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Changing Diplomatic
Relations Between India
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India's Leadership Role
in Global Disaster
Management

Road Accidents in India:
Current Situation & Its Solution

India Raising Its Voice for
Reforms in World Trade
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Message



Vinay Singh
Founder
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Current Affairs has an important role in the examinations conducted by Union Public Service Commission and State Public Service Commissions. It is necessary for the candidate to have knowledge of relevant information on issues of national and international importance. Perfect 7 Magazine is being presented fortnightly to the students to fulfill this requirement. Preparation of civil services exam is only completed when candidates have holistic knowledge and analysis of the dynamic nature of the current affairs. 'Perfect7' keeps this vision and approach and understands the multidimensional need of students at the content level, so this magazine has presented the current affairs with relevant issues of general studies. Keeping in mind the needs of mains exam, current articles on 7 burning issues, Ethics Case Studies, Biographies of important personalities, coverage of most useful topics of various sections of General Studies and the most important current affairs issues are being covered for Preliminary Examination in which emphasis is being given on national, international, environment, ecology, art and culture, science and technology, economic issues.

Brain boosters with 7 themes based graphics are being presented in a concise form to enhance the conceptual understanding of the students. Apart from this, updated information on Global Initiatives, Global Institutions, Structure of Organizations, Functioning, Important Reports, and Indices will be included in this magazine, which is asked prominently in the Civil Services Examination. To give emphasis on facts and analysis, keeping in view the trends of new nature of questions in Preliminary and Main Examination of Civil Services, an inclusive magazine is being provided to the students so that they can give the right direction to their preparation by understanding the new requirements of Civil Services Examination. Columns have been included in the format of the magazine keeping in mind the factual needs of the candidates, mental development, developing writing technique etc. Along with this, we have been introducing new segments according to the changing needs of the candidates and these initiatives will continue in future also. Hope this issue will prove useful for all of you. Your suggestions are always welcome.

Best wishes.



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Changing Diplomatic Relations Between India & Gulf Countries

India and Gulf countries have had emerging relations from time to time with both positive and negative aspects. A similar scenario was observed with Gulf country Qatar when diplomatic relations got affected, after eight former Indian Navy officers were arrested on spying charges and have been awarded death sentences. This situation has put the Indian diplomacy on the test bed. Qatar had alleged that these naval officers associated with India have leaked information related to the submarine project to Israel.

- After retiring from the Indian Navy, these officers joined the Doha-based Al Dahra Global technologies and consultancy services. The company used to provide Technology and Consultancy Services and was engaged in training the personnel of Qatar's Navy. Qatar's intelligence agency State Security Bureau arrested eight former Indian officers associated with this company and locked them directly in solitary confinement. They were neither allowed to meet anyone nor talk to anyone. These eight former Indian marines, who had once worked for the Indian Navy and before their arrest were working for a Qatari company, have been in jail since August last year.
- The Ministry of External Affairs of the Government of India is considering all possible legal measures for the protection of these eight officials, including the measures at the Consulate General level (consular level). Incredulously, Qatar has not even clarified the basis for imposing such punishment. These eight officers have served 20 years in various important positions in the Indian Navy and one of them, Commander Purnendu Tiwari, has also been awarded the Pravasi Bharatiya Samman.

Possible Reasons for Such Controversy in Qatar:

- The question arises as to what are the possible reasons behind such action by Qatar? For this, the controversial character of Qatar needs to be understood. Qatar is the only country in the Gulf region which has been held guilty of supporting separatism as well as terrorist activities and is known for funding terrorism. Countries like Saudi Arabia, the United Arab Emirates, Egypt, and Bahrain severed their diplomatic relations with Qatar a few years ago on this issue.
- At a time when a dangerous war is going on between Israel and Hamas, multiple reasons are being stipulated for Qatar to start a diplomatic dispute involving India. Qatar has close ties with Iran. Both countries are accused of providing funding and other forms of support to the terrorist organization Hezbollah. The six-member Gulf Cooperation Organization and the Arab League have declared Hezbollah a terrorist organization, but Iran and Qatar see it as a political weapon. Iran is also considered

responsible for funding Hamas. It has provided arms and money to Hamas and also continued to highlight its Islamic brotherhood with Palestine. The possibility cannot be ruled out that the Indian Prime Minister's support for Israel did not go down well with some countries doing politics in West Asia.

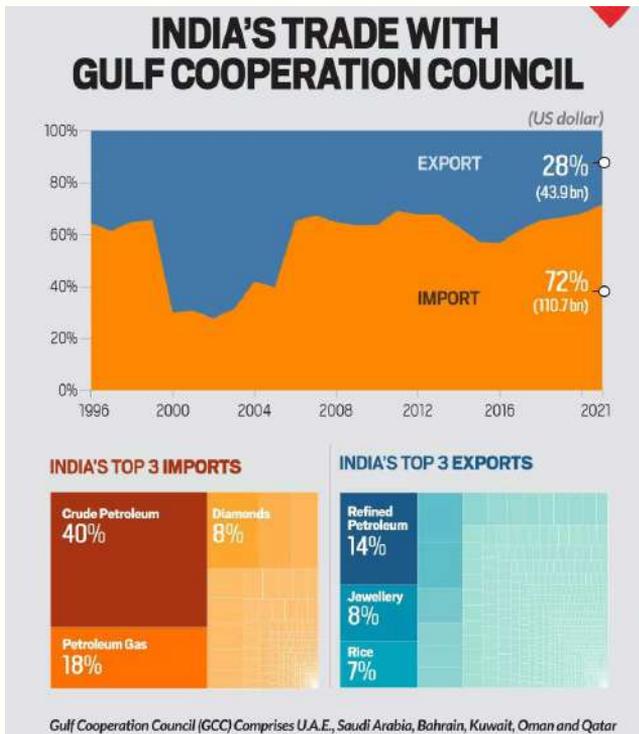


- India has clearly stated that it opposes all forms of terrorism and does not want any country to resort to terrorism based on the right to self-determination, to take retaliatory action in the context of ethnic demands or to equate terrorist activities with religious war. India has always emphasised that any terrorist violent action cannot be justified based on the new freedom struggle. That is why it proposed the Comprehensive Convention on International Terrorism in the year 1996 in the United Nations General Assembly so that there can be a consensus among nations on a universal definition of international terrorism and no person or organization in any country could justify committing terrorism on any basis.

India-Qatar Relations:

- Around 8 lakh Indians are living in Qatar and they are the largest expatriate community in the country. Qatar moreover puts special emphasis on its relations with India. India sources 40%

of its total Liquefied Natural Gas (LNG) imports from Qatar and India's purchases account for 15% of Qatar's total LNG exports. Qatar's gas is a guarantee of clean and secure energy for India and as a buyer, India is very important for Qatar. This is pertinent from the fact that in 2015, India had to buy liquefied natural gas from Qatar at the rate of \$ 12 per metric million British thermal units and then in 2016, Qatar reduced the prices of LNG for India by more than 50%. India had benefited billions of dollars from this deal.



- India's government company Petronet LNG Limited sources LNG from Qatar's RasGas. Due to good business deal with Qatar, India had saved \$15 billion on gas deals from 2003 to the next 11 years. Along with this, Qatar had given a rebate of Rs 12000 crore to India which had to be paid by India as fine since in 2015, India had purchased less LNG than the agreed agreement. Due to the agreement made between the Indian Prime Minister and the Emir of Qatar in 2015-2016, Qatar had agreed to give this exemption to India.
- Despite such special treatment, the tension between India and Qatar is not something new. Many incidents have emerged from time to time which have affected India-Qatar relations in some way or the other. For instance, India-Qatar relations were affected by the incidents of Former BJP spokesperson Nupur Sharma,

Islamic scholar Zakir Naik and famous painter Maqbool Fida Hussain. It is worth mentioning that Zakir Naik is declared wanted in India by the Enforcement Directorate and the National Investigation Agency. He is accused of giving inflammatory speeches, money laundering and promoting terrorism. Nevertheless, Qatar invited Zakir Naik to the FIFA World Cup, to which India had expressed its objection and displeasure. Zakir Naik has also been receiving funding from Qatar.

Italy Case: Lessons that can be drawn:

- The mention of the Italian marine case may be made here and this case can be linked with how Indian officials may be saved in Qatar. On February 15, 2012, two fishermen from Kerala, Gelestine and Ajeesh Pinku, went out fishing from Neendakara Harbor in Kerala. They went for deep sea fishing towards Lakshadweep in St. Antony's boat and on their return, they encountered the oil tanker Enrica Lexie, bound from Singapore to Egypt. It was an Italian ship, which had 34 crew members including 19 Indians on board. Two Italian marines, Salvatore Girone and Massimiliano Latour, who were stationed on the ship, shot and killed Gelestine and Ajeesh. In their defence, the Marines said that they had suspected the people in the boat to be pirates and they were following the protocol. The Coast Guard had arrested both the marines which eventually led to diplomatic apprehensions between Italy and India.
- Italy demanded India to end the case, but India kept refusing. In 2013, India allowed Italian marines to return but they did not return. The case eventually went to the Permanent Court of Arbitration (PCA) in the Netherlands. On 21 May 2020, the PCA ordered that the Italian marines would not face any criminal prosecution in India and would face legal action in Italy. Along with this, the Italian government offered a compensation of Rs 10 crore each to the families of the killed fishermen. The Government of India accepted the verdict and compensation.
- When the case was handed over to the National Investigation Agency (NIA), the NIA imposed 'Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation' (SUA) on both the accused. This convention ensures the safety of ships at sea, it equips the authorities to stop and punish those who threaten security and deal with global terrorism at large.

Terrorism: Need of a Universal Definition & Role of CCIT

Terrorism is one of the biggest challenges to global peace and security. It poses a major threat to the law enforcement bodies of national governments and negatively impacts development, economic activities, investment, tourism, transportation, good governance, human rights across the world. Therefore, consolidated action against it becomes necessary. However, the lack of a universal definition of international terrorism projects a major obstacle in the way of dealing with global terrorism.

There is no consensus on the clear definition of terrorism among different countries and during the Israel-Hamas war, the importance and need of the Comprehensive Convention on International Terrorism, which India presented in the UN General Assembly in 1996, is once again in discussion.

The Comprehensive Convention on International Terrorism (CCIT) has been proposed by India with the aim of building consensus among the 193 UN countries on a universal definition of international terrorism. India had urged all UN members to adopt this convention to create a global legal framework for definition as well as to take action at other levels to combat terrorism internationally. India was the first country in the world to propose CCIT at the UN in 1996, emphasizing four main points:

- First, a universal definition of international terrorism that all 193 UN countries should include in their criminal laws so that terrorist violence cannot be justified in any country on religious, political, ideological, ethnic or any other basis. Today, in many countries of the world, terrorism is justified on all these grounds. India believes that if a universal definition is created under the UN, countries and their governments will be forced to oppose terrorism in all its forms and they will also not be able to justify state sponsored terrorism.
- Second, all countries will have to enact special anti-terrorism laws under the CCIT and take action against terrorists under those laws; special punishment provisions for terrorists should be clear. In countries like Pakistan and Afghanistan, action is taken against terrorists under ordinary laws. There are no examples of giving death penalty or life imprisonment to terrorists. Therefore, India proposed to adopt the CCIT. To deal with terrorists, India has made special anti-terror laws like Unlawful Activities Prevention Act, 1967 and National Investigation Agency Act 2008. Under NIA Act, terrorists are punished through the special court of NIA. India expects that all the UN countries should deal with the terrorists in their countries by creating such specific terror lodges without any politics or motives.
- Third, under the Comprehensive Convention on International Terrorism (CCIT) all countries should ban terrorist organizations in their countries and destroy all terrorist camps. The

importance of CCIT is also that if this convention is passed in the UN, then many countries will not get a chance to do politics in these matters as China does in the UN General Assembly or UNSC and saves Pakistani terrorist organizations from being banned.

- Fourth, India says that under the CCIT, UN should declare international terrorism an extraditable crime at the global level so that even if there is no extradition treaty between two countries, a terrorist hiding in another country can be extradited if he has carried out a terrorist attack in one country. This can be done, so that a charge sheet can be filed against him, a case can be prosecuted and the terrorist can be punished. If we evaluate the importance of CCIT on this issue, it will be known that India has made extradition treaty with about 47 countries and even if a terrorist hides or takes refuge in a country other than these 47 countries, India will still be able to get the terrorist extradited. Currently there is a provision that it is necessary to have an extradition treaty. On many occasions, it can be seen that countries do not have an extradition treaty, or it is not renewed, or an enemy country even bypasses the extradition treaty, so that such treaty does not remain as a legal obstacle in the action against terrorists. Therefore, it is a logical proposal from India that the UN declare international terrorism as an extraditable crime at the global level.

