement in rupee mechanism
- The RBI has declared the creation of this mechanism that will facilitate international trade using Indian rupees.
- The Indian rupee's trade settlement mechanism is a way of making use of the Indian rupee for any international transaction, in lieu of dollars and other currencies.
- Special accounts for vostro rupee known as SVRA, are being opened by Indian banks along with their banks from Mauritius, Russia, Sri Lanka.

### **For Importers in India:**

- Importers from India carrying out imports via the system will be required to pay in rupees, which will be credited to the Vostro account of the bank that is the correspondent of the country of the partner, in addition to the invoices for the purchase of goods or services supplied by the overseas supplier or vendor.

### **For exporters from India:**

- Similar to this exporters of India who export goods and services through this process

are required to pay the profits from exports in Indian currency, from the balance of the specially specifically designated Vostro account at the bank that serves as the correspondent of the country of partner.

### **Vostro & Nostro Account**

- A Vostro account is an account of funds that a bank holds or due to a bank by another third entity (an individual firm, an individual or bank).
- The nostro account is a method to track the amount of bank funds are stored by the bank that is not.

## **Topic 21. OBICUS**

### ***Important for subject: Economy***

The RBI has been conducting the OBICUS of the manufacturing industry on an annual basis since the year 2008.

- It means -Order books, Inventories and Capacity Utilization Survey (OBICUS).
- The study provides insight into the needs from the Indian manufacturing industry.
- The survey covers 2,500 businesses both in the public as well as private sector.
- The study reveals the changes in the real-time data of the order books and inventory levels for raw materials as well as finished goods, as well as the utilization of capacity.
- Inventory refers to the quantity of merchandise that a business has capacity utilization is the term used to describe the production and manufacturing capabilities utilized by an enterprise or a nation.
- The report also provides the ratio of inventories total to sales, as well as the proportion of raw materials (RM) and final goods (FG) inventory to sales, in percent.
- It is thought to be a crucial indicator of the pace of economic growth, inflation pressures, and the general business cycle.
- The research provides valuable information to the formulation of monetary policy.
- The Reserve Bank of India has announced the 58th edition of their Order Books, Inventories and Capacity Utilisation Survey (OBICUS). The survey is scheduled for the reference period from April to June 20, 2022 (Q1:2022-23).

## Topic 22. CARBON CALCULATOR

### *Important for subject: Economy*

British Petroleum created an advertising campaign to encourage individuals to make use of the personal carbon calculator. The campaign informed consumers that it was the right time to go to a low carbon diet - the message of guilt that implied that people could stop the climate change if they were willing.

- Prior to BP's ads Google queries in the search terms "carbon footprint" and "carbon footprint calculator" were not even registered and often received zeros from Google Trends.
- In the wake of the campaign the terms began to gain traction In 2008, the two terms were often near on the upper end of Google Trends scale.
- In the "Carbon Majors" report by the Climate Accountability Institute, the 108 cement and fossil fuel companies release more than 70% of global carbon emissions and put BP third in the list of fossil fuel polluters that are tied to the United States which is just behind Chevron as well as ExxonMobil.
- However, are the oil and gas industry has to dramatically transform in order for the world to prepared to face our climate change.
- That's why at the end of the day carbon footprint calculators hold an important place in people's lives. They could have been made available in the name of Big Oil in an error of omission however, when used with care they could help us to take the bottom-to-top actions required to tackle the climate crisis.

### **Carbon Calculator**

- Carbon calculators are tool that can help organizations or individuals determine the carbon footprint of their business.
- Carbon calculators are able to ask users several questions about their consumption of energy as well as their transport practices and other pertinent actions, and then computing the carbon emissions that are associated with these actions.
- Utilizing the carbon calculator, people as well as organizations can gain a better comprehension of their environmental footprint and determine ways to decrease your carbon footprint.
- Many carbon calculators offer tips and suggestions to cut emissions like driving less,

using energy efficient appliances and investing in energy-efficient renewables.

### **Carbon Footprint:**

- A carbon footprint refers to an indication of the quantity of carbon dioxide (GHGs) which are released in a direct or indirect manner through an individual company or product.
- It is typically measured in the metric tons in carbon dioxide equivalents (CO<sub>2</sub>e). The carbon footprints are determined by taking into consideration all possible sources for greenhouse gas emission resulting from the activities of an organization or individual that include:
  - Emissions direct of fossil fuels that are burned (such as diesel, gasoline natural gas) to power heating, electric power transportation, and industrial processes.
  - Emissions indirect generated by the production or transportation and disposal of items and services utilized either by individuals or an a group which includes clothing, food and electronic devices.

### **Ecological Footprint**

- It is a technique that is promoted through the Global Footprint Network to measure the human need for the natural resources, i.e. the amount of nature needed to support the population or an economy.
- It monitors demand by using an ecological accounting system.
- In essence, it's an indicator of the impact of humans on the environment.
- The Ecological Footprint as well as biocapacity are expressed as the global acres which are globally comparable, standardized hectares that are the world's average productivity.
- Ecological Footprint accounting is a way to measure the supply and demand of the natural environment.
- In one hand, on the Demand side on the demand side, the Ecological Footprint is a sum of all productive areas which a product, or any other entity is competing. It is a measure of the ecological resources that a specific product or population needs to generate the natural resources it needs (including fiber and plant-based food products such as livestock and fish products as well as timber along with other products from forests, as well as space in urban areas for infrastructure) and also to take in its waste,

particularly carbon emissions.

- The Ecological Footprint monitors the utilization of productive surfaces.
- The most common areas include typically: grazing land, cropland and fishing grounds, constructed forests and carbon demand on the land.
- From on the other hand, on the supply-side On the demand side, a city's the nation's or state's biocapacity is the efficiency of its ecosystem assets (including crops land, grazing land as well as forest land fishing grounds, as well as constructed-up land). These areas, particularly if not harvested, could help to absorb the waste that we produce particularly carbon emissions due to burning fossil fuels.
- If the Ecological Footprint of a person exceeds the biocapacity of the region the region is in an deficiency in biocapacity.
- Its need for the goods and services its oceans and land offer- fruits and veggies, animal meat wood, fish, cotton for clothing, carbon dioxide absorption--is greater than what ecosystems in the region can regenerate.
- In the more popular media we can also refer to this as "an ecological deficit."
- A region with an ecological deficit is able to meet the demand for food by imports or reselling its ecological resources (such such as excessive fishing) or emitting carbon dioxide in the atmosphere.
- If the biocapacity of a particular region is greater than it's Ecological Footprint then it has a reserve of biocapacity.

### **What is Earth Overshoot Day?**

- If the whole planet is experiencing the risk of running an environmental deficit. We refer to this "overshoot." At the global scale the ecological deficit as well as overshoot are exactly the same since there isn't a net flow of resources into the world.

### **Overshoot can occur at the time:**

- HUMANITY'S ECOLOGICAL FOOTPRINT > EARTH'S BIOCAPACITY
- Earth Overshoot Day is the day that humanity's need of ecological services and resources (Ecological Footprint) during a particular year is greater than the amount that Earth is able to regenerate in that particular year (biocapacity).
- Based on according to the World Wide Fund for Nature (WWF) Humanity has yet

again exhausted the entire biological resource that renew our planet over the entire year until the 30th July 2021.

- Humanity today consumes seven times more ecosystems on Earth can regenerate, or 1.7 Earth's.
- Since Earth Overshoot Day until the closing of the year humanity is operating in a deficit-based economy.

### **Global Footprint Network**

- Global Footprint Network, founded in 2003 was an autonomous think tank located on the United States, Belgium and Switzerland. It was created as a not-for-profit charity within each of the three countries.
- Global Footprint Network develops and provides tools for improving sustainability, such as the biocapacity and ecological footprint that measure the quantity of the resources we consume and how much we own. These tools are designed to bring ecological limitations to the forefront of the decision-making process.
- The Network is comprised of more than 70 partner organizations, which include WWF International, ICLEI, Bank Sarasin, The Pictet Group The New Economics Foundation, Pronatura Mexico along with The Environment Agency Abu Dhabi.

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## **Topic 23. MERCURY POLLUTION**

*Important for subject: Economy*

Kodaikanal Mercury Poisoning Episode Has Lessons for Current, Future Generations

### **Mercury:**

- Mercury is an element in the chemical world that has its symbol Hg and the atomic code 80.
- Mercury is a natural element that can be present in water, air and soil.
- It is a hard silvery-white, metallic.
- The one metal which is liquid at room temperature.
- Mercury has a very small melting point as well as a boiling point when compared with other metals.
- It is used in many applications, like barometers, thermometers electrical switches, and fluorescent lamps. mercury is utilized for Dental amalgams as well as in a variety of

instruments for scientific and medical research.

### **Sources of Mercury Pollution**

- 6/24 Mercury pollution can originate from both human and natural sources. Sources of mercury pollution that are natural are Olcanic eruptions and forest fires and the weathering of mercury-rich rock. However, the majority of mercury pollution is caused by human actions which include:
- Coal-fired power stations: The coal contains small amounts of mercury which is released into the atmosphere when it is burnt. The emissions can travel for far distances and build up in the air.
- Small-scale and artisanal gold mining The use of mercury is to remove gold out of the ore in smaller-scale mining activities for gold. It is able to release huge quantities of mercury in the atmosphere and water, creating severe environmental and health problems.
- Processes in the industrial sector: Certain industrial processes such as the production of chlorine releases mercury in the air and water.
- Waste incineration In the case of burning waste, specifically medical waste, may let mercury out into the air.
- Products for the consumer Mercury is used in a variety of consumer goods, like thermometers as well as fluorescent light bulbs and batteries.

### **Effects of Mercury Pollution**

- Mercury pollution can cause many negative impacts on the health of humans as well as wildlife and environmental. Here are a few most significant impacts of mercury pollution
- Health impacts Mercury is a poisonous chemical which can lead to serious health issues, particularly for pregnant women and children. The exposure to high levels mercury may harm the kidneys, brain and the central nervous system which can lead development delays and impairment of cognitive function, as well as other health issues.
- The impact of wildlife Mercury pollution could cause serious harm to wildlife, especially fish and other species of water. Mercury can build up within the food chain and bigger fish near the uppermost part of the chain carrying greater levels of

mercury.

- This could cause reproductive failure which can result in reduced growth and survival rates, as well as other issues with wildlife's health.
- Environmental effects: Mercury pollution can be a source of environmental effects, such as diminished biodiversity, changes in the distribution of species and reduced cycle of nutrients in ecosystems. Furthermore the mercury pollution may cause climate change since mercury emissions could cause the creation of ozone, which is a powerful greenhouse gas.
- Economic impact: Mercury pollution can also have a significant impact on the economy such as reduced fish populations, decreased tourism revenue and higher health care costs that are due to mercury exposure.