Need of CCIT:

- There is no universally accepted definition of terrorism. Often those who are called terrorists for one country are seen by the people of another country as their freedom fighters. In a general sense, terrorism can be seen as an ideology based on violence and terror whose objective is to influence the policies of the state by creating an environment of fear among the common people through violent means. Terrorism is an ideology that seeks to intimidate the general public to achieve a political objective through the spread of terror and violence. It emphasizes the deliberate adoption of violent means to create fear among the public. This political objective may be inspired by ideological, racial, ethnic, religious or political grounds. It is a criminal activity that deliberately targets the physical existence and property of ordinary citizens so as to spread fear and terror in the society. This is against both the

government and the citizens.

- In 1994, a similar definition has been given in the proclamation regarding efforts to eliminate international terrorism. The same elements have been included in the definition of terrorism in the United Nations Security Council Resolution No. 1566 in the year 2004. India's first anti-terrorism law TADA also includes these elements while defining terrorism. It says that whoever, with intent to intimidate the Government established by law or to create fear among any section of the public, destroys harmony, or uses bombs, dynamite or other explosive materials or inflammable materials, deadly weapons or poisonous gases and chemicals, or if someone experiments in such a way that it causes harm to life or property, it can be seen as a terrorist act.
- Due to the absence of a universally accepted definition of terrorism, it becomes necessary to understand it by classifying it in different forms. In this context, based on the nature and motivating elements of terrorism, it can be classified into the following forms-
 - » Terrorism inspired by ethnic identity
 - » Religious terrorism
 - » Ideology oriented terrorism
 - » State sponsored terrorism

Terrorism inspired by ethnic identity:

- The sense of ethnicity creates a feeling of isolation in ethnic groups from other groups on the basis of shared cultural distinctiveness, which is an important factor motivating terrorist incidents after the Second World War. The terrorist activities are carried out either to create a separate state or to establish their supremacy. For eg., the terrorist activities conducted by LTTE in Sri Lanka were on the basis of the demand for a separate Tamil Eelam. Apart from this, Chechens in Russia, Kachin and Arakan Army members in Myanmar and some ethnic communities of North Eastern India like Naga and Mizo have also resorted to terrorist activities to achieve their specific objectives.

Religious terrorism:

- The most popular form of terrorism in the contemporary world is religiously inspired terrorism. Its supporters see terrorist violence as a religious mandate or duty and here, religion serves to legitimize the violent incidents committed by them at the ideological level. Justifying terrorist activities in the name of Jihad (so-called holy religious war) by promoting religious fanaticism, fundamentalism and extremist ideas is called religious terrorism. Under this, terrorist groups emphasize on the establishment of Islamic empire and establishing its prestige by giving ideas like Islam is in danger and there is a need for its purification. Along with this, efforts are

made to strengthen notions like Islamophobia. Terrorist organizations like Al Qaeda, Lashkar-e-Taiba, Boko Haram, Al Shabaab, ISIS promote religious terrorism on the basis of these beliefs. On this basis, in countries like Morocco, Algeria and Philippines, Salafi jihad is promoted in the name of restoration of Islamic pride.

Ideological terrorism:

- Terrorism and violent activities are often inspired by various ideologies, which can be mainly classified as left-wing and right-wing terrorism. Leftist terrorism is carried out by the exploited classes against the ruling elite. Under this, the aim is to bring revolutionary change in the system through violent means. Some examples of leftist terrorism are Shining Path of Peru, Red Army Faction of Germany and Red Brigade of Italy. The goal of right-wing terrorism is either to maintain the status quo in the system or to try to bring back some of the circumstances of the past. It can be seen as America's Ku Klux Klan, Denmark's Green Jackets.

State Sponsored Terrorism:

- Many countries also see terrorism as a tool of their foreign policy. Under this, proxy war is promoted instead of direct war to weaken or defeat the opposing country. Since the 1980s, Pakistan promoted state-sponsored terrorism against India and even involved the ISI and its army for this task.

Obstacles in the path of CCIT:

- Many countries and organizations do not support the CCIT and do not want it to be passed. The Organization of Islamic Cooperation of 57 Muslim countries does not support CCIT. It says that the freedom struggle and the violent actions related to it should be kept out of the universal definition of international terrorism. For example, the actions of Hamas are seen as linked to the independence movement and not as terrorist violence. On the other hand, Latin American countries, such as Chile, Peru, Colombia and Bolivia, do not support the CCIT on the basis of national independence struggle and the right to self-determination, justifying communist goals. Pakistan views terrorists in Afghanistan as pious religious fighters (mujahideen) and views the war against Kashmir as a religious war. Therefore Pakistan does not support CCIT. Countries like the USA, Iran and Qatar do not support it due to power politics and state sponsored terrorism, while China, Malaysia and Turkey also do not support CCIT due to their own personal interests. These countries also know that if CCIT is implemented then India's stature will increase significantly in the international community.

Road Accidents in India: Current Situation & Its Solution

Recently, the annual report on 'Road Accidents in India-2022' has been published by the Ministry of Road Transport and Highways. This report is prepared by States on a calendar year basis in standardized formats provided by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) under the Asia Pacific Road Accident Data (APRAD) Base Project. It is based on data/information received from police departments of Union Territories.

The Situation of Road Accidents in India:

- According to the report, a total of 4,61,312 road accidents were recorded by states and union territories (UTs) during the calendar year 2022.
- This report shows that a total of 1,68,491 people died in road accidents while about 4,43,366 people were injured.
- According to the report, there has been an increase of 11.9% in accidents, 9.4% in deaths, and 15.3% in the number of injuries as compared to last year.

Possible Solutions Provided by the Report:

- The report stresses the urgency of adopting a comprehensive approach to address the factors contributing to these accidents (speeding, reckless driving, drunk driving, and non-compliance with traffic rules).
- The report emphasises strengthening the enforcement mechanisms, enhancing driver education and training programs, and investing in improving road and vehicle conditions.

Major Causes of Road Accidents:

Undesirable incidents and losses occurring on the road due to road traffic and probable other reasons are usually termed road accidents. There can be many reasons behind road accidents such as:-

- **High-speed vehicles:** Globally, approximately 48% of road accidents occur due to speeding. When a vehicle moves at high speed, there is very little time to react in an emergency, as a result, it becomes difficult to stop the vehicle, and road accidents occur.
- **Infrastructural problems:** At times, infrastructural issues such as the poor condition of roads also cause road accidents. Structural problems arising in mountainous areas, use of bad materials in road construction, poor design of roads, etc. are many reasons which lead to road accidents.
- **Tendency to not obey the laws:** In developing countries including India, simultaneous movement of all types of vehicles on the roads, driving on the wrong track, overtaking vehicles, etc. are considered to be the major reasons behind the accidents. People consider actions such as not wearing safety gear like helmets, breaking traffic signals, etc. as a matter of self-glorification. Along with this, delays in implementing rules, overloading of heavy vehicles, and overloading of passenger vehicles are also primary causes of road accidents.

- **Not driving the vehicle carefully:** According to the statistics of the World Health Organization, 77.8 percent of the total road accidents occurring in the world are due to the fault of the drivers.
- **Other reasons:** Driving under the influence of alcohol and drugs, not using adequate and quality safety devices etc. also increase the risk of an accident. For example, two-wheeler drivers, do not use high-quality ISI Mark helmets.

Efforts to Reduce Road Accidents:

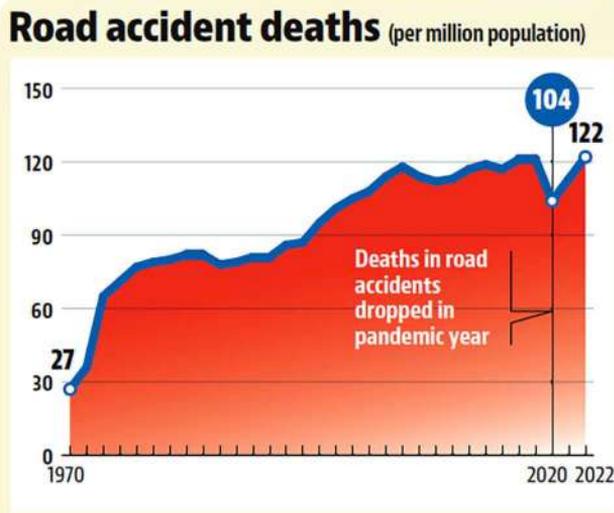
At the national and international level, many efforts are being made to prevent road accidents which are described below:

Legislative efforts and executive efforts made by the government:

- The Motor Vehicles (Amendment) Act 2019 has been enacted by Parliament which provides for road safety.
- The government has approved a 'National Road Safety Policy'. This policy includes increasing awareness about various measures, collecting data on road safety information, encouraging efficient transportation application within road safety infrastructure, enforcement of safety laws, etc. Many government departments have been entrusted with the responsibility of implementing the road safety policy on a strong basis.
- A Commission under the Chairmanship of the Chief Secretary is called upon, to establish better coordination among the Government agencies and all the State Governments on road safety, to implement technical measures to keep road safety in mind in the respective State and to minimize the number of casualties in road accidents. States have also been asked to prepare a strategy to ensure safety on the roads.
- The Government of India has constituted the 'National Road Safety Council' as the apex body to take policy decisions in matters of road safety.
- The Ministry of Road Transport and Highways has also requested all the states and union territories to set up 'Road Safety Councils' and committees at the state and district level.
- The Ministry of Road Transport and Highways has adopted a strong policy on road safety at four levels - education, enforcement, engineering (roads and vehicles), and emergency care.
- Safety accounts/data are also being collected on various selected National Highway, and Expressway (State Highway) routes.
- A Central Road Fund has been established by

the Central Government under the Central Road Fund Act 2000 to create a fund for the development and maintenance of national highways and rural roads.

- To raise funds under this, it was proposed to collect levies in the form of cess, excise, and customs duty on petrol and high-speed diesel oil under the Central Road Fund Act, 2000. A provision has been made to use this fund for the construction of roads over bridges and under bridges and other safety facilities at unmanned railway crossings.



Behavioural Efforts:

- Institutes have been established by the government to provide training to drivers.
- Emphasis is being laid on campaigns that create awareness related to safety measures while driving, such as helmets, seat belts, power steering, rear-view mirror, and road safety awareness.
- 'The Ministry of Road Transport and Highways', under innovative measures to ensure road safety, and through 'Road Safety Week', is organizing seminars, conferences, and workshops through television and radio networks, and is further developing awareness via the distribution of material on road safety, publications, advertisements in newspapers etc.
- In addition to the above measures, a chapter on road safety has been included in the school books by the government.
- A scheme to provide free treatment to those injured in road accidents has been implemented. The 25 most likely accident spots in 13 states, where 90 percent of accidents occur, have been identified and measures to avoid accidents have been implemented at these places. The National Ambulance Code has been prepared based on

the recommendations of the Working Committee on Emergency Care.

- Recently, the Ministry of Road Transport and Highways has also launched a website named, www.missionroadsafety.com on road safety, with the help of IIT Delhi. This website provides statistics about road accidents and related information.

Efforts to be Made at the International Level:

- India is a signatory to the second global high-level Conference on Road Safety held in Brazil in 2015, referred to popularly as the Brasilia declaration, which, inter-alia, resolved to halve the deaths and injuries from accidents by 2020 and to include this target in the 2030 agenda for sustainable development by the participating countries.
- In 2011, the United Nations General Assembly, in response to the rapidly increasing number of road traffic injuries and deaths worldwide, announced the Road Safety Action for 2011–2020, aimed at reducing the number of road accidents during this period. The number of deaths has to be reduced by 50 percent. For this, attention has been given to five areas-
 - » Road Safety Management.
 - » Secure infrastructure.
 - » Safe vehicle.
 - » Behaviour of road users.
 - » Post-accident response.
- The targets mentioned in Road Safety Action for 2011–2020 were renewed in the Second Decade for Action for Road Safety 2021-2030. This was proclaimed in UN Resolution A/RES/74/299 on Improving Global Road Safety with a target to reduce road deaths and serious injuries by 50 per cent by the end of 2030.

Conclusion:

Amidst increasing urbanization and increasing issues of road traffic, most people are losing their lives to road accidents. According to the report released by the World Health Organization, every year millions of people die in road accidents around the world and the number of deaths is especially high among people from poor countries. Despite this, only 28 countries in the world have implemented comprehensive laws regarding road accidents. The governments along with the public must take the issue of road accidents and associated problems seriously, ensuring road safety. India, along with the government, the private sector and many NGOs, is on this path to increase road safety. These stakeholders together are working towards reducing road accidents in India for a much safer future.

Deep Ocean Mission: Expansion of India's Maritime Capabilities

India's vast maritime resources hold immense potential for sustainable development and economic growth. Exclusive Economic Zone (EEZ) of India, extending over 2.2 million sq km, holds untapped resources of marine biodiversity, potential energy sources, and unexplored mineral deposits. Deep-sea exploration can lead to the discovery of new species, renewable energy sources, and valuable minerals, further expanding India's economic potential. Moreover, understanding the ocean's role in climate regulation is essential for mitigating climate change impacts. Oceans absorb vast amounts of carbon dioxide, helping to regulate global temperatures.

Why in News?

With a view to explore deep ocean for resources and develop deep sea technologies for sustainable use of ocean resources, Cabinet Committee on Economic Affairs (CCEA) approved the proposal of Ministry of Earth Sciences (MoES) on "Deep Ocean Mission".

Estimated Ocean Resources for India:

- Preliminary estimates indicate that 380 Million Metric Tonnes (MMT) of Polymetallic Nodules (PMN) comprising Copper, Nickel, Cobalt and Manganese are available within an allocated area of 75000 sq. km for exploration of PMN in Central Indian Ocean Basin. Just utilizing 10% of the PMN reserve available in the area, the country can meet its energy requirements for the next 100 years.
- The estimated value of these metals is about 110 billion US\$. The polymetallic sulphides are expected to contain rare earth minerals including gold and silver.

About the Mission:

- Deep Ocean Mission is a mission mode project to support the Blue Economy Initiatives of the Government of India. MoES is the nodal Ministry implementing this multi- institutional ambitious mission.
- The aim of Deep Ocean Mission is to help India in achieving target of over Rs. 100 billion "Blue Economy" through its ocean resources.
- The mission was approved at an estimated cost of Rs. 4077.0 crore for a period of five years to be implemented in a phase-wise manner. The estimated cost for the first phase for the three years (2021-2024) is Rs.2823.4 crore.

Objectives of Deep Ocean Mission:

- To address issues arising from long term changes in the ocean due to climate change.
- To develop technologies for deep-sea mission of living (biodiversity) and non-living (minerals) resources.
- To develop underwater vehicles and underwater robotics.
- To provide ocean climate change advisory services.
- To identify technological innovations and conservation methods for sustainable utilization

of marine bio- resources.

- To develop offshore based desalination techniques.
- To develop renewable energy generation techniques.
- To provide clean drinking water and explore the avenues of desalination of water as well as extracting minerals from the ocean belt.



Components of Deep Ocean Mission:

- **Development of Technologies for Deep Sea Mining, and Manned Submersible:** A manned submersible is being developed to carry three people to a depth of 6000 metres in the ocean with a suite of scientific sensors and tools. Only a few countries have acquired this capability. An Integrated Mining System is also being developed for mining Polymetallic Nodules from 6000 m depth in the central Indian Ocean. The exploration studies of minerals will pave way for the commercial exploitation in the near

future, as and when commercial exploitation code is evolved by the International Seabed Authority, an UN organization. This will help the Blue Economy priority area of exploring and harnessing of deep-sea minerals and energy.

- **Development of Ocean Climate Change Advisory Services:** A suite of observations and models will be developed to understand and provide future projections of important climate variables on seasonal to decadal time scales under this proof-of-concept component. This will support the Blue Economy priority area of coastal tourism.
- **Create awareness** amongst the public, students, academicians and user communities about the various fields of Earth system science as well as on the achievements and services rendered by MoES.
- **Technological innovations for exploration and conservation of deep-sea biodiversity:** Bio-prospecting of deep-sea flora and fauna including microbes and studies on sustainable utilization of deep-sea bio-resources will be the main focus. This will support the Blue Economy priority area of Marine Fisheries and allied services.
- **Deep Ocean Survey and Exploration:** The primary objective is to explore and identify potential sites of multi-metal hydrothermal sulphides mineralization along the Indian Ocean mid-oceanic ridges. This will additionally support the Blue Economy priority area of deep-sea exploration of ocean resources.
- **Energy and freshwater from the Ocean:** Studies and detailed engineering design for offshore Ocean Thermal Energy Conversion (OTEC) powered desalination plant are envisaged in this proof-of-concept proposal. This will support the Blue Economy priority area of off-shore energy development.
- **Advanced Marine Station for Ocean Biology:** This is aimed as development of human capacity and enterprise in ocean biology and engineering. It will translate research into industrial application and product development through on-site business incubator facilities. This will support the Blue Economy priority area of Marine Biology, Blue trade and Blue manufacturing.

Budget Estimate and Allocation:

- Rs 650 crore has been allocated in Union Budget 2022-23 (up from Rs. 150 crores during 2021-22) for India's Deep Ocean Mission. The Earth Sciences Ministry's entire budget has more than doubled to Rs 2653.51 crore in 2022-23, from Rs 1281 crore in the year 2013-14.

Progress of the Mission:

Collaboration and Assistance:

- Indian Space Research Organisation (ISRO) is one of the collaborators of the MoES for implementation of Deep Ocean Mission (DOM).
- National Institute of Ocean Technology (NIOT), an autonomous institute under the Ministry of Earth Sciences is developing a manned submersible with a capacity to carry three human beings to 6000 m ocean depth.
- The Vikram Sarabhai Space Centre (VSSC) of ISRO is involved in developing a titanium alloy human sphere of 2.1 m diameter for the above manned submersible.
- Ministry of Earth Sciences through contractual agreements with the International Seabed Authority (ISA) is carrying out exploration activities for Poly-metallic Nodules (PMN) in the Central Indian Ocean Basin and for Poly-metallic Sulphides (PMS) in parts of Central and South-West Indian ridges.

India's First and Unique Manned Ocean Mission, Samudrayan:

- It was launched on 29 October 2021 from Chennai.
- With this step India joined the elite club of nations such as USA, Russia, Japan, France and China in having such underwater vehicles for carrying out subsea activities.
- It will facilitate MoES in carrying out deep ocean exploration of the non-living resources such as polymetallic manganese nodules, gas hydrates, hydro-thermal sulphides and cobalt crusts, located at a depth between 1000 and 5500 metres.
- Preliminary design of the manned submersible MATSYA 6000 is completed and realization of vehicle has been started with various organizations including ISRO, Indian Institute of Tropical Meteorology (IITM) and Defence Research and Development Organisation (DRDO) roped-in to support the development.
- MATSYA 6000 will be ready for trials by the second quarter of 2024.

Conclusion:

"India, with its unique maritime position and growing ocean-based economy, can play a leading role in this global effort. The country's vast coastline and diverse marine ecosystems provide a rich platform for ocean science research and innovation. By investing in ocean research and sustainable ocean management practices, India can ensure a prosperous and sustainable future for its people and the planet."

India's Leadership Role in Global Disaster Management

India is all set to organise the 6th Global Disaster Management Conference from 28 November to 1 December to demonstrate its leadership role. This conference will be organized in Dehradun, the capital of Uttarakhand, under the joint aegis of Uttarakhand State Disaster Management Authority, DMICS Hyderabad and Uttarakhand State Council of Science and Technology (UCOST). The veteran actor Amitabh Bachchan has been made the brand ambassador of this conference. The conference seeks to address the important issues of disaster management along with climate change. There will be four sessions in the conference, comprising 50 technical sessions. Experts and scientists from several countries will come together to discuss disaster management issues at the conference.

- The 6th Global Disaster Management Conference will give impetus to the thinking and efforts being made at the global level to solve disaster-related challenges in the Himalayan regions. The objective of this conference is to develop Uttarakhand as a hub of climate-friendly solutions for disaster resilience and preparedness. To further add to the significance of this conference, heads of the Indian Space Research Organization, Defense Research and Development Organization, Atomic Energy Commission, Chief Scientific Advisor of the Government of India as well as representatives from the major institutions of the world, United Nations Organization, and climate experts from India and abroad have been invited.

India's role in Global Disaster Management:

- The Indian Prime Minister originally proposed for establishment of a global organization for infrastructure, which would deal with natural disasters and associated issues, at the G20 Summit held in Hamburg, Germany in 2017. Again on June 27, 2019, the Prime Minister proposed the formation of Global Coalition for Disaster Resilient Infrastructure in his meeting with Japanese Prime Minister Shinzo Abe during the G20 Osaka Summit and sought his support on this subject. Later it was agreed that India and Britain would jointly launch this global organization at the UN Climate Summit to be held in September 2019. This proposal was eventually accepted by the global community and today this organization is working diligently in the field of disaster management.
- The Union Cabinet of the Government of India on August 13, 2019, approved the formation of the International Coalition for Disaster Resilient Infrastructure, setting up its Secretariat in Delhi. The organisation was launched on September 23, 2019, at the headquarters of the United Nations in New York. Further, the Government of India approved the Secretariat of this organization to be constituted as a Society under the Societies Registration Act, 1860 and the responsibility related to this rests with the National Disaster Management Authority. The Indian Cabinet also approved the expenditure of Rs 480 crore for the secretariat of this organization. In this context, India once again exemplified its environmental activism by proposing the formation of the

International Coalition on Disaster Resilient Infrastructure and the formation of its Secretariat on the lines of the International Solar Alliance.

- India was unanimously elected as the co-chair of the Global Facility for Disaster Reduction and Recovery for the year 2020. The organizations chairing it included the Africa Caribbean and Pacific Group of States (ACP), the European Union and the World Bank. The decision to make India the co-chair of the Consultative Group of the GFDRR was taken at the sixth session of the Global Facility for Disaster Risk Reduction in Geneva, Switzerland in May 2019. In this context, GFDRR, together with the United Nations Office for Disaster Risk Reduction and the European Union, organized the Fourth World Reconstruction Conference on Disaster Risk Reduction on 13 and 14 May 2019.

What is GFDRR?

- Global Facility for Disaster Risk Reduction or GFDRR is a global partnership, specifically a funding mechanism to provide financial assistance to disaster risk challenges around the world. It is managed by the World Bank and helps developing countries understand the risks associated with natural disasters and climate change. Its secretariat is based in Washington DC and it has satellite offices in Brussels and Tokyo. It currently partners with over 400 local, national, international and regional partners to provide disaster risk knowledge and literacy, financial assistance and technical assistance to developing countries. It helps nations implement the Sendai Framework for Disaster Risk Reduction.
- The countries included as members are Australia, Austria, Germany, India, Italy, Japan, Luxembourg, Mexico, Norway, Serbia, Sweden, Switzerland and America. Apart from this, its members also include Africa, the Caribbean, the Pacific Secretariat, the European Union, UNDP, World Bank Group and UNISDR. Its observer member countries include Belgium, Canada, France, Mozambique, Spain, Turkey, Britain and Vietnam. The World Meteorological Organization, the Islamic Development Bank, the Organization of Islamic Cooperation, the International Federation of Red Cross and Red Crescent Societies and the Global Network of Civil Society

Organizations for Disaster Reduction are also its observer members.

India and GFDRR:

- India aspires to play a leadership role in global disaster management. Therefore India in 2015 became a member of the Consultative Group of GFDRR. India proposed to form a global organization in this direction at the Hamburg Summit of G20 in 2017. Strengthening this idea, India expressed its desire to co-chair the Consultative Group of the GFDRR in October 2018. After this, India, the United Nations Office for Disaster Risk Reduction, the United Nations Development Program and the World Bank organized an International Workshop on Disaster Resilient Infrastructure on 19 and 20 March 2019. Earlier, the Government of India had constituted a task force to give suggestions for the development of a global organization for the development of such infrastructure, which also took the opinion of the National Disaster Management Authority. NDMA also prepared a blue print in this regard.

Report of the United Nations Office for Disaster Risk Reduction, 2018:

- The United Nations Office for Disaster Risk Reduction released a serious report on the disaster on October 13, 2018. This report states that in the last 20 years i.e. between 1997 and 2018, India had suffered an economic loss of \$ 80 billion due to natural disasters. This amount was equivalent to \$80 billion worth of remittances sent by the Indian diaspora (World Bank's 2018 report). Even our bilateral trade with ASEAN countries and China was worth 81 billion dollars and 84 billion dollars (2018 data). There have been several such reports that showcase how disasters not only caused the loss of lives and property but impacted the entire economy at large.
- The report further highlighted the impacts that disasters had made. For instance, the report said 91 percent of all disasters such as floods, storms, drought, heat waves and other severe weather conditions in the last 20 years have caused economic losses of \$3 trillion globally. The report emphasised that every year globally, 520 billion dollars of economic loss was caused due to disasters and due to this, 26 million people were included in the category of poverty. Presently in 2023, in the context of G20 economies, the combined estimated annual average loss due to disasters in the G20 countries alone is USD 218 billion, equivalent to 9% of the average annual investment in infrastructure made by them.
- In 2019, more emphasis was laid on the formation of a global organization after the natural disaster at port city of Beira, Mozambique. On March

20, 2019 34 countries, together decided that the interim secretariat of the Global Coalition for Disaster Resilient Infrastructure will be established in New Delhi, India. The Global Coalition for Disaster Resilient Infrastructure proposed by India was supported by the United Nations, the World Bank and many other multilateral development banks.