### **Minamata Convention on Mercury**

- The Minamata Convention on Mercury is an international treaty that protects both the health of humans and the environment from the harmful effects of mercury as well as its constituents.
- It was ratified in the Fifth Session of the Intergovernmental Negotiating Committee in Geneva, Switzerland 2013.
- The Convention also deals with mercury storage in interim periods and its disposal after it has become waste, and sites which are contaminated with mercury, and health risks.
- The Convention encompasses every aspect of the lifecycle of mercury, which includes controlling and reducing mercury in various industries, products, and processes. This includes the regulation of Mercury mining as well as the manufacturing and trading of mercury, products that contain mercury, the disposal of mercury waste and the emission in mercury from industrial installations.
- India has accepted the Convention.

## **Topic 24. NET-ZERO BUILDINGS**

### ***Important for subject: Economy***

Net-zero-rated buildings in India have seen a surge, however they do not have guidelines from the government, nor regulations

- In the past few years, a number of structures in India have transformed into net-zero energy structures through compensating their entire annual energy requirements by using renewable energy, and improving their energy efficiency.
- There is no regulation on this. Indian federal government is currently implementing the Model Building Bye-Laws, Energy Conservation Building Code which encourages more use of green energy in building design , but more general norms and regulations regarding the Important for subject are not yet in place.
- The Indian Green Building Council (IGBC) has begun voluntary ratings of net-zero structures in the year 2018, and the design of buildings that are energy efficient and climate-friendly models were additionally given weightage in addition to the use of renewable energy.

### **Net zero energy buildings**

- Net-zero energy structures are those buildings that have the capability of producing the same amount of fossil fuel-free electricity as they draw from grid every year.
- Private rating agencies, however, have stricter standards for net-zero structures, where energy efficiency design is also considered.
- There is no precise definition of net-zero construction that are constructed in India from the government's perspective.
- However, in the building system generally net-zero is a term used to describe net-zero energy buildings in which the energy consumption needed for the building is offset by the amount of electricity generated through renewable sources of energy.
- Norms for net-zero energy buildings

### **Energy Conservation Building Code 2017**

- Released by Ministry of Power, Coal, New and Renewable Energy and Mines
- It sets out new standards for energy efficiency for commercial buildings to be built throughout India.

- The code offers both current and futuristic advances in the field of building technology to reduce energy use in buildings and promote sustainable growth that is low carbon.
- The code provides clear guidelines for designers, builders and architects to incorporate renewable energy sources into designs for buildings by way of the incorporation of passive design strategies.
- ECBC 2017 will aim to optimize energy efficiency in conjunction with comfort levels for the occupants. The code's goal is to reach zero energy in commercial structures.
- To be ECBC compliant, new buildings must be able demonstrate the minimum savings in energy of 25 percent. A reduction in energy consumption of 35 percent or 50% can allow the buildings to be upgraded such as ECBC Plus as well as Super ECBC or Super ECBC status.

### **Shunya scheme**

- Ministry of Power in 2021 also began rating net-zero buildings through its Shunya scheme, where the BEE provides certification for net-zero-rated buildings.
- This is the case if buildings are able to meet their energy needs through renewable energy sources.
- Buildings that generate the same amount of renewable energy as their consumption total are awarded the Shunya (net-zero) designation while those that produce more green energy than their connected load are awarded the Shunya Plus label by BEE.
- The BEE certification documents BEE certificate for Net-zero does not include energy efficiency when granting net-zero certifications.

### **Indian Green Building Council**

- The Indian Green Building Council (IGBC) is part of the Confederation of Indian Industry (CII) which was previously recognized for grading Green Buildings in the country and began grading "net zero" buildings in the year 2018.
- The IGBC rating that is in the direction of intent and is non-binding in the sense that it, rates net zero-energy buildings in accordance with their use of renewable energy and energy efficiency, as well as strategies for passive design, as well as thermal comfort (comfortable room temperature).

- It only gives 25 percent weightage for the use in renewable sources of energy and focuses on energy-efficient design and other architectural aspects.

## **Topic 25. ECONOMIC TERMINOLOGIES IN NEWS**

*Important for subject: Economy*

### **Hard Landing**

- A hard landing is an economic slowdown that is noticeable or a downturn after the period of high growth.
- "Hard Landing" or "hard landing" comes from aviation, and is a reference to the type of high-speed landing, which--while not a real crash--is an area of stress and injuries and potential damage.
- The phrase is applied to fast-growing economies that face an abrupt, rapid stop in their development such as a monetary policy intervention designed to limit the rise in inflation.
- The economies that suffer a rough descent often fall into stagnation as well as recession.

### **Soft Landing**

- A soft landing, as in economics, refers to a decline in growth which keeps from triggering recession.
- The soft landing aim that a central banking institution aims for whenever it tries to increase the interest rate just enough to keep the economy from becoming overheated with high levels of inflation without causing a drastic recession.
- Soft landing could also be a reference to a gradual, comparatively easy slowdown in one particular sector or industry.

## **Topic 26. BLUE ECONOMY TO BE NEXT GDP MULTIPLIER: CAG GC MURMU**

*Important for subject: Economy*

CAG is coordinating CAG's role in the SAI20 Summit on Blue Economy for a specific time. The conference will concentrate upon the research on the Blue Economy.

### **Blue Economy is the next multiplier of GDP:**

- About 80 percent of all International trade in goods is conducted by shipping,

according to the UN Conference on Trade and Development (UNCTAD). World Economic Forum, Davos Agenda 2022, acknowledged the G20 Nations, primarily have 45 percent of the world's coastline, and have jurisdictional authority over 21 percent of the world's exclusive Economic Zone.

- SDG 14 helps to focus attention on the most important aspect that is the Blue Economy
- The blue economy has an essential part in India's economic growth and could be the next growth driver of GDP and well-being, if sustainability and socioeconomic welfare remain at the forefront level.
- India has a 7,517-km long coastline, which includes nine states along the coast along with 1,382 small islands. The economy of the coastal region supports more than 4 million fishermen as well as various coastal towns.
- There are a total of 200 ports, with 12 major ports handling about 1,400 million tons of cargo annually. in India's Exclusive Economic Zone with a total area of more than 2 million square kilometers is home to an abundance of non-living and living resources, including significant recoverable resources like natural gas and crude oil.
- The blue economy has an essential position within India's economic development. It could become the next growth driver of GDP and well-being, if sustainability and socioeconomic well-being remain at the forefront.

### **Blue Economy:**

- Blue Economy encompasses a wide array of economic activities that relate to the sustainable development of assets and resources within the oceans, the bodies of water, rivers and coastal zones and coastal regions in a way that promotes equality, inclusion and the use of modern technology.
- The Blue Economy sector comprise: Fisheries, Aquaculture, Mariculture and Marine Products; Marine Biotechnology; Offshore and Deep-Sea Mining ; Marine Tourism and Leisure ; Shipping, Port and Maritime Logistics ; Marine Construction ;Marine Renewable Energy Marine Manufacturing; Marine Commerce and ICT and Marine Education and Research.

### **Mutiplier Effect**

- The multiplier effect is the effect on the national income and the product that results

from an exogenous rise in demand. As an example, let's say that the demand for investments rises by one.

- Companies then create to meet the demand. The fact that the national product has grown indicates that the income of the nation has grown. In turn, the demand for consumption is increasing, and businesses produce to meet the demand. Therefore, the country's product and income rise by more than the growth in investment. It is a multiplier that's more than one.

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## **Topic 27. GREEN ENERGY CORRIDOR PHASE II**

*Important for subject: Economy*

The Green Energy Corridor Project aims to synchronize electricity generated by renewable sources like wind and solar in conjunction with conventional power plants on the grid.

- Green Energy Corridor is an inter- and intra-state transmission system that is being developed by eight states with abundant renewable energy in India. The eight states include Tamil Nadu,
- Rajasthan, Karnataka, Andhra Pradesh, Maharashtra, Gujarat, Himachal Pradesh and Madhya Pradesh.
- Intra-State Transmission Systems are being implemented by the respective State

### **Transmission Utilities (STU) and Inter-State Transmission**

- The system is currently being implemented through Power Grid Corporation of India Ltd. (PGCIL).
- The scheme will ease the integration of grids and the power transfer of around 20 GWG of energy from renewable sources (RE) projects across seven states.

### **Green Energy Corridor Phase 1**

- The Government of India initiated the Green Energy Corridor project in the year 2013.
- It is in the process of being implemented in states with abundant renewable resources to ensure the possible increase in renewable power capacity during the twelve-fifth Year Plan period.
- The initial section of these green corridors has been currently in the process of

implementation across Andhra Pradesh, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Tamil Nadu and will help provide around 20 gigawatts of renewable energy in 2022.

### **Green Energy Corridor Phase 2**

- It will help the integration of grids and the power transfer of around 20 Gw of Renewable Energy (RE) power projects across seven states namely, Gujarat, Himachal Pradesh, Karnataka, Kerala, Rajasthan, Tamil Nadu and Uttar Pradesh.
- These Transmission systems are built over the course of five years from Financial Year 2021-22 to 2025-26.
- It is expected to be established at a cost of approximately Rs. 12,031 crore in addition, it is expected that the Central Finance Assistance (CFA) will amount to three-quarters of overall project cost.
- The CFA can help offset the transmission costs of Intra-State and will help keep energy costs low.
- The program will aid to reach the goal of the installed capacity of 450 GW in 2030.

### **Significance:**

- It will help to ensure the energy security long-term of India and promote environmentally sustainable development through reducing carbon footprint.
- It can lead to the creation of huge direct and indirect employment opportunities for both trained and untrained.

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## **Topic 28. A LEGISLATOR HAS TO OBEY PART WHIP – UDDHAV THACKERAY TELLS SC**

### ***Important for subject: Polity***

A legislator must obey the whip of the party and is unable to make a decision on his own claims that his electorate is disillusioned with the leadership of the ruling party Former Maharashtra chief minister Uddhav Thackeray told the Supreme Court on Wednesday.

### **About Whip**

- The term "whip" refers to a whip acts as rule from the party which requires the members of the House to follow the rules that is set by the group.

- While the position of whip is not recognized as a legitimate function in the standing order but there has been an long tradition of giving these offices a position in the form of Parliamentary government.
- The whip plays an essential part in ensuring a efficiency and smooth conduct of the business that takes place on the floor of the House.
- Whips are MP/MLA whose membership comes from the party in power , as well as the party that is on the bench of the opposition. They are essential in maintaining connections between the internal structure of the parties within the Parliament.
- Additionally, it is the responsibility that the Chief Whip has to ensure discipline within the party in the floors in the House. In addition, he is accountable for keeping MP sin good standing, and particularly Ministers, informed of the opinion within the party about the moods of the individual members.
- If an MP/MLA breaks the whips of his party and rules, he could be expelled from the House pursuant to the Anti-Defection Act.
- Status of the Constitution The office of "whip" isn't not mentioned in the Constitution of India nor in the Rules of the House nor in a Parliamentary Statute. It is an interpretation of Conventions of the government of the parliamentary system.
- Whips cannot be used in a manner that is not applicable. Whips are not applicable in certain situations, like presidential election where whips are not able to direct a member of parliament (MP) or a Member of the Legislative Assembly (MLA) on which candidate to support.

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## **Topic 29. CAG OF INDIA SELECTED AS EXTERNAL AUDITOR OF INTERNATIONAL LABOUR ORGANIZATION**

*Important for subject: Polity*

CAG is an autonomous authority as per the Constitution of India.

- He is the chief of the Indian audit and accounts department and the chief official of the public money.
- It is the institution by that the accountability of the state and other public officials (all that spend public money) before the Parliament and State Legislative bodies and, through them, to the public is guaranteed.

### **Analysis to Britain CAG**

- CAG of India only performed the function as an auditor general, not as a Comptroller however in Britain it is a powerhouse of Comptroller as well as Auditor General.
- For India the CAG examines the financial statements after the expense is made i.e. "ex post facto. In the UK there is no way to be taken out of the public exchequer without the consent from the CAG.
- The situation in India, CAG is not an elected member of the Indian parliament however it is in Britain; CAG is a member of the house of the Commons.

### **Constitutional Provisions**

- Article 148 broadly addresses the appointment of CAG, oath and the conditions of service.
- Article 149 deals with the powers and duties of the Auditor General and Comptroller of India.
- The Article 150 says that the accounts of the Union and the States will be maintained in the manner that the President, based upon the guidance of the CAG determine.
- Article 151 says that the annual reports from the Comptroller and Auditor General of India in relation to the financial statements of the Union are to be presented to the president, who will make them available before every House of Parliament.
- Article 279 Estimation of "net proceeds" is ascertained and verified through the Comptroller and Auditor General of India The certificate issued by the Comptroller and Auditor General of India is definitive.
- 3rd Schedule The section IV in the third Schedule of the Constitution of India prescribes the type of oath to be taken by judges in the Supreme Court and the Comptroller and Auditor General of India at the time of their assumption of the office.
- In accordance with the the Sixth Schedule the financial accounts for District Council or Regional Council are required to be kept in accordance with Sixth Schedule.
- District Council or Regional Council must be maintained in such format as CAG and the President, with the consent by the President recommends. Additionally, the accounts of these bodies are audited according to the procedure as CAG can decide to do and the results pertaining to these accounts are delivered to the Governor who will

make them available before the Council.

### **Independence of CAG**

- CAG was appointed by President via a warrant that is signed by his hand and seal. The appointment is accompanied by the tenure of six years or age 65 or 65 years of age, whichever comes first.
- CAG may be removed by the President according to the procedure specified in the Constitution. This is in the same manner as removal of the Supreme Court Judge.
- He is not eligible to hold any position, whether within or under the Government of India or of any other state once the CAG retires or resigns as CAG.
- The salary of his employer and other conditions are not able to be changed at his expense after appointment.
- The power of the administrator and the terms of employment of employees at the Indian Audit and Accounts Department are formulated by the President after consulting with him.
- The administrative costs associated with the offices of CAG comprising all allowances, salaries and pensions, are imputable to the Consolidated Fund of India that is not Important for subject to voting

### **Functions and Power of CAG**

- CAG examines the financials related to the expenditures from the Consolidated Fund of India, Consolidated Fund of each state and the UT's that have a legislative assembly.
- He audits every expenditure coming from his Contingency Fund of India and the Public Account of India as along with those from the Contingency Fund and Public Account of each state.
- He reviews all manufacturing, trade Profit and Loss accounts, balance sheets, and other accounts of subsidiary companies maintained at the discretion of any agency within the Central Government and the state governments.
- He examines the revenue and expenditures of all bodies and government agencies that receive substantial funding from the revenues of the State or Central government including government companies, other bodies and corporations as required by applicable laws.

- He also audits the accounts for any authority when asked by the Governor or President e.g. Local authorities.
- He gives advice to the President with respect to the prescribed format in which the records for both the Centre and States will be maintained.
- He will submit his audit reports regarding the financial statements for the Centre to the President who will, in turn put them in front of both Houses of Parliament.
- He sends his audit reports on the state's accounts a state to the Governor who will, in turn submit them to the legislature of the state.
- CAG also serves as an advisor, friend and philosopher for members of the Public Accounts Committee of the Parliament.

### **CAG and Public Accounts Committee (PAC)**

- PAC is an Parliamentary Standing Committee created under GOI Act, 1919.
- Audit reports from CAG are made available to PACs in the centre as well as at the state level.
- Three CAG reports i.e. audit report on accounts for appropriation as well as audit report on finance accounts and the audit report for public sector enterprises are analyzed by PAC.
- At the national level at the central level, these reports are sent by CAG to the president, who decides if they should be laid before parliament.
- CAG helps the committee in its work by providing a list of the most pressing issues that need the attention of PAC.
- He also aids in making the committee's actions transparent to witnesses, and in making the actions of the government apparent to the committee.
- The CAG job description can be one of translator and interpreter in explaining officials' views to politicians and vice versa.
- The role of the CAG doesn't end here. He is responsible for ensuring that the corrective actions recommended by him was completed or not. In the event that it has been implemented the issue is reported to the PAC who will then investigate the matter.

**Topic 30. NATIONAL SCIENCE AND TECHNOLOGY MANAGEMENT INFORMATION SYSTEM**

***Important for subject: Polity***

Department of Science and Technology (DST) was setup in 1971, and by virtue of its responsibility in S&T policies, implementation and funding involving multiagencies /ministries, the department has been acting as the nodal agency to establish S&T statistical system and collect national science statistics at regular intervals in the country.

- National Science and Technology Management Information System Division (NSTMIS) previously named Science and Technology Statistics (STS) which is a division of DST is tasked with the task of conducting studies on resources dedicated to S&T activities on a regular basis. The Division released its first report on Research and Development Statistics in the years 1973-74.

**National S&T Survey**

- The National Science and Technology Management Information System (NSTMIS), Department of Science and Technology (DST), Government of India has been conducting periodic national surveys to gather data on the resources that are devoted to S&T operations (mainly R&D) in the country.
- Based on data from surveys there are numerous S&T reports are released which provide vital data on the country's R&D indicators that serve as a solid basis for S&T evaluation and formulation of policy.
- National S&T survey 2021-22 will aim to capture the present R&D industry by obtaining data from a variety of R&D organizations, including, private sector, public sector MNCs, higher educational institutions as well as SIROs and NGOs across the nation.
- A well-structured questionnaire based on the international standardization of S&T tools has been developed in order to gather information about various aspects, including General Information, Expenditure on S&T (R&D) activities, R&D Manpower and R&D output.
- In this digital age the current national survey is being conducted through an online platform in order to reduce the time delay and ensure the smooth completion of such a huge undertaking.

- To verify the authenticity of data the respondent organizations have been assigned an unique Username along with a Password.

### **Topic 31. FSSAI NOTIFIES COMPREHENSIVE GROUP STANDARDS FOR MILLETS**

#### ***Important for subject: Polity***

The Food Safety and Standards Authority of India (FSSAI) has established a comprehensive standards for millets w.e.f. 1st September 2023.

- It has issued a notice Food Safety and Standards (Food Products Standards and Food Additives) Second Amendment Regulations 2023.
- About :
- There are currently no the individual standards for just milliliters like Sorghum (Jowar) and whole and decorated Pearl Millet grain (Bajra), Finger Millet (Ragi) and Amaranth are set by FSSAI in 2011.
- FSSAI has created a complete general standard that covers 15 kinds of millets that specify eight quality parameters Limits for the content of moisture, uric acid content, other matter, other edible grains, imperfections such as weevilled grains and the immature and shrivelled grains so that there is a constant supply of high-quality (standardized) millets on both the global and domestic markets.

#### **The standard for group is applicable to these millets. :**

1. Amaranthus (Chaulai or Rajgira)
2. Barnyard Millet ((Samakechawal or Sanwa or Jhangora)
3. Brown top (Korale)
4. Buckwheat (Kuttu)
5. Crab finger (Sikiya)
6. Finger Millet (Ragi or Mandua)
7. Fonio (Acha)
8. Foxtail Millet (Kangni or Kakun)
9. The tears of Job (Adlay)
10. Kodo Millet (Kodo)
11. Little Millet (Kutki)

12. Pearl Millet (Bajra)
13. Proso Millet (Cheena)
14. Sorghum (Jowar)
15. Teff (Lovegrass)

### **Topic 32. CAVEAT PETITION**

#### ***Important for subject: Polity***

Apex Court bench headed by CJI D Chandrachud has scolded one law student for filing an objection within "Shailendra Mani Tripathi v. Union of India & Others" A petition for menstrual leave for female students as well as working women at Indian institutions

- It also stated it was "this is a publicity-oriented caveat" and that the student was "no business here."

#### **Caveat Petition**

- In everyday usage, the word caveat is a reference to "warning" or "caution".
- Legally, it refers to it is a "formal notice requesting the court to refrain from taking some specified action without giving prior notice to the person lodging the caveat."
- The person who lodges the caveat is referred to as "caveator".
- This provision was included in the Amendment Act of 1976 after the Law Recommendation of the Commission by section 148A in the Civil Procedure Code(CPC).
- The term "religion" isn't defined in any way other than in the Calcutta High Court's decision in 1978.

#### **Who is able to fill the caveat?**

- Anyone has the right to file an objection in an instance of a Court.
- Any person who asserts an rights to be in a Court for the hearing of an application for a hearing may file an objection to the application.
- The person lodging the application or the caveat or lodging the application is also required to deliver a copy of the caveat through "registered post" to the person on whose behalf they're lodging the application.

### Topic 33. THE NATIONAL COMMISSION FOR SAFAI KARAMCHARIS (NCSK)

#### *Important for subject: Polity*

Evolution: The National Commission for Safai Karamcharis (NCSK) was established on the 12th of August 1994, as a statutory entity through the Act of Parliament.

- "National Commission for the Safai Karmcharis Act, 1993', for a duration that is 3 months i.e. from the 31st of March to 1997. In accordance with the sub-section (4) of Section 1 of the Act the Act was repealed following 31.3.1997. However, the validity of the Act was extended until March 2004 through later changes.
- Nature: Following 2004 The Commission is now a non-statutory entity under the Ministry of Social Justice and Empowerment. The Commission's duration extends from time to time through Resolutions by the government. Resolutions
- structure: It comprises one Chairman (in the rank and status of the Union Minister of State) and four members, which includes the Lady members (in their rank as Secretary of the Government of India) and the Secretary (in the rank of Joint Secretary to the Govt. of India) as well as other support staff

#### **The directive:**

- Make recommendations that the Central Government specific programmes for action to end the cycle of inequality in conditions, facilities, as well as opportunities available to Safai Karamcharis.
- Analyze and analyze the effectiveness of the programs and plans relating to the economic and social rehabilitation of Safai Karamcharis and scavengers, specifically.
- Examine specific grievances and be sure to take the necessary notice of any issues related to the non-implementation or non-application of: programs or schemes that are part of any particular group of Safai Karamcharis directives, decisions or guidelines to ease the difficulties of Safai Karamcharis actions to ensure the economic and social improvement of Safai Karamcharis the laws when applied to Safai Karamcharis. the provisions of any law in its application to Safai Karamcharis; and These issues are discussed to the relevant authorities or the State or Central governments.
- To examine and track the working conditions, which includes the ones pertaining to the safety, health and wages of Safai Karamcharis employed by various types of employers like Government, Municipalities and Panchayats and to formulate

suggestions in this respect.