Global Strategy for Disaster Management:

- Till now, three strategies or action plans have been made at the global level to deal with natural disasters. The first was the Yokohama Strategy and Plan of Action in 1994, which was related to a safer world. This subsequently led to the formation of the HUGO Framework for Action for 2005 to 2015. Eventually, on March 18, 2015, the Sendai Framework for Disaster Risk Reduction was adopted for 2015 to 2030.
- The Sendai Framework states that every \$1 spent on disaster risk reduction will yield \$7 in benefits. It is true that buildings, highways, railways, everything gets affected and destroyed due to natural disasters. The more the risk of such disasters is reduced, the more assets can be protected. India has also started intensifying its environmental diplomacy on the similar vision. In September 2019, India organized CoP-14 of the United Nations Convention to Combat Desertification in New Delhi. India organized this convention in 1994 for the first time. In this meeting, India emphasized dealing with the problem of land degradation and said that by 2029, it will rehabilitate 50 lakh hectares of land by taking it out of the challenge of land degradation and desertification. Thus, at present India is giving positive ideas to deal with environmental challenges at the global level. UNCCD's Science and Technology Committee in New Delhi also released the Soil Organic Carbon Report, which states that it is important to focus on soil organic carbon for sustainable land management at the global level.
- In recent times, India has done several meaningful works in this direction which has attracted the attention of the entire global community. The National Disaster Reaction Force (NDRF), the largest fast-reaction force in the world devoted to disaster response, was established by India as part of its ongoing efforts to mitigate and respond to all kinds of disasters. India has been using its military increasingly in its global humanitarian aid. As part of its "Neighbourhood First" diplomatic strategy, many of the recipient nations have been in South and Southeast Asia. India also adopted the Sendai Framework which showcases its commitment to disaster mitigation and a safer world.

Electoral Bond: Electoral Fairness Vs Right to Information

India stands as a model for many emerging democracies around the world. Free and fair elections are the hallmark of a well-functioning democracy. While we are justifiably proud of our democracy, there are a number of areas which need to be strengthened for us to realize the true potential of a well-functioning democracy. Our election system, from the selection of candidates, to the manner in which funds are raised and spent in election campaigns, are in dire need of significant changes. The financing of elections has become a major issue in the past few decades. It is widely believed that the cost of fighting elections has climbed far above the legal spending limits. This has resulted in lack of transparency, widespread corruption and the pervasiveness of so-called 'black money'. -Committee on Electoral Reforms, Ministry of Law and Justice, Government of India

Context:

Recently, a five-judge bench of the Supreme Court led by Chief Justice of India D.Y. Chandrachud has started hearing a batch of petitions challenging the constitutional validity of the Centre's electoral bonds scheme. However, the central government told the Supreme Court that voters do not have the right to know about the funding of political parties as per the Constitution.

About Electoral Bonds:

"Electoral Bonds" are interest-free "bearer instruments", which means that they are payable to the bearer on demand. They were first announced during the Union Budget session in 2017. Notified on January 2, 2018, the scheme introduced instruments through which anyone in the country could donate money to political parties anonymously. A report by the Association for Democratic Reforms (ADR) found that more than 55% of the funding for political parties came through electoral bonds.

Features of the Electoral Bond Scheme:

- Electoral Bond would be a bearer instrument in the nature of a Promissory Note and an interest free banking instrument. A citizen of India or a body incorporated in India will be eligible to purchase the bond.
- Electoral bond would be issued/ purchased for any value, in multiples of Rs. 1,000, Rs. 10,000, Rs. 1,00,000 Rs. 10,00,000 and Rs 1,00,00,000 from the specified branches of the State Bank of India.
- The purchaser would be allowed to buy electoral bonds only on due fulfillment of all the extant KYC norms and by making payment from a bank account. It will not carry the name of payee.
- Electoral Bonds would have a life of only 15 days during which it can be used for making donation only to the political parties registered under section 29A of the Representation of the Peoples Act, 1951 (43 of 1951) and which secured not less than 1% of the votes polled in the last general election to the House of the People or a Legislative Assembly.
- The bonds under the Scheme shall be available

for purchase for a period of 10 days each in the months of January, April, July and October, as may be specified by the Central Government. An additional period of 30 days shall be specified by the Central Government in the year of the General election to the House of People.

- The bond shall be encashed by an eligible political party only through a designated bank account with the authorized bank.

Electoral Bonds Scheme Notified
To help cleanse the political funding system in the country

- Nature**
 - Bearer instrument in the nature of a Promissory Note
 - Interest free banking instrument
- Eligibility**
 - A citizen of India or a body incorporated in India
 - On fulfillment of all the extant KYC norms
 - By making payment from a bank account
- Value**
 - Issued/ Purchased in multiples of Rs.1,000, Rs.10,000, Rs.1,00,000, Rs.10,00,000 and Rs.1,00,00,000
 - Available from the Specified Branches of the State Bank of India (SBI)
- Lifespan**
 - Shelf life of only 15 days
 - Can be used for making donation only to the political parties registered u/s 29A of the Representation of the Peoples Act, 1951
- Period of Purchase**
 - Available for purchase for a period of 10 days each in the months of January, April, July and October, as may be specified by the Government

Electoral Bonds and Electoral Transparency:

- Since their inception, electoral bonds have been a subject of significant controversy, with many questioning whether they have achieved their intended goals or have instead facilitated opacity in political financing. One of the main criticisms of electoral bonds is the lack of transparency regarding the source of funds.
- The donor's identity is not disclosed to the public or the Election Commission, which makes it difficult to track the origin of political contributions. This opacity has led to concerns that electoral bonds could be used to launder illicit money into the political system.
- In 2017, then Reserve Bank of India (RBI) Governor Urjit Patel spoke about the possibility of misuse of electoral bonds, especially through the use of shell companies. He suggested that the electoral bonds be in digital form, instead of being in physical form.
- It has also been observed that the party in power gets most of the funding and this uneven funding

hasn't been rectified even with the introduction of the electoral bond system. Critics argue that this undermines the principle of a level playing field in democratic elections.

- Electoral bonds are exempted from disclosure requirements. Parties inform the ECI of the aggregate donations received through EBs, but give no details of the donors, which they are required to do in case of donations in cash or by cheque or bank transactions over Rs.20,000 each. This raises the doubt regarding the transparency of the donations. However, the government argues that this lack of transparency in donations through Electoral Bonds is to maintain the privacy of donors.

Electoral Bonds and Right to Information Act:

- While electoral bonds provide no details to the citizens, the said anonymity does not apply to the government of the day, which can always access the donor details by demanding the data from the State Bank of India (SBI). This implies that only taxpayers are in dark about the source of the donations. It may also be noted that the printing of these bonds & SBI commission for facilitating the sale and purchase of the bonds is paid from the taxpayers' money by the central government.
- Critics argue that Electoral bonds infringe the citizen's fundamental 'Right to Know'. An unreasonable and irrational restriction on information at the cost of larger public interest is a severe blow to the very fundamentals of transparency and accountability. Making the political class even more unanswerable and unaccountable by withholding crucial public information goes against the very spirit of 'Democracy and Rule of law'.
- Supreme Court has observed that the current system of Electoral Bonds has created an "information blackhole". In testing the validity of electoral bonds (EBs), used mainly by corporate houses to donate huge sums to political parties, the Supreme Court prima facie perceived certain shortcomings in the scheme's transparency. However, the Union government maintains that revealing the identity of donors would expose them to retribution or victimization as has been acknowledged by parties in Parliament.

Committees on Electoral Funding:

A few Government reports have looked at state funding of elections in the past, including:

- Indrajit Gupta Committee on State Funding of Elections (1998)
- Law Commission Report on Reform of the Electoral Laws (1999)

- National Commission to Review the Working of the Constitution (2001)
- Second Administrative Reforms Commission (2008)
- The Indrajit Gupta Committee (1998) endorsed state funding of elections. The Committee recommended two limitations to state funding. Firstly, that state funds should be given only to national and state parties allotted a symbol and not to independent candidates. Secondly, in the short-term state funding should only be given in kind, in the form of certain facilities to the recognized political parties and their candidates.
- The 1999 Law Commission of India report concluded that total state funding of elections is "desirable" as long as political parties are prohibited from taking funds from other sources. The Commission concurred with the Indrajit Gupta Committee that only partial state funding was possible given the economic conditions of the country at that time.
- The National Commission to Review the Working of the Constitution, 2001, did not endorse state funding of elections but concurred with the 1999 Law Commission report that the appropriate framework for regulation of political parties would need to be implemented before state funding is considered
- The Report "Ethics in Governance" of the Second Administrative Reforms Commission also recommended that "a system for partial state funding should be introduced to reduce the scope of illegitimate and unnecessary funding of expenditure for elections."

Way Forward:

- Attorney General of India R. Venkataramani has backed the government's electoral bonds scheme in the Supreme Court, extolling it as a measure which promotes contribution of "clean money" to political parties. Besides, the Attorney General argued that citizens could not have a "general right to know anything and everything without being subjected to reasonable restrictions [Article 19(2)]".
- The proponents of electoral bonds argue that they promote transparency by ensuring that political parties receive donations through formal banking channels, which can be audited by government authorities. Furthermore, the identity of the donors remains confidential, reducing the risk of retaliation or intimidation for their political affiliations.

India Raising Its Voice for Reforms in World Trade Organization

The World Trade Organization (WTO) is the only global international organization dealing with the rules of trade between nations. It works on lowering the trade barriers through negotiation and operates under the principle of non-discrimination. India is a founding member of the World Trade Organization and has been showing its commitment to its rules since 1995. However, with time, the structure, functions and nature of the World Trade Organization have witnessed certain changes which have affected the interests of developing countries. India has from time to time raised its voice on global forums for necessary reforms in the World Trade Organization.

- In this series, it has recently appealed for reform in the dispute settlement system of WTO. The 'Ministerial Conference', which is one of the biggest meetings of the World Trade Organisation, is to be held four months from now. Before this, India had emphasised that the reforms in the World Trade Organization had become necessary.
- On the other hand, the USA, after its defeat in many controversial cases in the World Trade Organization, has paralyzed the Dispute Settlement System in a way. The US wants the WTO to have a system that is more dependent on negotiations and does not have an appellate body to settle disputes because this is an expensive and time-consuming process. The WTO's Dispute Settlement System has been in a state of uncertainty since 2017, when the US started blocking appointments to the Appellate Body of the Dispute Settlement System. Appointments become necessary for the proceedings of the Appellate Body of the WTO after the retirement of judges. By 2019, the dispute settlement system became non-functional and as of 2020, all seven posts in the Appellate Body of the WTO are vacant.
- This has led to a situation where decisions given by the WTO's Dispute Settlement Body cannot be implemented as there is no system of appeal against its decisions in trade disputes. Generally, 70 percent of the decisions given by the Dispute Settlement Body are appealed to the Appellate Body. In this regard, many major trading countries have said in different global forums, like the G20 meeting, that it is necessary to work in the direction of making WTO's dispute settlement system become functional by the end of 2024.
- There are two main ways to settle or resolve trade disputes in the World Trade Organization. Whenever any complaint is filed in WTO, either the parties (two or more countries having a trade dispute) resolve the disputes themselves or it is sent to the Dispute Settlement Body for adjudication. Appeals against the decisions given by the Dispute Settlement Body can be made to the Appellate Body of WTO and India is currently

emphasizing correcting the proceedings of this body. USA, which had caused problems in this dispute resolution system, is now informally mobilizing some countries on this issue. However, there is a problem with promoting any such informal process because many other WTO members who have less presence at the ambassadorial level in WTO may have to face challenges at the level of the US' participation in this informal process.

India raises the issue of the definition of e-commerce in WTO:

- India has recently raised the issue of a clear definition for e-commerce trade in goods and services in WTO and has urged the World Trade Organization to give a clear definition of e-commerce so that there is no scope for doubt or confusion on this issue in the minds of developing countries. At present, the market of e-commerce is continuously increasing in developing countries like India and due to unclear definitions, if any unnecessary restrictions are imposed on this sector by the World Trade Organization under the pressure of developed countries, it may affect the interests of these countries. Presently, the World Trade Organization defines e-commerce as a platform for electronic production, distribution, sale or delivery of goods and services. This includes products such as digitally transmitted books, music, videos etc.
- The United States, nevertheless, has indirectly approved the concerns that India has been expressing on the global platform regarding e-commerce. On October 25, 2023, the United States distanced itself from the negotiations regarding e-commerce under the World Trade Organization. The United States took this decision in view of the future threats to national security that are posed by unbridled digital transactions. The US has been one of those countries which were in favour of encouraging maximum commerce at the global level.
- India's stance on this, however, was quite restrained from the beginning and the Indian PM himself had warned about its danger from global forums. Provisions regarding e-commerce

were the major reasons why India decided to stay out of the Regional Comprehensive Economic Partnership (RCEP), a trade agreement between ASEAN and its five partner countries.

- With India wanting effective regulation of global digital trade and with the United States' decision to distance itself from WTO, the possibility of sparking new discussion regarding the use of data and source code by global digital companies has emerged. GTRI, an agency that researches global business, on October 26, 2023, issued a framework that says India believes that there should be strong regulations regarding global digital trade. If this does not happen, several challenges may arise.
- Another biggest concerns of India is data security. India believes that under WTO, such rules can be made which can be in favour of the companies of developed countries and other countries may be forced to provide them with markets. Further, India is concerned regarding its domestic companies that are performing very well in digital transactions and how these companies may face discrimination in other countries. It is noteworthy that India has not yet made a national policy on e-commerce. The reason for this is believed to be that it is waiting for other countries to clear their stance on this issue.

CCI market study on e-commerce in India:

- A market study on e-commerce in India was initiated by CCI in April 2019 with the objective

of understanding the functioning of e-commerce in the country as well as its implications for markets and competition. Further, its objective was to identify the barriers, if any, to competition arising from e-commerce and keeping these in mind, to ascertain the Commission's priorities for implementation and advocacy. This study has helped in gathering useful insights and information with respect to the key features of e-commerce in India, different business models of companies that are engaged in e-commerce and various aspects of commercial agreements between market participants engaging in e-commerce.

- The e-commerce market is expanding very rapidly in India. According to a report, the size of e-commerce in India will increase to \$40 billion by 2030. This was earlier worth just \$4 billion in 2019. This growth is attributed to the digital revolution. The number of internet users in India is increasing, which in turn, is the reason for the huge increase in online shopping. Internet access in India is stretching out at a very fast pace with Tier-3 and Tier-4 cities of India becoming digitalized and Internet reaching rural India as well as in other areas. Due to this, there is a lot of change in the behaviour and patterns of the customers there and the need to regulate such revolution is much more evident.


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1 Ruling On Use of Donor Gametes Through Surrogacy

Why in News:

The Supreme Court has protected the right to parenthood of a woman suffering from a rare medical condition, Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome, by staying the implementation of a law that prohibited her motherhood through surrogacy.

What is Mayer-Rokitansky-Küster-Hauser Syndrome?

- Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome is a disorder that primarily affects the female reproductive system. This condition causes the vagina and uterus to become underdeveloped or absent.
- In the embryo, this structure develops into the uterus, fallopian tube, cervix and upper part of the vagina.
- This disease usually occurs in 1 in 4,000 to 5,000 girls.
- Women with such conditions are unable to conceive due to the absence of a uterus but assisted reproductive technologies such as surrogacy may be an option.

Key Points Related to the case:

- A two-judge bench stayed the operation of a law to protect a woman suffering from the rare medical condition Mayer Rokitansky Kuster Hauser syndrome.
- A government notification amended the law banning the use of donor gametes and stating that 'willing couples' will have to use their own gametes for surrogacy.
- A petition was filed in the Supreme Court challenging the amendment as a violation of a woman's right to become a parent.
- Section 2(R) of the Surrogacy Act 2021, recognizes a situation when a medical condition would require the couple to opt for gestational surrogacy to become parents.

Observations by the Court:

- Gestational surrogacy was 'women-centred'. It held that the decision to opt for surrogacy was taken due to the woman's inability to become a mother due to a medical or congenital condition.
- The court said the amendment cannot contradict Rule 14(A), which clearly accepts medical conditions, including absence of a uterus, as valid reasons for requiring gestational surrogacy.

Way Forward:

This Supreme Court decision not only upholds the right to become parents, but also reinforces the importance of gestational surrogacy as a woman-centric solution for individuals facing medical conditions in their journey to parenthood.

2 New Guidelines for Appointment of Director General of Police

Why in News:

Recently, the Union Public Service Commission (UPSC) in a revised guidelines said that only police officers with at least six months of service before retirement will be considered for appointment as Director General of Police of the state.

Key Points related to the guidelines:

- The guidelines state that officers will not be included in the panel unless they themselves are willing.
- These guidelines allow officers with 25 years of experience to qualify for the post of DGP instead of 30 years of superannuation.
- This guideline will ensure that the appointed DGP has a reasonable tenure to serve in the post, thereby preventing short tenures and promoting stability in the leadership of state police forces.

Appointment Selection Process:

- In the appointment selection process, a committee comprising the UPSC Chairman, Union Home Secretary, State Chief Secretary, State DGP and a Central Police Organization Chief will select three officers on the basis of merit.
- The number of officers involved in the appointment process cannot exceed three, but in exceptional circumstances, less than three officers can be involved.

Supreme Court's instructions on the police reform process:

- The State Security Commission (SSC) should be established to check government influence on police, establish policy guidelines and evaluate the performance of state police.
- The appointment process will be made through a transparent, merit-based process with a minimum tenure of two years.
- Prakash Singh case has given important directions to promote police reforms in India after 2006, to improve politicization, lack of accountability and weaknesses.

- Minimum tenure of two years is mandatory for operational police officers, including Superintendent of Police.
- The National Security Commission (NSC) aims to set up a panel with a minimum two-year tenure requirement for the selection and appointment of heads of central police organisations.

Way Forward:

The objective of the new appointment process is to increase transparency, fairness and efficiency in the process of appointment of DGP in the states and to strengthen the professionalism and effectiveness of the state police forces across the country.

3

Stop Film Piracy

Why in News:

The Ministry of Information and Broadcasting has set up an institutional mechanism of nodal officers to receive complaints against piracy and direct intermediaries to remove pirated content on digital platforms.

About Piracy:

- Piracy refers to the duplication of copyrighted material which is then sold in the 'grey' market at significantly lower prices. This content includes software, games, e-books, music and movies.
- Any form of copyright infringement can be called piracy.
- The gray market is an unofficial market for financial securities.

Issues related to film piracy:

- The instances of piracy have increased with the spread of the internet, since everyone is interested in watching movie content for free.
- Nevertheless, piracy is a big threat not only to the film industry but to the entire economy.
- Film piracy causes a loss of approximately Rs 20,000 crore to the entertainment industry every year.
- There is no institutional monitoring mechanism to take direct action on pirated film content except legal action under the Indian Penal Code 1860 and Copyright Act 1957.
- The Act has been amended to include provisions against film piracy, including digital piracy since the last significant amendment was made in 1984.

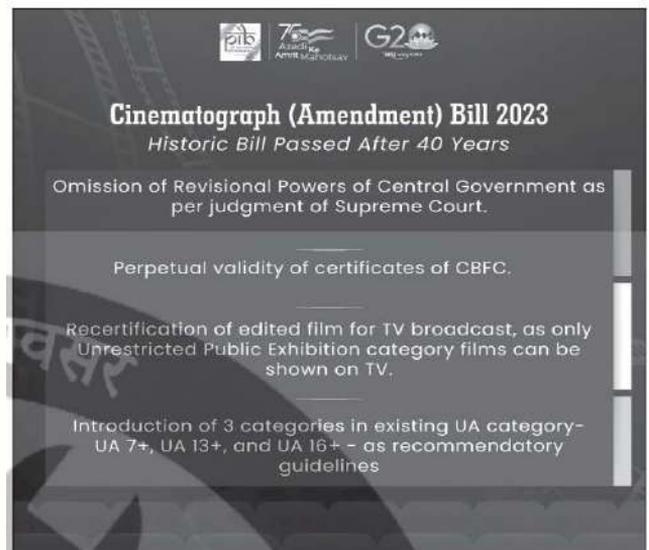
Provision of punishment for Piracy:

- The amendment includes stricter punishment of minimum imprisonment of 3 months and a fine of Rs 3 lakh, which can extend to 3 years.

Further, it includes imprisonment and a fine of up to 5% of the audited gross production cost.

Who can Apply?

- The original copyright holder or any person authorized by him can apply to the nodal officer for the removal of pirated material.
- If a complaint is made by a person who does not hold the copyright or is not authorized by the copyright holder, the nodal officer can hold hearings on a case-by-case basis to decide the genuineness of the complaint before issuing the directions.



Cinematograph (Amendment) Bill 2023:

- Section 6AB of the Act provides that no person shall use an infringing copy of any film for exhibiting to the public for profit at any exhibition place.
- This Act constitutes the Central Board of Film Certification (CBFC) to certify films for exhibition.
- This bill prohibits carrying out or promoting unauthorized recording and exhibition of films.

Way Forward:

The Indian government will have to make efforts to focus on good films and take strict action against those involved in film piracy. This includes provisions of offences, including an attempt unauthorized recording, against film piracy and digital piracy.

4

Changes in Provision of leave for women soldiers

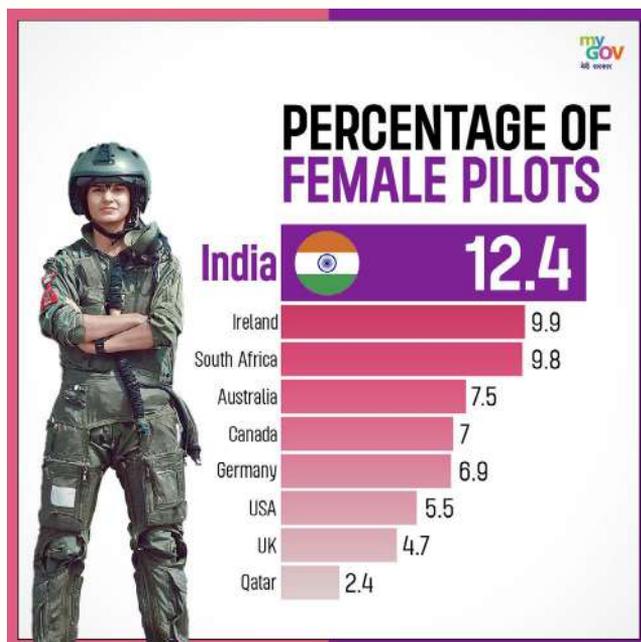
Why in News:

With the armed forces now inducting women as soldiers, sailors and air warriors under the

Agneepath scheme, the Defense Ministry has recently approved a proposal to give them maternity benefits, child care and adoption leave at par with male officers.

Key Features:

- Presently women officers are provided 360 days of childcare leave in their total service career.
- This decision is in line with the policy of inclusive participation of all women in the armed forces, irrespective of their rank. With the recruitment of Women Agniveers, the Armed Forces will be empowered by the bravery, dedication and patriotism of women soldiers, sailors and air warriors to protect the land, sea and air borders of the country.
- There is a provision for one month leave without pay in exceptional cases and extension of leave for 30 days in case of miscarriage.
- The new proposal will benefit only those women soldiers, sailors and air warriors who are included in the 25% Agniveer inducted into the three services on the basis of merit after completing four years of service.



Current status of women in the Army:

- More than 7,000 women personnel are serving in the Indian Army, followed by 1,636 women military personnel in the Indian Air Force and 748 in the Indian Navy.
- Apart from women serving at officer-level ranks in all three armies, there are also women as soldiers, sailors and air warriors.
- This decision will improve the working conditions of women in the Army and help them

better balance the spheres of professional and family life.

- Currently, women officers get 180 days of maternity leave with full pay for up to a maximum of two children.
- The Army, Air Force and Navy began inducting women as Short-Service Commission (SSC) officers in 1992.

Way Forward:

This step will go a long way in dealing with women-specific family and social issues related to the armed forces. The working conditions of women in the army will improve and they will be able to better manage the balance between their professional and family life.

5 Ethics Committee

Why in News:

The Ethics Committee of the Lok Sabha is conducting proceedings against Mahua Moitra on charges of taking bribes for putting questions in the Lok Sabha. If the allegations are proven, she may lose her membership in the House.

About the Ethics Committee of Lok Sabha:

- The committee investigates every complaint relating to unethical conduct of a Lok Sabha member that is referred to it by the Speaker and makes such recommendations as it deems appropriate.
- The members of the Ethics Committee are appointed by the Chairman for a term of one year. The committee have a total of 15 members.