- Create Reports to either the State or Central Government on all issues pertaining to Safai Karamcharis taking into consideration any issues or limitations confronted by Safai Karamcharis.
- Other matters that could be brought before Central Government.
- However, following the passage of "The Prohibition of Employment as Manual Scavengers and Their Rehabilitation Act, 2013", the mandate and extent of the Commission is also enlarged. In accordance with Section 31 (1) of the Act the Commission is required to fulfill the following duties which include:
  - To supervise the execution to ensure the implementation of Act.
  - To inquire into complaints about violations of requirements of the Act and communicate its findings to concerned authorities, along with recommendations for additional actions.
  - To give advice to the Central as well as State Governments to ensure the effective implementation of those provisions in the Act.
  - To issue in a timely notice of matters relating to not implementing the Act.

### **The power**

- To request details regarding any of the issues mentioned above from any local or Government or another authority.
- It is responsible for monitoring the implementation the Supreme Court Judgement in Safai Karamchari Andolan and ors in vs. Union of India. "Identify family members of all those who have died due to sewerage facilities (manholes or Septic tanks) from 1993 and award a compensation of up to Rs. 10.00 lakhs per death to the relatives who depend on the deceased".

### **Working:**

- The Chairperson as well as the members of the Commission take part in an extensive tour across the country to examine the living and socio-economic circumstances of Safai Karamcharis as well as their families. The complaints of Safai Karamcharis are then subsequently addressed by the Commission in consultation with local authorities, including police and civil.

- It is also the case that Commission also receives complaints and petitions from Safai Karamcharis all over the country. The Commission is requesting factual reports on these petitions/complaints from the concerned authorities and urges them to resolve the grievances of those victimized Safai Karamcharis.
- Based on information received from electronic or printed media In light of the information gathered through print or electronic media, it is the Commission in suo motu will take into consideration the problems in the case of Safai Karamcharis. They try to solve them through an active role.
- When a matter has being investigated, investigated, the existence or the progress of any plan or program. is to be examined or the implementation of any guidelines, decisions or instructions, as well as laws regarding Safai Karamcharis or any other matter. is to be examined and the Commission has a sitting every so often as is necessary anywhere in the country for this purposes of evaluating the
- The Commission also analyzes various issues related to Safai Karamcharis, including the status of compensation payments for the legal heirs to the victims, by way of a numerous meetings/VCs with the State and Local authorities.
- Based on their findings Based on its findings, the Commission makes recommendations for the rehabilitation and release of Safai Karamcharis of the burden of manual scavenging. It also recommends recommendations to the Ministry of Social Justice and Empowerment at times and also in its annual reports.

### **Topic 34. \$5 BILLION DEFENCE EXPORTS TARGET**

#### ***Important for subject: Science and Technology***

The ministry of defence has set a goal to boost India's defense exports by 5 billion dollars in 2024-25 up from \$1.5 billion that is currently.

- It was also reiterated by Prime Minister Modi in the recent completed Aero India 2023 in Bengaluru earlier in the month.

#### **Current Defence Export Figures**

- According to data from the government according to government data, India's export value for defence up to December 2022 has reached the sum of Rs 6,058 crore.
- The exports of defence products from India have grown by 334 percent in the last five

years. They reached nearly 13,000 crore by 2021-22.

### **What defence equipment do India export?**

- The main defence items that are exported include Personal Protective items, Offshore Patrol Vessels, ALH Helicopter, SU Avionics, Bharati Radio, Coastal Surveillance Systems etc.
- The most important items exported by India over the last three years comprised of light torpedoes, weapon-locating radars and fast patrol vessels 120mm mortar armoured security vehicles, 0.338 Lapua magnum sniper rifle and simulators.

### **What are the most important defense platforms? India wants to export?**

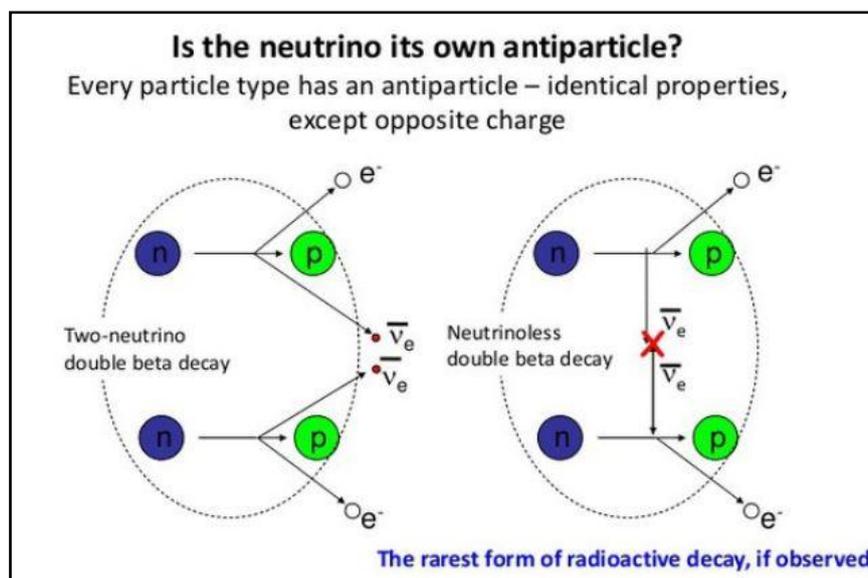
- India is currently in discussions in talks with Argentina and Egypt as well as other nations for the export of its native LCA Tejas.
- According to officials from the government that according to officials, the LCA Version 2 of the aircraft has attracted the attention of nearly 16 nations and efforts are underway to identify private production firms to boost production of the aircraft.
- India is seeking to export its indigenous Advanced Light Helicopter to several countries.
- India has entered into a contract with Mauritius to export the one Advanced Light Helicopter (ALH Mk III) to the Mauritius Police Force.
- Mauritius has already operated Mauritius already operates the ALH and Do-228 aircrafts, which are an all-purpose light transporter.
- India is also engaged in discussions with Guyana to sell the Dornier 228 as well as fast patrol vessels.
- In the year 2000, India signed a \$375 million agreement together with Philippines to sell to the Philippines BrahMos hypersonic cruise missile.
- India is planning to sell the weapon system, as well as its lighter version of the next generation (BrahMos Ng) to more than 10 countries including South Africa, Egypt, UAE along with Saudi Arabia.
- In 2022, Armenia inked a government-to-government deal to buy the DRDO developed Pinaka multi-barrel rocket launchers, rockets and ammunition.

## Major export destinations

- Private companies in India and Defence PSUs export Defence equipment to more than 75 nations.
- Major countries: Italy, Maldives, Sri Lanka, Russia, France, Nepal, Mauritius,
- Israel, Egypt, UAE, Bhutan, Ethiopia, Saudi Arabia, Philippines, Poland, Spain and Chile are among the most important export destinations.
- Top customers of India's exports to the defence sector
- A report issued from India Exim Bank stated that Mauritius, Mozambique, and Seychelles were among the top clients for India's defense exports between 2017 and 2021.
- India is one of the top 25 major exporters of arms
- According to an Stockholm International Peace Research Institute (SIPRI) report that was released this year, India is among the top 25 exporters of large arms.
- Myanmar is the largest exporter of Indian arms with a 50 percent share between 2017 and 2021. It was being followed by Sri Lanka at 25 percent and Armenia at 11 percent.

## Topic 35. NEUTRINOS ARE THEIR OWN ANTI-PARTICLE

*Important for subject: Science and technology*



A research study conducted in Japan recently announced that it did not find "strong evidence" that the neutrinos are themselves anti-particles.

## Anti particles

- Every elementary particle is an anti-particle. When the two collide and collide, they destroy each one by the flash of energy.
- The electron's opposite particle is the positron. They are distinct because they have opposing charges.
- Similar to neutrinos, anti-neutrinos also have. However, neither one is electro-charged, nor do they have any other characteristics that can discern between them.

## Experiment

- Physics researchers working on scientists working with the Kamioka Liquid Scintillator Antineutrino Detector (KamLAND) in Japan recently announced that after studying two years of data, they were unable to find any evidence that neutrinos might be the anti-particles of their own.
- KamLAND searches for an event that is called the neutrinoless beta-decay.
- In normal double beta-decay two neutrons inside an atom change into two protons through the emission of two electrons and two anti-neutrinos.
- In a neutrinoless double beta-decay the anti-neutrinos don't get emitted in the same way, and it can happen only when anti-neutrinos are simply different types of neutrinos.
- This might eliminate some theories that attempt to understand neutrinos' numerous intriguing properties.

## How do you define neutrinos?

- Neutrinos comprise the second-most abundant particle around the globe, just behind photons or the light particle.
- Neutrinos can be described as mysterious particle created in a variety of nuclear reactions occurring in the Sun as well as in stars and other places.
- Also, the neutrinos "oscillate"- meaning that different kinds of neutrinos transform into one another.
- Exploring the neutrinos' oscillations and their relationships with mass is essential in understanding the origins of the universe.
- Neutrinos are generated by different radioactive decays in the supernova explosion,

cosmic rays hitting atoms, etc.

**Neutrinos' features:**

- Neutrinos have a very weak interaction with all other things billions of them move through each human being each second, without anyone even noticing.
- The spin of a neutrino always goes in the opposite direction to its movement.
- There is a consensus that neutrino oscillations requires neutrinos to be tiny in mass.

**Topic 36. ATACAMA LARGE MILLIMETRE / SUBMILLIMETRE ARRAY (ALMA) TELESCOPE**

*Important for subject: Science and technology*

The Atacama Large Millimetre/submillimetre Array (ALMA), a radio telescope comprising 66 antennas is set to get software and hardware upgrades.

- It will allow it to gather more data and create sharper images than ever before Science reported. Science released a report recently.
- The most significant upgrade to ALMA is the replacement of the correlator, an extremely powerful computer that integrates the signals from different antennas and allows astronomers to create high-quality pictures of the celestial object about Atacama Large Millimetre/ submillimetre Array (ALMA) Telescope:
- It's an high-tech radio telescope that analyzes celestial objects with micrometer and submillimeter wavelengths.
- It is situated inside The Atacama Desert of Northern Chile.
- They can break through dust clouds and assist Astronomers study distant and dim galaxies and star clusters.
- It also has a remarkable sensitiveness, which allows it to pick up even tiny radio signals.
- The telescope is comprised of 66 high-precision antennas that are spread across the distance of 16 kilometers.
- It is managed as part of an agreement with and the United States, and 16 countries in Europe, Canada, Japan, South Korea, Taiwan and Chile.
- Radio telescopes were developed to be constructed, designed and planned by the United States' National Radio Astronomy Observatory (NRAO) and also known as

the National Astronomical Observatory of Japan (NAOJ) as well as the European Southern Observatory (ESO).