How it works?

- Any person can complain against a Member through another Lok Sabha MP, along with evidence of the alleged misconduct, and an affidavit stating that the complaint is not "false, frivolous, or vexatious."
- If any Lok Sabha member himself/herself makes the complaint, then an affidavit is not required.
- The Speaker can send any complaint against any MP to the ethics committee. The committee conducts a prima facie investigation before deciding whether to investigate a complaint. It makes its recommendations after evaluating the complaint.
- The committee presents its report to the Speaker, who asks the House whether the report should be considered.

History of Ethics Committee:

- Presiding Officers' Conference, 1996 held in Delhi first mooted the idea of ethics panels for

- the two Houses (Lok Sabha and Rajya Sabha).
- Rajya Sabha Chairman K R Narayanan constituted the Ethics Committee of the Upper House on 4th March 1997 to oversee the Moral and Ethical conduct of members and examine cases of misconduct referred to it.
- In the case of Lok Sabha, a study group of the House Committee of Privileges in 1997 recommended the constitution of an Ethics committee, but its recommendation was not implemented.
- The Committee of Privileges finally recommended the constitution of an Ethics Committee during the 13th Lok Sabha.
- Then late Speaker, G M C Balayogi, constituted an ad hoc Ethics Committee in 2000, which became a permanent part of the House only in 2015.

6

Annual Survey of India's City-Systems (ASICS) 2023

Why in News:

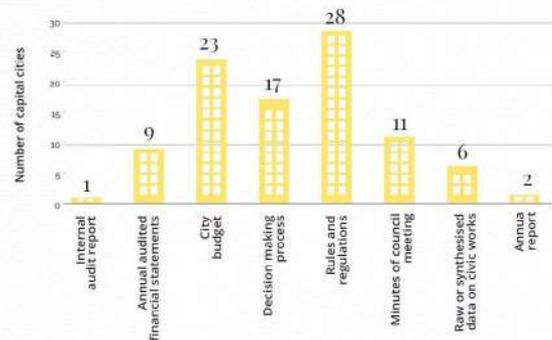
An Annual Survey of India's City-Systems (ASICS) 2023 of Indian cities shows that a majority of local governments are financially dependent on their State governments. The report was published by the Janaagraha Centre for Citizenship and Democracy, a non-profit institution. The Survey highlighted various limitations and challenges faced by Indian cities in terms of financial autonomy, governance structures, and transparency.

Key Points of the survey:

- There are disparities in the level of influence and control over finances across different city categories, including megacities (>4 million population), large cities (1-4 million), medium cities (0.5 mn-1 million), small cities (<0.5 million).
- The survey shows that while megacities have more say over their finances, their mayors do not have a five-year tenure and are not directly elected.
- On the other hand, more mayors in smaller cities have a five-year tenure and are directly elected, but lack a say on the city's finances.
- The report also shows that mayors and councils have limited power in staff appointments and promotions.
- Cities especially lack control over their senior management teams who are deputed directly by State governments, which makes it tough to initiate disciplinary proceedings against them if needed.

- Only 11 of the 35 States/Union Territories have enacted the Public Disclosure Law that mandates publishing of key civic data.
- Due to poor control over the appointment of staff, the local governments suffer from high levels of unfilled posts. Data show that 35% of posts in India's municipal corporations are vacant.
- The vacancy progressively worsens with 41% posts being vacant among municipalities and 58% being vacant in town panchayats.
- A comparison with other metropolises such as New York, London and Johannesburg shows that such a crippling shortage of staff is limited to Indian cities.
- There are 5,906 city workers in New York and 2,936 in London for every one lakh population compared to just 317 in Bengaluru, 586 in Hyderabad, and 938 in Mumbai.
- Cities such as New York have also been empowered to impose taxes, approve their budget, invest and borrow without approval.

AVAILABILITY OF CIVIC DATA VARIES SIGNIFICANTLY ACROSS CAPITAL CITIES



Source: ASICS report

About Urban Local Government:

- Urban local governments were established with the aim of democratic decentralization.
- There are eight types of urban local governments in India – Municipal Corporation, Municipality, Notified Area Committee, Town Area Committee, Cantonment Board, Township, Port Trust, and Special Purpose Agency.
- The 74th Amendment Act related to Urban Local Government was passed in 1992. It came into force on 1 June 1993.
- Part IX-A added and includes provisions from Articles 243-P to 243-ZG.
- The 12th Schedule was added to the Constitution. It contains 18 functional objects

of municipalities and relates to Article 243W.

Conclusion:

The survey highlights the dire state of urban local governance. The need of the hour is to provide real autonomy in terms of financial and executive to the urban administration so that they can work more efficiently and people-friendly.

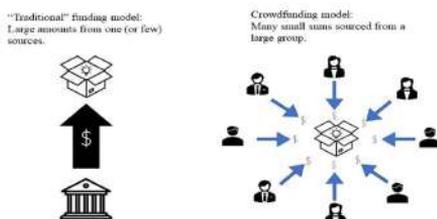
7 Crowdfunding for Terrorism Financing

Why in News:

According to a recent FATF report, an Indian extremist group, PFI, under investigation utilized well-structured networks, both offline and online, to raise funds, including the circulation of QR codes and account details. Crowdfunding is a significant global market in which innovative fundraising method is used by people worldwide for legitimate projects, ideas, and business ventures. Experts have anticipated continued growth and evolution in this area. However, this market can be exploited by bad actors, especially by extremist and terrorist groups who take advantage of permissive environments.

FATF Study on Crowdfunding for Terrorism Financing:

- The Financial Action Task Force (FATF) conducted its first comprehensive international study on terrorist financing (TF) associated with crowdfunding.
- Crowdfunding encompasses various methods, including formal platforms, social media, messaging apps and hybrid digital and physical approaches.
- Terrorists rely on multiple techniques to raise funds and often combine various methods.



Four Ways Crowdfunding Can Be Misused:

Misuse of Humanitarian, Charitable, or Non-Profit Causes:

- Individuals, unaffiliated with registered charities, launch financial appeals that appear to support humanitarian causes but fund terrorism.
- Charities may launch fundraising campaigns

but divert funds away from advertised humanitarian activities.

- Non-profit organizations (NPOs) crowdfunding for legitimate purposes might become victims of extortion in high-risk environments.

Misuse of Dedicated Crowdfunding Platforms or Websites:

- In 2022, there were over 6 million crowdfunding campaigns worldwide, making it difficult to detect illicit activity.
- Specialized platforms emerged to serve individuals banned from mainstream platforms, including ethnically or racially motivated terrorist (EoRMT) groups, like PFI.
- These actors may use crowdfunding for activities promoting hate or violence, even if they don't meet the threshold of terrorism.

Misuse of Social Media Platforms and Messaging Apps:

- Social media and online messaging services are integral to the success of crowdfunding campaigns for terrorists.
- Terrorist actors use these platforms strategically to share campaign links, recruit supporters, and offer advice on avoiding detection.
- Algorithms on social media reinforce extremist beliefs and lead users to specific fundraising causes.

Interaction of Crowdfunding with Virtual Assets:

- Crowdfunding now incorporates funding options tied to virtual assets (e.g., cryptocurrencies like Bitcoin).
- Anonymity-enhancing services, such as tumblers and mixers, can be used to conceal the origin and destination of funds linked to TF.
- However, the use of virtual assets for TF crowdfunding campaigns varies due to conversion challenges and value fluctuations.

Challenges and Best Practices:

- Law enforcement faces challenges in proving funds were used for terrorism-related offenses.
- Crowdfunding operations' complexity, lack of data, and anonymizing techniques complicate tracing efforts.
- Intermediary platforms often lack expertise and mechanisms for flagging potential TF activity.
- Best practices include improving understanding of the crowdfunding industry, conducting outreach, and enhancing information sharing.

Way Forward:

The FATF report is an important contribution to understanding the risks posed by crowdfunding for TF. It highlights the need for law enforcement, financial institutions, and intermediary platforms to work together to mitigate these risks.



International Issue



1 Akhaura-Agartala Rail Link

Why in News:

The Akhaura-Agartala Rail Link Project and Khulna-Mongla Port Rail Line were jointly inaugurated by the Prime Ministers of India and Bangladesh.

Key Points related to the project:

- This rail link is seen as the first step to connect Tripura, Mizoram and southern Assam with Kolkata via Bangladesh instead of the longer route via Guwahati.
- This project will significantly reduce the time and distance required from Kolkata to reach Tripura, Southern Assam and Mizoram to the rest of India.
- Akhaura-Agartala Cross-Border Rail Link Project is supported with a grant-in-aid of Rs.392.52 crore.
- This rail link is 12.24 km long and consists of 6.78 km of dual gauge rail line in Bangladesh and 5.46 km in Tripura.



- Akhaura Junction, located in Brahmanbaria district of Bangladesh, is part of Chittagong Division, and has a rich history of commercial and cultural ties with the northeastern region of India since the colonial era.
- Akhaura Junction was used by people from the Northeast during the 1950s and 1960s for access to the market of East Pakistan as well as for transit to Kolkata.
- The Akhaura-Agartala project was revived in 2010, when both countries signed an agreement to reconstruct the link.

Trading Profit:

- This link project will boost India-Bangladesh trade in agricultural products, tea, sugar, construction goods, iron, steel and consumer goods as well as people-to-people ties.
- It will facilitate smooth cargo movement between

Chattogram and Mongla ports in Bangladesh and various states in India.

About Khulna-Mongla Port Rail Line:

- It is a broad-gauge railway line, which aims to connect the country to Mongla port.
- This project is India's first line of credit to Bangladesh in 2010 with a total project cost of \$388.92 million.
- Mongla is the second largest port of Bangladesh and the new line will provide connectivity to the port by connecting to the existing rail network of Khulna.

Way Forward:

This rail link project will promote multi-dimensional cooperation between the two countries ranging from traditional tourism, health and education sectors to nuclear science, space and information technology, environment, climate change, cyber security, ICT, space technology, green energy and blue economy.

2 SCO Council Meeting in Bishkek

Why in News:

The External Affairs Minister of India represented India in the 22nd meeting of the Council of Heads of Government (CHG) of the Shanghai Cooperation Organization (SCO) in Bishkek, the capital of Kyrgyzstan. The main issues highlighted in this meeting were the G20 New Delhi Summit and the Israel-Hamas war.

Key Points of the meeting:

- A total of 14 documents were approved at the Council of Heads of Government meeting in Bishkek, covering the administrative, budgetary and financial responsibilities of the group.
- The Global Council supported efforts to upgrade and overhaul economic governance frameworks as well as a fairer multilateral trading system.
- During the meeting, the representatives agreed on the need to expand cooperation in various fields such as politics, security, trade, economics, finance, investment, cultural and humanitarian relations.
- Governments encouraged business leaders to deepen their mutual contacts in specific areas such as investment, digital transformation and building regional startup ecosystems.
- The organizations supported efforts to align the development of the Eurasian Economic Union (EEU) and the BRI.
- The Council meeting reviewed the previous

meetings of Ministers of Energy, Finance, Railways, Health and Transport etc. and issues of climate change, development of hilly areas and glacier conservation attracted special attention.

About Shanghai Cooperation Organization:

- It is a nine-member organization comprising two major Asian states, China and India, one Eurasian country, Russia, and four 'Stan' nations, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan, as well as Pakistan and Iran.
- The organization was established in 1996 as the 'Shanghai Five', becoming SCO in 2001 with the inclusion of Uzbekistan.
- It began to expand with the entry of India, Pakistan and Iran. Recently, Belarus has been included as the 10th member.
- SCO has two observers (Mongolia and Afghanistan) and 14 dialogue partner countries.
- This organization is committed to comprehensive political, security and economic cooperation.
- It represents 42% of the world's population and about one-third of global gross domestic product (GDP).

Way Forward:

Despite limited achievements, the SCO remains a consequential grouping for India due to strategic, economic and cultural factors. There is no doubt that the participation of the nation in future deliberations and actions will be properly ensured.

3 Afghan Migrants Forced to Leave Pakistan

Why in News:

Long queues of trucks were seen at the borders with Afghanistan as well as Pakistan recently, as Pakistan ordered undocumented migrants to leave the country.

Reasons for deporting Afghan migrants:

- Pakistan says Afghan civilians were found involved in attacks against the government and military, including 14 of the 24 suicide bombings this year.
- They have been convicted of smuggling and other terrorist attacks as well as minor crimes.
- Pakistan has ignored calls from UN rights groups and Western embassies to reconsider its decision.
- Many immigrants fled Afghanistan during the Soviet war in the 1970s, and had few connections or opportunities in their home country.
- Pakistan is home to more than 4 million Afghan migrants and refugees, about 1.7 million of

them are undocumented.