### **What are some noteworthy findings made by ALMA?**

- In the past it has allowed astronomers to make breakthrough discoveries, like the starburst galaxies, and the formation of dust in supernova 1987A.
- It had viewed the intricate pictures of the protoplanetary disk surrounding HL Tauri which is an extremely young T Tauri star located in Taurus about 150 light years from Earth.
- It has helped scientists discover the Einstein Ring, which happens in the event that light from an star or galaxy is reflected by a huge object before reaching the Earth and is observed in stunning detail.

### **What is the reason ALMA found within the Chilean Atacama Desert?**

- ALMA is located on a height of 16,570 feet (5,050 metres) above sea level on the Chajnantor plateau of Chile's Atacama Desert as the millimetre and submillimetre waves that it observes are highly vulnerable to absorption of water vapour in the atmosphere in the Earth.
- Furthermore the desert is also one of the driest places in the world, which means the majority of nights here are free of clouds and without water that is light-distorting which makes it the ideal location to study the universe.

### **Atacama Desert**

- The Atacama Desert is a 600-mile (1,000 km) plateau in north of Chile located near the border between Peru, Bolivia and Argentina in South America.
- The Atacama Desert is the the driest desert non polar anywhere in the globe and the only desert that can have less rainfall than Polar deserts.
- It is so dry that a few meteorological stations located in deserts have not recorded even a rainfall drop.
- Due to the harsh circumstances, plant and animal existence is virtually non-existent Particularly within the lower Atacama Desert.
- The northern areas of the coast however, do get an extra bit of rainfall and , as a

result, are less dry.

### **Topic 37. ISRO SUCCESSFULLY CONDUCTS KEY ROCKET ENGINE TEST FOR CHANDRAYAAN-3**

*Important for subject: Science and technology*

It was the pilot acceptance test for the CE-20 cryogenic engine, which will be the cryogenic engine for the lower stage on the launch vehicle in Chandrayaan-3. Chandrayaan-3 space mission was successfully completed in the words of the Indian Space Research Organisation.

- The hot test was carried out for a planned duration of 25 seconds at the High Altitude Test Facility of the ISRO Propulsion Complex at Mahendragiri in Tamil Nadu on February 24, the Bengaluru-headquartered national space agency said.
- The parameters of propulsion tested were to be satisfactory and were closely aligned with the predictions.
- Its cryogenic generator will also be integrated with the stage tanks, propellant tanks structures, and liquid lines to create the stage fully integrated for flight.
- The flight acceptance testis performed with the goal of confirming the reliability of the hardware, evaluate on subsystems' efficiency as well as adjust the engine for conforming to mission-specific specifications.

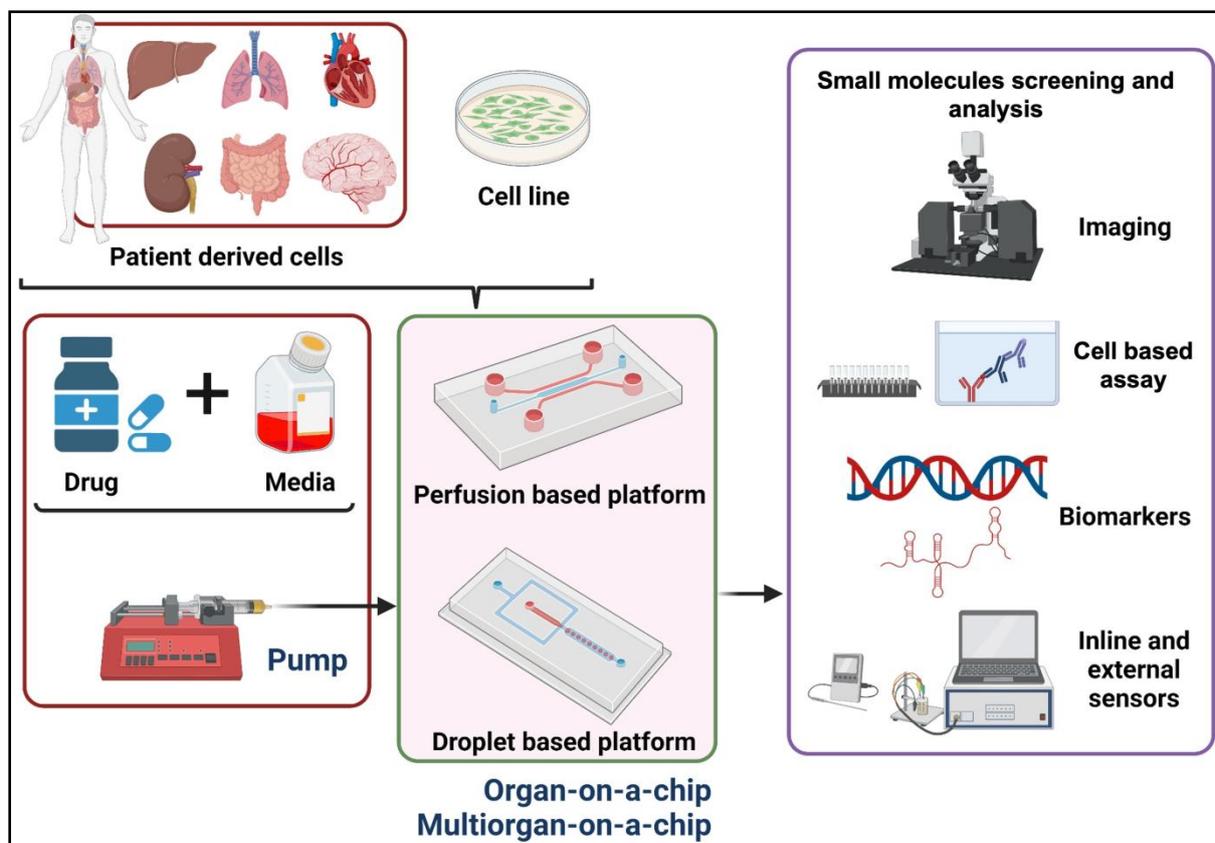
#### **IPRC Complex**

- ISRO Propulsion Complex (IPRC), Mahendragiri is equipped with modern facilities to develop most advanced propulsion technology to support the Indian space program.
- The tasks carried out by IPRC, Mahendragiri are: assembly and integration, as well as testing of earth-storable engine, cryogenic and propellants, and platforms for launch vehicle launches; high-altitude testing on upper-stage engines as well as spacecraft thrusters and testing of its subsystems as well as the production and distribution of cryogenic propellants to the Indian cryogenic rocket program and other programs.
- An semi-cryogenic Cold Flow Test facility (SCFT) was established within IPRC, Mahendragiri for the creation, qualification and acceptance testing of semicryogenic engine components.
- IPRC provides the Storable Liquid Propellants used by ISRO's launchers, as well as satellite programs.

- IPRC offers high-quality products to satisfy the zero defect requirement of the ISRO space program, ensuring the highest quality standards of safety and dependability.
- It also conducts Research & Development (R&D) as well as Technology Development Programs (TDP) in order to improve the quality on its role in the Indian space program.

### Topic 38. 'ORGAN ON A CHIP': A TECH WHICH MIMICS DISEASE SYSTEMS IN LABORATORY CONDITIONS

*Important for subject: Science and technology*



The passing of the Modernization of the Food and drug Administration Act 2.0 by the US government in the month of December 2022 is anticipated to give momentum to this R&D for "organ chips".

#### **Organ chip or an Organ on chips or a chip model**

- Organ chips are small devices that are made of human cells. They are designed to replicate the natural environment of human organs like breathing and blood flow which can be used as artificial environments for testing new medicines.

- These chips are transparent, which allows for researchers to view the inner workings of an organ being investigated.
- Donald Ingber, a professor of bioengineering, and director of the Wyss Institute at Harvard University together with his colleagues, developed the first human organ-on-chip model in 2010.
- The first organ-on-chip model was described as a "lung on a chip" that was akin to the biochemical components of the lung as well as the mechanism of breathing.
- In 2014, participants of the Wyss Institute founded a company called "Emulate Inc." to commercialize the organ-on-a chip technology.
- Researchers from Emulate Inc have created various kinds of chips, including skin barrier and bone marrow vagina, gut, kidney and the liver.

### **Significance**

- The main benefit of the use of Organ on a Chip technique is the fact that it can determine how certain organs react to exposure to chemicals that could be that is found in food, cosmetics or nutritional supplements with more accuracy than the other techniques currently being used like animal-based or cell-culture tests.
- Additionally further, it is also believed that the Organ in a chip is thought as an alternative to drug trials conducted on animals which are widely criticized as unethical and scientifically fraudulent method.
- Organ chips could thus in preventing the deaths of thousands of lab animals.
- The technology is able to discover, create and test innovative treatments for a variety of illnesses in a safe method and can predict the outcome of treatment better than standard techniques.
- Examples: The liver chips created in the lab of Emulate Inc could predict the potential of drugs to cause liver injury , with 87% sensitivity and 100 percent specificity.
- Additionally the liver chips were utilized to determine the harmful effects of 27 different drugs which are either safe or unfit for human livers.
- Organ chips that are created by isolating the cells of a patient to create biomimetic tissues that mimic the symptoms of a specific disease may be used to enhance personalized treatments for specific patients.

## Organ chip in India

- Some of the study groups from India are also involved in the creation of new organ-on-chip models.
- Researchers and experts from The Institute of Chemical Technology, Mumbai together with an engineering team made up of chemical engineers from IIT Bombay have developed a skin-on-chip simulation.
- The model is currently being evaluated to determine if it causes skin irritation or the toxicity.
- This expert group has developed a retina-on chip model.
- Researchers from India are working on a placenta-on chip model.
- In addition to organs, researchers are also working to imitate different diseases with organ chips.
- A group of experts from Savitribai Phule Pune University (SPPU). Savitribai Phule Pune University (SPPU) have created an infection-on-chip device that can recreate an infection on the human skin state.
- The aim is to simulate an infection that isn't healing regardless of repeated antibiotic treatment.

## Topic 39. ADOPT A HERITAGE SCHEME

*Important for subject: Government Schemes*

**The Dalmia Bharat Group, under the Central Government's Adopt a Heritage program:**

- ApniDharohar, ApniPehchaan scheme is now showcasing the historical significance of the Red Fort (17th Century monument) for visitors.

### **About the Scheme**

- The " 'Adopt Heritage' Apni Dharohar, Apni Pehchaan' scheme is an initiative by the Ministry of Tourism, in collaboration with the Ministry of Culture and the Archaeological Survey of India.
- It was announced in September of 2017.
- The government encourages all entities, which include private sector firms, public sector corporations, sector companies, as well as individuals to build selected

- monuments as well as tourist and heritage sites all over India.
- The development of these tourist destinations requires the provision and maintenance of the basic necessities, such as drinking water, accessibility to access for those with disabilities and elderly citizens, uniform signs and cleanliness, as well as lighting and public conveniences as well as modern amenities such as surveillance systems night viewing facilities and tourism facilitation centers.
  - The monuments and sites are chosen in accordance with the amount of tourist traffic and visibility and is taken up by both public and private sector businesses as well as individuals-referred to in the form of Monument Mitras-for a period that is five years.
  - The Monument Mitras are chosen by the 'oversight & vision committee co-chaired the Tourism Secretary and Culture Secretary on the basis of the bidder's vision to develop all facilities on the site of heritage.
  - Note that there is no cost-based bid in the process.
  - The business sector is expected to make use of Corporate Social Responsibility (CSR) money for the maintenance of the website.
  - The oversight committee has the power to deactivate the memorandum in the event of non-compliance or non-performance.