- Nearly 600,000 Afghans have moved to neighboring Pakistan since the Taliban came to power in 2021.

Afghanistan's Reaction:

- Afghanistan's Taliban-run administration has rejected Pakistan's allegations against Afghan migrants.
- All countries hosting Afghan refugees have been asked to give the refugees more time to prepare for their home return.
- Afghanistan is currently burdened by a collapsed economy, a devastating earthquake, food insecurity and human rights violations under Taliban rule.
- About 100,000 Afghan migrants have voluntarily returned to their country this month through the Torkham border crossing in Khyber Pakhtunkhwa and the Chaman crossing in Balochistan province.

Way Forward:

Afghanistan's Taliban rulers have also condemned the deportation order as cruel and barbaric and requested Pakistan to give more time to undocumented Afghans in Pakistan to leave.

4 India-UAE Relationship

Why in News:

The United Arab Emirates is considering investing as much as \$50 billion in India. The deals that are being discussed include stakes in major Indian infrastructure projects and state-owned assets. According to a report in Bloomberg, the UAE could announce these investments into India next year, coinciding with the General Elections.

About India-UAE Economic Relationship:

- Recently UAE has become an active partner of India and India-UAE trade has risen to USD 85 billion in 2022, making the UAE India's third-largest trading partner for the year 2022-23 and India's second-largest export destination.
- India is UAE's second-largest trading partner. In February 2022, India became the first country with which UAE signed a Comprehensive Economic Partnership Agreement (CEPA). Since the agreement came into force on 1 May 2022, the bilateral trade has increased by approximately 15%.
- India has long been described as a prized economy in the UAE due to its growing middle class looking to diversify from other investment destinations such as Europe.

- New Delhi and Abu Dhabi aim to increase non-oil bilateral trade to \$100 billion. It is worth mentioning that presently, a total of 28 lakh Indian citizens live in the UAE.

Diplomatic Ties:

- India and the United Arab Emirates established diplomatic relations in 1972.
- Bilateral relations were further enhanced when the Prime Minister of India visited the UAE in August 2015 marking the beginning of a new strategic partnership between the two countries.
- Indian Prime Minister's recent visit to Abu Dhabi marked his fifth trip to the West Asian nation since he took over as Prime Minister in 2014.
- The last Indian Prime Minister to visit the UAE before him was Indira Gandhi in 1981.

Defence Exercises:

- In-UAE BILAT (bilateral naval exercise)
- Desert Eagle (bilateral air force exercise).
- Exercise Desert Flag UAE
- **Pitch Black:** Biennial, multilateral air combat training exercise
- **Red Flag:** Multilateral air exercise

Conclusion:

Both India and the UAE are engaged across a wide range of sectors such as trade, investments, energy, food security, science and technology, education, fintech, defence, security, and robust people-to-people ties. They both are part of the I2U2 Group. Indians make up the largest ethnic group in the UAE, making up roughly 38% of the UAE's total residents. Such huge investment from the UAE will further deepen the relationship between the two countries.

5 Prisoner's Dilemma In International Relations

Why in News:

While addressing the Goa Maritime Conclave, Defence Minister Rajnath Singh referred to the concept of the "Prisoner's Dilemma"

About "Prisoner's Dilemma":

- The Prisoner's Dilemma is one of the most famous game theory concepts, also commonly referred to as the peace-war game. According to this concept, participants in a conflict or negotiation will, in most cases, refuse to cooperate, even if this cooperation allows them to achieve their interests. Thus, each participant seeks only to benefit themselves, which is today a major problem in politics, economics, business, the social environment, and all spheres of human

life.

Paradox of The Prisoner Dilemma:

Suppose two people A and B are brought in for questioning about a crime.

- Both accomplices keep silent until the last moment, and if no one confesses in the allotted time, both receive the shortest possible prison sentence.
- One accomplice turns in the other, the first is released and the other gets the maximum sentence.
- Both accomplices turn each other in and receive the same punishment- a medium sentence.

Application of the Prisoner's Dilemma in International Relations:

- When applied in the domain of international relations, the Prisoner's dilemma can explain and analyse various situations where countries face strategic decision-making challenges. For instance, if in a bid to secure one's borders, a country starts hoarding more and more arms then it may be far from achieving that goal and might start an arms race with the other countries, which will eventually prove ruinous for their economies and people.
- Prisoner's dilemma brings out this paradox clearly and aids in finding solutions that promote cooperation, build trust, and mitigate the risks associated with the Prisoner's Dilemma situations in international relations.

Way Forward:

Countries must set some ground rules in geopolitics to ensure they don't deter their long-term goals of development for achieving short-term objectives. It is the cooperation and a vision for the growth of all that will eventually mark the beginning of the world that is cordial and ensures development for all.

6 Chanakya Defense Dialogue 2023

Why in News:

Recently, 'Chanakya Defense Dialogue 2023', a two-day event conducted by the Indian Army in collaboration with the Center for Land Warfare Studies (CLAWS) was concluded with a dialogue on security challenges in South Asia and the Indo-Pacific.

About Chanakya Defense Dialogue:

- Chanakya Defense Dialogue is a recurring forum designed to unite leading experts from the international defense and strategic community.
- Its primary objective is to promote relations among these distinguished intellectuals and to

- facilitate the free flow of ideas and philosophies.
- The dialogue provided a wide range of security challenges with a key focus on South Asia and the Indo-Pacific region.
- This two-day conference included prominent speakers, military strategists, diplomats, and intellectuals from the field of defence and strategic affairs.
- The conference attracted participants from various countries including Australia, France, Japan and the USA.
- The dialogue covered a wide range of topics, from cooperative efforts to enhancing security to counter-terrorism, strengthening maritime security and cyberspace security.

Special Attractions in the Defense Sector:

- The dialogue included cooperation in technological advancement within the defence sector, regular military exercises and debate on measures to control the spread of nuclear weapons.
- It comprehensively addressed topics such as regional stability and cooperative procurement of military equipment, with the security of nations as the primary objective.
- This dialogue placed significant emphasis on the countries of the Indo-Pacific region and their collaborative efforts to ensure security.

Importance of Defense Dialogue:

- Under this, it is envisaged to conduct a comprehensive analysis of security in South Asia and the Indo-Pacific.
- It focuses on laying out a roadmap for collaborative security measures in the region to strengthen India's position as a ready, revitalized and relevant stakeholder among nations.

Way Forward:

This dialogue will be an important step towards enabling India, with its rich heritage and futuristic vision, to play an important role in the community of countries near and far towards collective security and prosperity in the region.

7 Indo-Pacific Maritime Domain Awareness (IPMDA) Initiative

Why in News:

Recently, Navy Chief Admiral R. Hari Kumar said that Indo-Pacific Maritime Domain Awareness (IPMDA) initiative, announced by the Quad grouping, is a testament to our commitment to a free, open, inclusive and rules-based Indo-Pacific.

About Indo-Pacific Maritime Domain Awareness (IPMDA) Initiative:

- During the 2022 Quad Leaders Summit in Tokyo, the Quad Leaders announced the Indo-Pacific Partnership for Maritime Domain Awareness (IPMDA) to enhance existing maritime domain awareness capabilities.
- It is a technology and training initiative to enhance maritime domain awareness in the Indo-Pacific region and to bring increased transparency to its critical waterways. IPMDA harnesses innovative technology, such as commercial satellite radio frequency data collection, to provide partners across Southeast Asia, the Indian Ocean region and the Pacific with near real-time information on activities occurring in their maritime zones.
- It was announced to track dark shipping and build a faster, wider, and more accurate maritime picture of near-real-time activities in the Indo-Pacific region — the Pacific Islands, Southeast Asia, and the IOR.
- It seeks to establish a comprehensive system for monitoring and securing maritime activities in the Indo-Pacific, ensuring the safety of critical sea lines of communication, and promoting cooperation among like-minded nations in the region.

Benefit for India:

- It aligns with India's Indo-Pacific vision.
- It will secure sea lanes which are critical for India
- It will leverage India's IFC-IOR fusion centre.

About QUAD:

- Also known as 'Quadrilateral Security Dialogue' (QSD), QUAD is an informal strategic forum consisting of four countries USA, India, Australia and Japan.
- **Objective:** To work for a free, open, prosperous and inclusive Indo-Pacific region.
- It is considered an alliance of maritime democracies and this forum is maintained by meetings of all member states, semi-regular summits, information exchange and military exercises.

Conclusion:

The cutting-edge maritime domain awareness picture provided under IPMDA supports the ability of Indo-Pacific partners to rapidly detect and respond to a wide range of challenges involving illicit maritime activities such as illegal, unreported and unregulated fishing, climate events, and humanitarian crises. The initiative also involves regional information centres, helping to establish a common operating picture of the maritime domain across the Indo-Pacific region.



Environmental Issue



1 Interconnected Disaster Risk Report 2023

Why in News:

A 'Interconnected Disaster Risk Report 2023' recently published by the United Nations University Institute for Environment and Human Security (UNU-EHS) warns that India is close to reaching the tipping point of its groundwater depletion.

Key Points of the Report:

- The report highlights six environmental tipping points that include rapidly depleting groundwater, melting mountain glaciers, space debris and unbearable heat and states that 27 of the world's 31 major aquifers are rapidly depleting.
- According to the report, 78% of wells in Punjab are considered overexploited, and the entire northwestern region is projected to experience critically low groundwater availability by 2025.
- The report states that environmental tipping points are critical limits in Earth's systems beyond which sudden and often irreversible changes occur, leading to catastrophic changes in ecosystems, climate patterns, and the overall environment.
- The report considers groundwater as an essential freshwater resource, which is stored underground reservoirs called 'aquifers'. This reservoir supplies drinking water to more than two billion people.
- Nearly 70% of water is reportedly used for agriculture, but more than half of the world's major aquifers are naturally depleting rapidly.

Ground water storage in the world:

- About 30% of the world's fresh water is stored as groundwater and is sometimes brought to the surface through springs, lakes or extracted from wells dug into the aquifer.
- Global groundwater depletion has accelerated since the middle of the 20th century and groundwater is contributing less to sea level rise.

Impact of groundwater exploitation:

- Due to excessive exploitation of groundwater, the Earth's axis has tilted by 4.36 cm per year. Areas where groundwater depletion is most severe include India, north-eastern China, the western United States, Mexico, Iran, Saudi Arabia, and parts of North Africa.
- India is the largest user of groundwater in the world, exceeding the use of the United States and China combined.

- India's northwestern region, the states of Punjab and Haryana, produces 50% of the country's rice supply and 85% of its wheat stock and is one of the largest consumers of groundwater.

Way Forward:

As the water level continues to fall, farmers will not be able to access groundwater to irrigate their crops. This not only puts farmers at risk of losing their livelihoods, but can also lead to food insecurity and put the entire food production system at risk. Additionally, there will be repercussions for the surrounding biome, flora and fauna.

2 Renewable Energy to Limit Global Warming

Why in News:

A recent report, at the 28th session of the International Renewable Energy Agency (IRENA) and the Global Renewables Alliance, called for tripling the renewable energy capacity for electricity generation, doubling energy efficiency by 2030 and limiting global temperature rise from pre-industrial levels to 1.5°C.

About International Renewable Energy Agency:

- It is an intergovernmental organization that supports countries in their transition to a sustainable energy future.
- It is the first international organization focused on renewable energy, which works to promote cooperation and increase knowledge, sustainable use and adoption of renewable energy.
- It was established on January 26, 2009 in Bonn, Germany.
- Its headquarters are in Masdar City, Abu Dhabi (UAE). Currently, it has 163 member countries.

Key Points of the Report:

- The report says 22 gigatonnes of greenhouse gases need to be cut over the next seven years to keep 1.5°C within reach.
- It states that phasing out fossil fuels is inevitable and necessary, but it must be responsible.
- To deliver an equitable and orderly energy transition while ensuring socio-economic development, energy affordability, reliability and sustainability, we must accelerate our efforts to scale up renewable energy.
- The world's installed renewable energy generation capacity will need to more than triple to reach 11,174 GW by 2030, from 3,382 gigawatts (GW) in 2022, according to the World Energy Transition Outlook.
- The report said wind installations need to exceed

3,500 GW, up from 899 GW by 2022.

- In addition to adding renewable energy capacity, the global annual rate of improvement in energy intensity should double by 2030 from current levels.
- Annual average investment in renewable energy generation should rise to \$1,300 billion by 2030, from \$486 billion in 2022.
- Funding from multilateral development banks should be rapidly increased and public capital should be redirected away from the fossil fuel industry toward renewable energy development.
- The report says there is an urgent need to boost infrastructure planning, enhance cross-border cooperation and develop regional power grids.