#### **Topic 40. BUDGET FOR COOPERATIVES TO ACHIEVE INCLUSIVE GROWTH**

##### ***Important for subject: Government Schemes***

Budget 2023-24 strengthens cooperatives, allowing them to continue the goals of inclusive growth.

- Economic entities like cooperatives play significant impact on the income of small and less affluent sections, by providing opportunities for employment and facilitating access to credit and market.

##### **Initiatives for Cooperatives**

- The Cabinet also approved the Centrally sponsored Scheme - Vibrant Villages Program for FYs 2022-23 through 2025-26 with a budget of 4,800 crore. The program will help strengthen the cooperative movement with two lakh multi-purpose Primary Agricultural Credit Societies in each panchayat that is not covered.
- It will result in the development of infrastructure and opportunities for livelihoods

within 4 States as well as the one Union Territory along the northern border of the country.

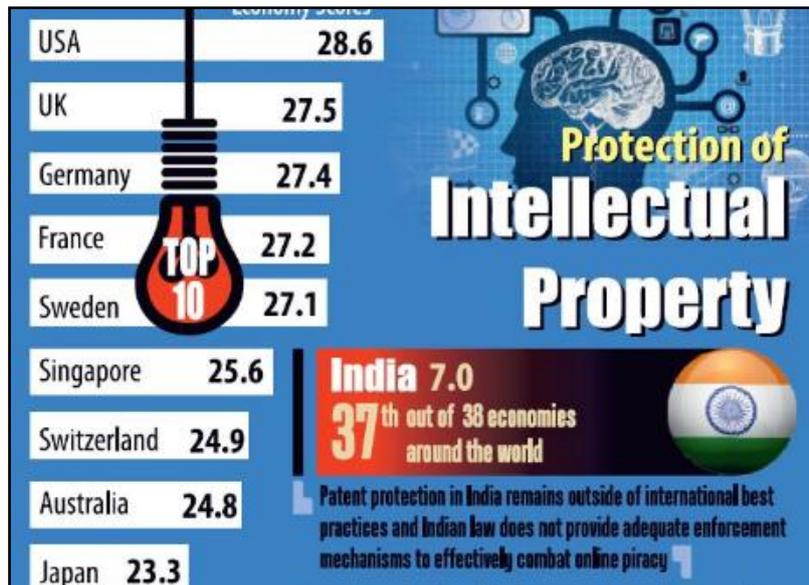
- Budget spending for Rs1,150.38 crore is allocated to the computerization of 63,000
- Primarily Agricultural Credit societies (PACS) and the establishment of National Multi State Cooperative Societies in the fields of export, seed and organic products, and the development of a large grain storage facilities and a National cooperative database.
- The models byelaws regarding PACSpave the possibility of establishing PACS as multi-service centres that can provide services in a quick and cost-effective manner.
- Budget allows for an new association or cooperative society for manufacturing that will be created in April 2023 or later that will begin production or manufacturing before March 2024.
- It provided 15% tax concession to help promote the creation of a new manufacturing cooperative society.
- A huge centralised capacity for storagewill be constructed to assist farmers in storing their products and earn the highest prices by selling it at the right time through a cooperative ecosystems

#### **Draft bye-laws Proposals:**

- The Primary Agricultural Cooperative Societies (PACS) are scheduled to change their name to the use of a different name. They will also be headed by a CEO, who is responsible for infrastructure development in the form of building and managing community centers hospitals or educational institutions, and dealerships in diesel or petrol in the event that States are willing to accept the draft bye-laws that were prepared through the Centre.
- The Centre has suggested that the PACS could promote other organisations like the Farmer Producers Organisation (FPO) that receives 100% contribution from the society to the advancement of its stated goals.
- The Centre's proposal brings the members to join under two classes, A and B.
- A-class membership (shareholders) will be entitled to vote rights and claim over dividends. A-class (nominal members) won't have voting rights or the right to contest for Board of Governors.

## Topic 41. INTERNATIONAL INTELLECTUAL PROPERTY INDEX

*Important for subject: Government Schemes*



India ranks 42nd of the 55 world's top economies in the International IP Index.

### **International Intellectual Property Index**

- The report is published annually each year by the US Chamber of Commerce Global Innovation Policy Centre (GIPC).
- The index was launched in 2012, and the initial edition measured IP environments across 11 economies.
- The Intellectual Property (IP) Index examines the ecosystem of each country by analyzing 50 distinct indicators that the industry believes are the ones that represent countries with the most efficient IP systems.

**The parameters: They rank nations using 50 different indicators.**

- The indicators are split into nine types of protection 1.) Patents 2.) copyrights) trademarks) designs rights) trade secrets) commercialization IP properties seven) Enforcement 8) efficiency of the system and 9) acceptance and ratification in international agreements.
- Relevance The IP Index is an outline for policymakers who seek to encourage the development of innovation, creativity and economic growth by implementing an enhanced IP policy.

## **Topic 42. GOVT PLANS 10 'CLEAN PLANT CENTRES'**

### ***Important for subject: Government Schemes***

With the need for foreign plant materials for fruits such as avocados, apples and blueberries increasing in recent years the Central government is planning to establish 10 'Clean Plant Centres'

### **About Clean Plant Centre**

- Goal: To boost domestic production of the fruit crops that have been selected.
- The services provided are diagnostics for diseases therapies, multiplying plants, and the production of mothers plants.
- Ministry of Agriculture and Farmers Welfare is the main Ministry for the programme.
- The agency that implements HTML0: National Horticulture Board (NHB)
- It is completely paid for by Central government.
- It will be established as part of the 'Atmanirbhar Cleaning Plants Program'(announced in Budget 2023-24)

### **Significance:**

- It is currently difficult to obtain authentic and disease-free plant material for horticultural plants in India.
- Furthermore the process of importing plants can be extremely difficult since the plants that are imported must be quarantined up to two years.
- After the establishment of Clean Plant Centres the time frame can be reduced down to six weeks.

### **Atmanirbhar Clean Plant Program**

- The program will be inaugurated with a budget of 2200 millions(in the next seven years until 2030) to improve the supply of high-quality, disease-free planting material for high-value cultivars of horticulture.

### **The Program will be geared towards the following goals:**

- Improve your horticulture yield plants,
- Distribute and adopt climate-resistant varieties

- Guard the ecosystem by taking proactive control of disease and viruses through strategies.
- The program will be guided to the National Horticulture Board (NHB) which will then set up in place Clean Plant Centers across the country to ensure the international efficiency of the Indian industry of horticulture.
- The centers will cooperate with stakeholders to ensure that they use clean seeds for plants and nurseries.

### **Topic 43. E-SANJEEVANI IS A GREAT BOON**

#### ***Important for subject: Government Schemes***

It is Ministry of Health & Family Welfare's National Telemedicine Service.

- It is currently operational in 31 States/Union Territories.
- It's the first of its type online OPD service provided by a nation's government and its people.
- It is envisioned as the doctor-to-doc Telemedicine platform that will be launched in November of 2019 to be implemented at 155,000 Health and Wellbeing Centers in the Ayushman Bharat Scheme , which is the Hub and Spokes model.
- It provides two kinds of telemedicine, namely. Doctor-to-Doctor (eSanjeevani) and Patient-to-Doctor (eSanjeevani OPD) Tele-consultations.
- The eSanjeevani ABHWC is a doctor to doctor Telemedicine platform.
- It is being implemented at more than 20000 Health and Wellness centers as spokes and more than 1800 hubs spread across 30 States.
- The eSanjeevani OPD (Patient-to-Doctor) was launched in the year 2020 to offer medical consultation online for patients who are sick at their homes.
- It was created through C-DAC, the Centre for Development of Advanced Computing (C-DAC).

#### **Centre for Development of Advanced Computing (C-DAC)**

- It is the leading R&D agency that is part of the Ministry of Electronics and Information Technology (MeitY) to carry the R&D activities for IT & E (Information Technologies and Electronics).

## **Topic 44. WORKING MECHANISM FOR CONSULTATION AND COORDINATION MEETING: INDIA AND CHINA**

*Important for subject: International Relations*

The 26th session of the Working Mechanism for Consultation and Coordination on Border Affairs between India and China (WMCC) was held in Beijing on Wednesday.

- The meeting was the first to be held in person WMCC meeting following the 14th meeting in July, 2019.

### **About WMCC:**

- The WMCC was created in 2012 to serve as an institutional structure for consultation and coordination in the managing the India the India - China border zones in addition to share views on enhancing collaboration and communication, which includes among border security personnel from the two countries.
- It is run by joint secretary-level officers from both sides.
- They're asked to assist the special representative for boundary talks. which is currently the position filled by NSA Ajit Doval.
- Important: The 26th session was significant because it was held amid continuing tensions between the two nations, especially after the violence in 2020 that occurred within Galwan Valley. Galwan Valley.

### **Purpose :**

- In order to bring normality back into relationships between India and China
- In order to restore peace across the Line of Actual Control.

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## **Topic 45. MUKAAB CITY**

*Important for subject: International Relations*

The Crown Prince of Saudi Arabia revealed the Mukaab It is a 400-meter high wide, long, and large indoor city in the middle of Riyadh

- The Mukaab super-city is expected to be big enough to accommodate 20 state-owned buildings from the empire. it is expected at ensuring that the PIF-backed mega-project become a global symbol of sustainability, technology mobility, mobility along with

Saudi Innovation.

- Mukaab Mukaab will be situated in the middle of the Wider New Murabba Development created by His Royal Highness the Crown Prince Mohammad Bin Salman Bin Abdulaziz,
- President and Prime Minister of the New Murabba Development Company (NMDC) to make the project a reality.
- Mukaab Indoor Super-City is Saudi Arabia's Next Mega-Project in Riyadh- Key Features
- The Public Investment Fund of Saudi Arabia has announced the development Mukaab which aims to be the largest modern city center in Riyadh.
- The Mukaab is a cube-shaped city that will become the center of a brand new downtown region in Riyadh.
- The creation of Mukaab will transform an area of 19 square kilometers in Northwest Riyadh into a new generation mixed-use area.
- The team behind the development of Mukaab affirms the city will be able to provide constantly changing environments that use digital and virtual technology to produce holographic displays.

### **The goal in the Mukaab project and Structure**

- The Mukaab The Mukaab, also known as the super-city is inspired by the Najdi architecture , but with a more futuristic design.
- The building will include the tower over the base of a spiral. The structure will have two million square metres of floor space. It will serve as a destination for hospitality that includes cultural, retail and tourist sites including hotel and residential units, commercial spaces and leisure facilities.
- The Mukaab Murabba project is a new Murabba project, will have 14,000 housing units as well as 9000 hotel rooms. 9,80,000 square metres of retail space as well as 1.4 million square metres of offices.
- The project will also have an area of green as well as walking paths that will encourage an active way of life.
- The developers have informed that the project will generate more than 340,000 new jobs. The Mukaab project is expected to be completed by the year 2030.

### Was the design influenced by the Kaaba?

- However this Saudi Arabia government has come under fire from some who think the proposed Mukaab to be a close resemblance to the Kaaba.
- The Kaaba is located in Mecca the city of the highest importance for Muslims is an dark cuboid
- It is said by many to be one of the top holy site in the entire world of Islam.
- Every year millions of pilgrims from around the globe travel to Mecca to take part in Mecca's Hajj religious pilgrimagewhere they circumambulate around Kaaba.
- Najdi Architecture
- It is among the Arabian architectural styles, which were developed within the Saudi Arabian region.
- Najdi Architecture Najdi Architecture of Saudi Arabia doesn't use domes or arches both for structural reasons as and symbolic motives.
- For instance,Qasr-al-Masmak is the fortress in the city of Riyadh constructed around 1865. It is missing from the arcuated spans that were part of the construction.
- The houses typical of the Najd region are typically two stories tall and are built in an area with an outdoor courtyard.
- The form of the garden is generally geometric in shape, like an oval or rectangle and it functions as an air duct for the house to manage the microclimate and offer a quiet area for families to live a private life.
- The primary material used to build the type of home is sun-dried mud bricks as well as the mud, nikutty Amma; Radha Dutta; Vijayalakshmi; Gopika Varma and Jayaprabha Menonamong other people.

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### Topic 46. NEW PRESIDENT FOR WORLD BANK

#### *Important for subject: International Relations*

US president Joe Biden is nominating former Mastercard CEO, Indian-born Ajay Banga, to the head of the World Bank.

#### **Appointment of the President of World Bank:**

- The President of the World Bank Group serves as the Chairman of the Board and is chosen by the Executive Directors..

- A President serves as the chief officer and does not have a vote, except for the deciding vote of a divided Board.

**According to the guidelines from the World Bank, the World Bank president must have:**

- An established experience of leading.
- Experience in managing large companies with international exposure, as well as an understanding of government sector.
- Ability to present an enlightened view of the Bank's development goals.
- A strong commitment to and gratitude for multilateral cooperation.
- Effective and diplomatic communication abilities with impartiality and objectivity.

**Who is eligible to nominate?**

- The executive directors at the World Bank can nominate candidates for the position. The candidates must be citizens in one of member countries and not be bank governor, executive director, or alternate.
- In the event that there is over three contestants, then there could be a shortlisting process in order to reduce the field by straw-polls.
- The selected candidates are interviewed in the presence of the committee. The board then makes an official selection by an overwhelming vote.

**Votes needed to be a winner:**

- To be elected president of the World Bank, a candidate must be approved by the executive board of the bank, with a total of 25 members.
- The US has 16% of the voting power of the board, therefore typically, the US supported candidate who is elected for the office of president.

**Voting Power in World Bank**

- Members countries are given votes at the time of joining and then for membership fees to capital.
- To be a member of the Bank the country must first be a member of with the International Monetary Fund (IMF).

## Governors

- An elected board of Governors represents the Bank's government shareholders. Each member country appoints one Governor and an alternate Governor. The majority of governors are ministers from the country for example, Ministers of Finance or Ministers of Development.
- Governors make up the main leaders of the World Bank. They meet every year during the Annual Meetings.

## Executive Directors

- The Bank's Executive Directors supervise the Bank's operations which includes approving the loan and guarantee, as well as new policies, the budget for administrative purposes and country assistance strategies as well as borrowing and other financial choices.
- According to the IBRD Articles of Agreement, each of the five members has the
- The largest share of shares elects an Executive Director and the other members elect the Executive Directors who are not elected.

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## Topic 47. FRIENDSHORING

### *Important for subject: International Relations*

Terming India as the largest trade partner U.S. Treasury Secretary advocated for the development of an strategy dubbed "friendshoring" to bolster the durability in supply chains.

### **Friendshoring**

- Friendshoring is an method by which a nation gets its components, raw materials and even the manufactured goods from nations who share their values..
- The dependency on nations that are considered to be as a "threat" to the stability of supply chains is gradually decreasing.
- It's also referred to as "allyshoring".
- To those in the US, Russia has long been portrayed as a reliable energy supplier however, during the Ukraine war, Russia has utilized gas in a way that is threatening the citizens of Europe.
- It's a good illustration of how malicious actors could use their market position in order

to gain influence over geopolitics or disrupt trade to their own benefit.

- Friend-shoring, also known as ally-shoring, has become a method for the US to persuade companies to relocate their manufacturing and sourcing facilities to more friendly shores--often returning to the same shores of the US.
- The aim for Frienshoring is to protect the supply chain of a country from countries with less similar interests like China in the case of the US.

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### **Topic 48. U.K., EU START 'NEW CHAPTER' OVER N. IRELAND TRADE PACT**

*Important for subject: International Relations*

The British Prime Minister has struck an agreement together with European Union (EU) on trade rules post-Brexit to Northern Ireland.

- In the words of his British PM, the agreement will open the door to a new chapter to be written in London's relation with its bloc.
- Northern Ireland, which is an British province, shares the option of an open border to Ireland which is also an EU member.
- The agreement aims to end tensions triggered by the post-Brexit arrangement for 2020 which governs Northern Ireland and its open border with the Republic of Ireland.
- The conflict has led to the demise of the regional government and has impacted the Northern Ireland peace process as well as connections between the UK and the EU.
- The new agreement is expected to reduce physical controls on goods moving from other areas within the UK to Northern Ireland.

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### **Topic 49. UNION GOVT TO MARK SANTHSEVALAL MAHARAJ JAYANTI**

*Important for subject: History*

The Union government on Sunday launched the year-long celebrations to commemorate the 284th birthday anniversary of Santh Sevalal Maharaj, a spiritual and religious leader of the Banjara Community.

#### **SanthSevalal Maharaj**

- He is known as to be a social reformer as well as a spiritual guide of the Banjara community.
- He traveled across in the United States with the Ladeniya Troup to serve especially

the people who live in the forests along with nomadic tribes.

- Because of his exceptional expertise, excellent skills and spiritual experience of Ayurveda as well as Naturopathy He was capable of dispelling and eliminating the myths and superstitions that are prevalent in the tribes.

### **Banjara Community:**

- Banjara is comprised of diverse groups found across India and the majority of them are located throughout Telangana, Andhra Pradesh and Karnataka states in South India.
- The people who settled in the country under various names. They have resigned their nomadic lifestyles to settle in communities known as Tandas.
- It is believed that they speak Gor Boli and are also known as Lambadi which is part of the Indo-Aryan Group of Languages. Lambadi has no script.
- Banjara people observe the celebration that is Teej on Shraavanam (in August, the month that falls in August). Young women who are not married are praying for a perfect groom.
- The fire dance and Chari are the most traditional form of dance of the Banjara people.

## **Topic 50. KERALA MURAL PAINTINGS**

*Important for subject: History*



Pooja Kashyap is a renowned artist of Kerala Mural Paintings, who is a teacher of History at the Delhi's Gargi College is exhibiting 30 of her paintings using acrylic paint during the week of the All India Fine Arts and Crafts Society (AIFACS).

## Kerala Mural Paintings

- Kerala artists (16th until the 17th to) developed an visual language and a technology in their individual style while selectively adopting stylistic elements of the Nayaka as well as Vijayanagara schools. It is among the Late Mural practices in India.

## Later Mural Traditions

- Even after Ajanta only a handful of sites that have paintings remain, that can be used as evidence to establish the traditions of painting.
- The sculptures were also painted and plastered, and the tradition of excavation in caves continued throughout the world, where painting and sculpting were performed simultaneously.
- The painters developed an art language drawing inspiration from modern art forms such as Kathakali as well as Kalam Ezhuthu using bright and vibrant colours, illustrating the human figure in 3 dimensions.
- The majority of the paintings can be visible on the wall of shrines, the wall cloisters of temples and in palaces.
- Thematically, also the works from Kerala stand out.
- The majority of the narratives are based on these episodes that are derived from Hindu mythology, which was very popular in Kerala.
- The artist may draw inspiration from oral tradition and traditional versions from the Ramayana along with the Mahabharata for the painting of narrations.
- Other than other than the Mahabharata, Ramayana, and The Gita, some texts that have inspired these paintings are the 15th century Tantrasamuchhaya regarding temple architecture written by Narayana 16th century Shilparatna by Sreekumara Kumarasambhava from Kalidasa.
- More than 60 locations have been identified with murals.
- The main palaces where murals can be seen include : Dutch Palace, Kochi, Krishna Puram palace, Kayamkulam and Padmanabhapuram palace.
- The final phase of Kerala's mural tradition could be observed in Pundareekapuram Krishna Temple, Panayanarkavu, Thirukodithanam, Tripayar Sri Rama temple, and Thrissur Vadakkunnatha Temple.

## Topic 51. 150TH ANNIVERSARY OF CALCUTTA TRAMS

### *Important for subject: History*

Kolkata's famous tram service marked 100 years ago when the very first tram was officially launched.

- The festival saw tram enthusiasts from as far as Germany and Australia visit the city for the historical "Tramjatra" festival, organised by the West Bengal Transport Department.
- The history of tram the first trams began operating in the British capital city of Calcutta from 1873. The trams with horses traveled an 3.8 km route that ran between Sealdah to Armenian Ghat Street.
- It was in 1874 that the very first horse-drawn trams were introduced in Mumbai and were operating on two routes: Colaba up to Pydhonie through Crawford Market, and Bori Bunder to Pydhonie.
- Nasik was an Indian city that was the 3rd in India where trams were used that were driven by four horses (with two cabins) that could travel over a distance of about 8 kilometers.
- Trams were reintroduced in Calcutta in 1880, when Lord Ripon introduced a new, more extensive tramway, with a metre-gauge and this time, using steam locomotives.
- But, Mumbai, Nasik or Patna could not ever switch to steam engines.
- Forest trams were first opened in 1907 in Cochin and later in the princely state of Bhavangar in 1926.
- Electric trams: In 1895, Madras (present-day Chennai) witnessed India's first electric tramways go into service. They had seven vehicles. It was later added in Calcutta.
- In the mid-sixties, tramways, that were once thought of as the most revolutionary innovation in the field of urban transportation was almost extinct in India. Nowadays, Kolkata remains the last city in the world that has tramways, even though these colonial remnants are constantly in danger of being snuffed out.

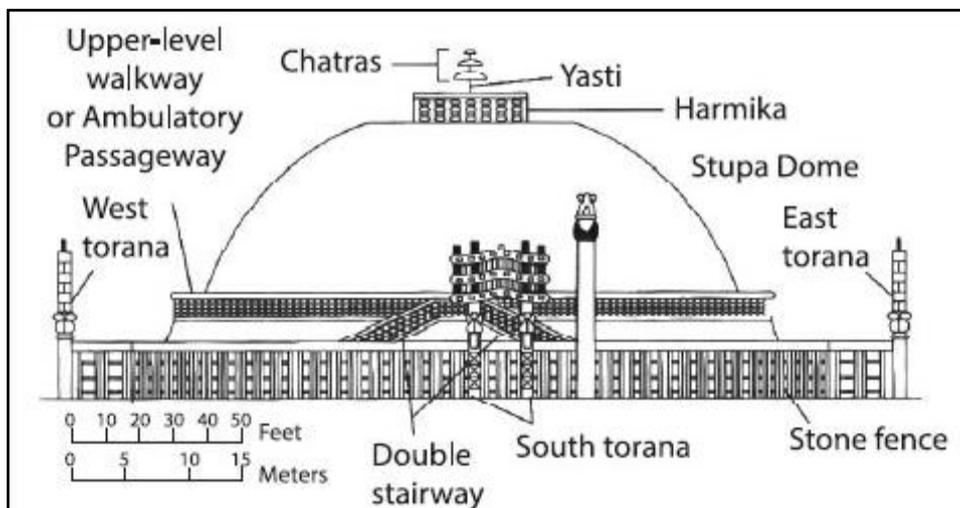
### **Tramjatra Event**

- Tramjatra (tram's journey) is a tram that moves carnival that was first introduced in 1996 by a group of fans who came from Melbourne in Australia and Kolkata.
- In the past, Kolkata, the only Indian city in which the tram is still running was home

- to more than two dozen trams.
- The number of routes in operation has decreased to two.
  - The 2023 show is, therefore, more about convincing government officials. West Bengal government to preserve the tram.
  - Tramjatra is basically an international partnership of trammies and artists environmentalists, and other tram-loving communities.
  - It is aimed at educating people, especially young people, on the impact of climate change and air pollution and sustainable development targets with a focus on sustainable mobility and Kolkata's tram heritage.

### **Topic 52. 1300-YEAR-OLD BUDDHIST STUPA FOUND IN ODISHA'S JAJPUR**

*Important for subject: History*



The Archaeological Survey of India (ASI) has discovered an 1,300-year-old stupa located in near a mine area in the state of Odisha's Jajpur district, from where Khondalite stones were extracted to construct The Jagannath Temple in Puri.

- Based on preliminary research the stupa's height is 4.5 meters high and could be part of the 7th or 8th century.
- This stupa was located in Parabhadi close to Lalitagiri which was a significant Buddhist complex with numerous monasteries and stupas.
- After discovering the Buddhist stupa at the mine site, the ASI intervened and demanded to the Odisha government to cease mining in the area.
- The ASI will now attempt to complete the restoration of the archaeological significance of the structure as well as restore it back to its original appearance and

protect the site.

- Experts believe they believe the State government should perform a heritage assessment of a place if it is situated near a site of archeological significance, prior to granting permission for mining since the destruction of small artefacts such as stupas is not a way to restore them when destroyed.

### **Stones of Khondalite:**

- They were frequently utilized in the old temple complexes.
- The State government has come up with a bold plan to invest \$3208 million in the Augmentation of Basic Amenities and Development of Heritage and Architecture (ABADHA) scheme in three years to turn Puri into an international city.
- Khondalite stones could be extensively used to preserve the beauty of certain projects, such as the security zone for heritage and The Jagannath Ballav pilgrim centre, Puri lake development project and The Atharnala heritage project, and The Matha Development Initiative.

### **Controversy**

- After the discovery that the Buddhist stupa at the mining site, ASI intervened and urged for the Odisha government to stop mining with the Odisha Mining Corporation (OMC). The mining was stopped in the meantime.
- Sukhuapada was the largest of the six Khondalite blocks of stone reserved to the OMC.
- With the ASI taking over the Sukhuapada site The OMC could be unable to provide Khondalite stone for those of State administration's ambitious temple building initiatives.
- This could trigger another confrontation among both the Centre as well as state government. State government. The violation of ASI guidelines caused a huge dispute over the redevelopment plan in Puri.

## Topic 53. DICKINSONIA FOSSIL FOUND IN BHIMBETKA IS OLD BEEHIVE

### *Important for subject: Art and Culture*

Fossils of a species that has gone extinct in the animal kingdom (Dickinsonia) that researchers made public in a sensational find in the Indian Bhimbetka Rock Shelters in 2021 have turned out to have not as exciting as they were thought to be.

### **Background:**

- In 2021, scientists discovered in the wild what appeared to be a fossil measuring 44 cm wide from Dickinsonia, a species of animal that lived for at most 538 million years old in the cave.
- Dickinsonia fossils from other regions of the globe have suggested that it was circular or oval in form, somewhat flat and having ribs-like structure radiating out from an underlying column.
- In 2022, scientists concluded it was "the impression resulted from decay of a modern beehive which was attached to a fractured rock surface".

### **About Dickinsonia:**

- This is an extinct species from the basal animal which lived in the latter part of the Ediacaran period, which is today Australia, Russia and Ukraine.
- These animals were born in a world without predators and did not have the requirement for carapaces that were hard and durable or Skeletons.
- Finding cholesterol-containing molecules within fossils from Dickinsonia supports the hypothesis the idea that Dickinsonia is an animal.

### **Bhimbetka Caves:**

- The Bhimbetka rock shelters are an archaeological site located in central India that covers both the Paleolithic as well as Mesolithic periods and also the historical period..
- It is home to the oldest evidence of human existence within India and proof of Stone Age starting at the site of the Acheulian era.
- It is situated inside it's Raisen District in the Indian state of Madhya Pradesh.
- It is an UNESCO World Heritage Site that is comprised of seven hills and more than

700 rock shelters spread over 10 kilometers

- Most of the shelters were built by humans more than 100,000 years ago.
- The Bhimbetka site is the most well-known rock art found in India and is among the biggest prehistoric sites.
- Bhimbetka which translates to "Bhima's resting place" or "Bhima's lounge" is a compound word that is composed out of Bhima (second brother of five Pandavas from Mahabharata) in addition to Baithaka (seat or lounge). According to the indigenous tradition, Bhima during his exile was known to have a stay here and interact with the locals.

### **Topic 54. MOHINIYATTAM**

*Important for subject: Art and Culture*

Mohiniyattam Exponent Kanak Rele Kanak Rele, who had an important role in bringing a logical structure, academic credibility and a lot of currency to Mohiniyattam as well as promoting women's roles in Kathakali was killed in the morning in Mumbai.

- Rele was awarded The Padma Bhushan in 2013.

#### **About Mohiniyattam**

- Mohiniyattam is one of the classical dance form of Kerala State and is one of eight main Indian classical dance styles.
- It is also known as the Mohiniyattam is a well-known dance form that has a dramatic quality in dance. It is performed using delicate gestures and footwork.
- A brief background on the history of this dance type
- Certain scholars trace Mohiniattam back to the second century or even third A.D.(to the era of the famous Tamil epic Silappadikaaram) however, some believe it was written in midway through the 18th century in the Maharaja Svati's court. Tirunal of Travancore
- It is considered that the dance form developed its affinities with it's Bharata Natyam technique and Karnatak Music and consequently its repertoire in the court of Swati Tirunal.
- In the early 20th Century, as with all the other traditional arts Mohiniattam was also lost because of its policies by the British.

- In the colonial period, the dance was became a snooze, but it was revived in the national independence movements led by V.N. Menon.
- The salient characteristics of the dance form Mohiniyattam is distinguished by graceful moving body movements that sway without abrupt jerks or jumps of sudden intensity. It is part of the Lasya style which is feminine, gentle and elegant.
- The most distinctive aspect that makes up mohiniattam's "form" component of Mohiniattam is the spiral or circular movement that all the joints in your body. It creates the appearance of the motion of a pendulum which is why it is referred to as an aandolika.
- The movement is emphasized by the glides and upward and downward motion on toes, reminiscent of wave action of ocean and the swaying of palm trees, coconuts and paddy fields.
- Dances have been borrowed by Nangiar Koothu and the female folk dances Kaikottikali as well as the Tiruvatirakali.
- The footwork is not overtly sassy and is performed in a soft manner. The importance is placed on the motions of hands as well as Mukhabhinaya by using subtle facial gestures.
- Mohiniyattam places the emphasis on the act. The dancer is in tune with the characters and feelings that exist in the compositions such as Padams and the Padams and the Pada Varnams, which provide ample opportunities for facial expressions.
- Hand gestures that are which are 24 in all were primarily borrowed from Hastalakshana Deepika which is a text which is then followed by Kathakali. A few are also taken in Natya Shastra, Abhinaya Darpana and Balarambharatam.
- The facial expressions and gestures are more natural (gramya) and realistic (lokadharmi) as opposed to the rigidly traditional or dramatic (natyadharmi).
- The vocal music in this performance art uses a variety of rhythms and lyrics for some of the songs that are performed in this form of dance are written in Manipravala which is a mixture from Sanskrit and Malayalam language , while the style of music is Carnatic.
- Instruments used during an Mohiniattam performance typically consist the following: Kuzhitalam as well as cymbals Veena; Idakka, an hourglass-shaped drum
- Mridangam Abarrel-shaped drum with two heads. The most likely 20th century

exponents of Mohiniattam aside from Vallathol Narayana Menon . Kalamandalam Kalyanikutty Amma, Thankamony, Krishna Panicker and Mukundraja.

- Today's exponents include Sunanda Nair, Smitha Rajan, daughter of Kalyanikutty Amma; Radha Dutta; Vijayalakshmi; Gopika Varma and Jayaprabha Menon among others.

### **Topic 55. MARCONI PRIZE 2023**

#### ***Important for subject: International Awards***

Hari Balakrishnan has been awarded the 2023 Marconi Prize. He is a Professor in the Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology (MIT).

- He has been recognized "for fundamental contributions to wired and wireless networking, mobile sensing, and distributed systems".

#### **About Marconi Prize**

- The Marconi Prize is an annual award which recognizes those who make significant contributions in the field of communications and information technology.
- It was named for Guglielmo Marconi who was an Italian innovator and pioneer in the field of wireless communication.
- The Marconi Prize is one of the most prestigious prizes that are awarded in telecomm and is often called the "Nobel Prize" of "Telecommunications."
- The award is administered through The Marconi Society, a non-profit organization that encourages understanding and awareness of the most important technical and scientific questions in the field of communications.
- The Marconi Prize consists of an award of \$100,000 in cash as well as a commemorative medal.
- The Marconi Society also awards other prizes and scholarships, such as those awarded the Marconi Society Paul Baran Young Scholar Award that recognizes students who've displayed extraordinary leadership and technical skills in the field of communication and information technology.
- The previous winners of the prize include Sir Tim Berners Lee, Google Co-Founder Sergey Brin and sci-fi author Arthur C. Clarke.

# PIONEER ACADEMY



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