Way Forward:

A strong regulatory framework including energy efficiency standards, fiscal incentives and public campaigns to create awareness about the role of energy efficiency measures is the need of the hour.

3 Global Declaration for River Dolphins

Why in News?

Following the recent irreversible decline in global river dolphin numbers, 11 Asian and South American countries signed a landmark agreement, the 'Global Declaration for River Dolphins', in Bogotá, Colombia, to save the world's six surviving species of river dolphins.

Key points related to the Global Declaration:

- The population of the endangered Indus River Dolphin has almost doubled in the last 20 years due to the collective efforts of communities and NGOs.
- The declaration includes measures to improve dolphin habitat by reducing pollution, fishing, releasing dolphins caught in nets and rescuing dolphins trapped in canals.
- The Global Declaration for River Dolphins aims to halt the decline of all river dolphin species and increase vulnerable populations, adopted by states in Asia and South America from Pakistan to Colombia.
- Globally, river dolphin populations have declined by 73 percent since the 1980s.
- The Indus River should be made a safe haven for dolphins as the river plays a vital role in the overall health of the communities where they live.

Important rivers for dolphins:

- River dolphins are found in some of the world's most important rivers, including the Amazon

and Orinoco in South America, the Irrawaddy, Ganges, Indus, Mekong, Mahakam and Yangtze in Asia.

- These rivers sustain millions of people, ranging from indigenous people and local communities in remote areas to residents of big cities.
- These rivers support large amounts of agricultural land, fuel industries and businesses, and an abundance of wildlife.

6 Species of River Dolphins:

- **Amazon Dolphin:** It is found mostly in freshwater. IUCN status: Endangered.
- **Gangetic Dolphin:** It is mainly found in the Ganges and Brahmaputra rivers in India and Bangladesh. IUCN status: Endangered.
- **Indus Dolphin:** This species of dolphin is found in the Beas River in Pakistan and Punjab. IUCN status: Endangered.
- **Irrawaddy Dolphin:** It is found in the coastal areas of South and East Asia, and rivers like Irrawaddy, Mahakam, Mekong and Chilka Lake. IUCN status: Endangered.
- **Tucuxi Dolphin:** It is found in countries like Brazil, Colombia, Ecuador, Peru and the Amazon river system. IUCN status: Endangered.
- **Yangtze River Dolphin:** It is found in the Yangtze River, the longest river in Asia. IUCN Status: Critically Endangered.

Way Forward:

This announcement is an important step towards curbing the decline of the endangered river dolphin species. Implementing its goals and actions will also provide broad benefits to river health and local communities around the world.

4 Adaptation Gap Report 2023

Why in News:

The UNEP recently published an adaptation gap report in which it was stated that there has been a decline in the flow of finances to developing countries for adaptation measures.

Key findings of the Report:

- Climate adaptation finance flows from public multilateral (like the World Bank) and bilateral sources (from a developed to a developing nation) declined by 15 per cent to around \$21 billion in 2021.
- Domestic budgets seem to be the largest source of funding for adaptation in many developing countries. They shell out between 0.2 per cent to over 5 per cent of their government budgets.
- Neither domestic nor private funding sources

could help bridge the adaptation finance gaps, especially in low-income countries including Least Developing Countries and Small Island Developing Nations.

- 85 per cent of countries have at least one national-level adaptation planning instrument such as a policy, strategy, or plan in place to cope with climate change.
- The current global adaptation finance gap (difference between needs and actual financial flows) is \$194-366 billion per year.
- For developing countries, the total cost of adaptation amounts to \$215 billion per year.

About the Report:

- The Adaptation Gap Report (AGR) is an annual UNEP flagship publication. It has been published by UNEP every year since 2014.
- The primary objective of the report is to inform UNFCCC Member State negotiators and the broader UNFCCC constituency about the status and trends of climate adaptation at the global and regional levels.
- AGR also provides a set of science-based options to policymakers and decision-makers to increase ambition in climate change adaptation in key climate-sensitive regions.

About Adaptation Gap:

- The adaptation gap is the difference between the actually implemented adaptation and the target set by society, which is largely determined by priorities related to climate change impacts, and reflects resource limitations and competing priorities.

Conclusion:

This report identifies seven ways to increase financing, including through domestic expenditure and international and private sector finance. Additional avenues include remittances, increasing and tailoring finance to Small and Medium Enterprises and a reform of the global financial architecture. The new Loss and Damage fund will also need to move towards more innovative financing mechanisms to reach the necessary scale of investment.

5 Economic Impact of Air Pollution

Why in News:

A recent study has shown that air pollution has a direct and serious impact on GDP growth and per capita income. The study shows that with air pollution, the efficiency of workers declines, consumer consumption-based services reduces, productivity of assets gets hampered and health expenditure increases.

Key Points Related to Economic Impact:

- Air pollution caused 1.3 billion work days lost, costing India \$6 billion due to absenteeism in 2019.
- 98% of the cost is borne by the northern and eastern parts of India, where AQI levels often exceed 300.
- Air pollution affects the physical and cognitive performance of employees. Employee productivity is reduced by 8-10% on high pollution days, costing \$24 billion in 2019.
- Air pollution has reduced India's strength as a large consumer economy by reducing consumer spending by 1.3%, at a cost of \$22 billion.
- Pollution cost the IT sector \$1.3 billion, accounting for 0.7% of GDP and a 3% loss in productivity.
- The tourism sector saw a decline of 1% of GDP, costing \$2 billion.
- Pollution impacts 820,000 jobs in tourism and supporting industries.

Challenges from Air Pollution:

- The annual cycle of pollution has been increasing in major manufacturing and service centers like the Delhi NCR and Mumbai.
- Delhi, among major Indian cities, has been listed as the city with the highest level of per capita economic loss due to pollution.
- Delhi has the worst air quality among cities globally, with PM2.5 concentration levels nearly 10 times higher than the WHO target.

Government efforts to tackle pollution:

- **National Clean Air Program (NCAP):** a long-term, time-bound program to reduce air pollution in a comprehensive manner.
- **Graded Response Action Plan (GRAP)** will prove to be an important step to deal with pollution.

Way Forward:

'Greening' business operations and supply chains, adopting renewable energy technology, reducing emissions through CSR activities and campaigning for anti-pollution policies are some of the important steps that can aid in tackling air pollution.

6 Climate Disaster Fund

Why in News:

The fifth meeting of a 24-member UN committee tasked with designing a Climate disaster fund was concluded in Abu Dhabi. After months of contentious talks, negotiators produced recommendations for the fund that will be put to nearly 200 governments for approval at COP28 from Nov 30 to Dec 12 in

Dubai. The recommendation “urges” developed countries to take the lead in capitalizing the fund and also “invites” contributions from other countries and funding sources like carbon markets.

Key Issues:

- Negotiators haggled over wording and punctuation on the section of the text on countries’ financial commitments to the fund.
- Developing nations argue that rich countries responsible for most of the historical CO₂ emissions causing climate change should be obliged to pay — something the United States and other rich nations refused to accept.
- Egypt, which represents African countries on the committee, also raised concerns in the meeting after the deal was agreed, noting that some of their key demands had not been met - such as agreeing on the size of the fund or clearer obligations for rich nations to contribute.

About the Fund:

- Climate disaster fund or loss and damage fund would be the first UN mechanism dedicated to helping countries that have suffered irreparable climate-driven damage from drought, floods and rising sea levels. It would aim to divert billions of dollars towards nations that are “particularly vulnerable”.

Conclusion:

If rich nations fail to follow through, it could reopen decades-old fights that have derailed past climate deals — with poorer nations demanding “compensation” from rich nations for causing climate change, or refusing to agree to cut emissions faster without substantially more financial support from rich countries. If the fund ends up as an “empty shell”, then countries will have “no choice but to bring back discussions on historical responsibility and compensation”.

7 2023 Production Gap Report

Why in News:

The 2023 Production Gap Report, released by SEI (Stockholm Environment Institute), Climate Analytics, E3G, IISD and UNEP, reveals that Top fossil fuel producers plan on even more extraction despite climate promises. The report finds that governments plan to produce around 110% more fossil fuels in 2030 than would be consistent with limiting warming to 1.5°C, and 69% more than that would be consistent with 2°C.

About the Production Gap:

- The production gap measures the difference

between the estimated extraction of coal, oil and gas (fossil fuels) by governments and the global production levels required to meet climate targets, specifically the targets outlined in the Paris Agreement (curbing the temperature rise to 1.5°C or 2 °C).

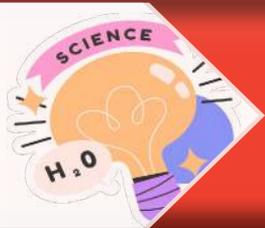
- The United Nations Environment Program (UNEP)’s annual Production Gap Report tracks the misalignment between governments’ planned fossil fuel production and global production levels consistent with limiting global warming to 1.5 °C or 2 °C. The 2023 Production Gap Report is the fourth of its kind, and more than 80 researchers from more than 30 countries have contributed to the analysis and review, including a number of universities, think tanks and other research organizations.

Report Findings:

- The report states that annual global coal production is projected to increase by 10% between 2020 and 2030, with a near-term increase in production led by India, Indonesia, and Russia.
- This comes despite 151 national governments having pledged to achieve net-zero emissions. In 2015, the countries signed the Paris Agreement and pledged to limit the average temperature rise to below 2 degrees, while actively aiming for 1.5 degrees above industrial levels. However, the latest forecasts suggest global coal, oil, and gas demand will peak this decade.
- Major countries including Australia, Brazil, Canada, China, India and the United Arab Emirates are projected to increase global coal production by 2030 and oil and gas production by at least 2050.
- The report also notes that oil and gas production is being planned by the 12 countries with the lowest levels of relative economic dependence on their production by 2040 under respective 1.5°C coherent pathways will exceed the global level.

Conclusion:

If the world envisages a sustainable earth that is habitable for the present and the upcoming generations, stringent measures have to be taken that can aid in maintaining the sustainability of the planet. This includes adopting targets for reducing fossil fuel production and ensuring an equitable transition taking into account countries. The countries must aim to eliminate coal production and use by 2040, as well as reduce oil and gas production and use by 75% by 2050 compared to 2020 levels.



1 Link Between Air Pollution & Parkinson's Disease

Why in News:

Researchers have found that people living in areas with average levels of air pollution have a 56 percent higher risk of developing Parkinson's disease than people living in areas with the lowest levels of air pollution.

Key Points related to the study:

- Studies have shown that fine particulate matter, or PM2.5, can cause inflammation in the brain, which is a known mechanism by which Parkinson's disease can develop.
- Researchers also found that the association between air pollution and Parkinson's disease was not the same in each part of the country.
- They identified about 90,000 people with the neurological disease from a Medicare dataset of about 22 million people in the US.
- People living in the western part of the US were found to have a lower risk of developing Parkinson's disease than people in the rest of the country.
- The researchers said such population-based geographic studies have the potential to reveal important insights into the role of environmental toxins in the development and progression of Parkinson's.

About Parkinson's Disease:

- Parkinson's disease is a movement disorder in which the nerves that send signals from the arms or legs to the brain become unable to function.
- In this, hands or legs start trembling and fingers start trembling, along with this the person's gait starts changing. He walks slightly leaning forward and the person lacks coordination with his hands.
- Parkinson's disease occurs when nerve cells inside the brain start getting damaged, these nerve cells play an important role in producing the hormone dopamine.

New technology to study Parkinson's disease:

- Researchers have developed a new technique called Z-Scan which can prove helpful in studies relating to Parkinson's disease.
- This technique can help monitor both the early and late stages of aggregation of a protein called alpha-synuclein.

Way Forward:

The relationship between pollution and brain

degenerative disorders is quite concerning as it has a long-term health impact on the present and upcoming generations, highlighting one of the many reasons why pollution in any form must be curbed. Strict policies have to be implemented aimed at reducing air pollution levels to ensure better sustainability of the planet.

2 Cloud Seeding

Why in News:

In an effort to increase rainfall in Solapur city by IITM Pune, cloud seeding was used. The rainfall in this region is scarce due to the Western Ghats and cloud seeding resulted in a significant increase of 18% in the amount of rainfall in the area.

About Cloud Seeding:

- It refers to a method of changing precipitation in the form of rain or snow by adding certain substances to the air which affects the condensation of clouds and their physical properties.
- For cloud seeding, silver iodide or dry ice is released into the clouds through rockets or airplanes.
- Where rain is to be caused, spraying is done by airplane in the opposite direction of the wind.
- In this process clouds absorb moisture from the air and their mass increases. Due to this, rain drops start forming and it starts raining.

Cloud seeding works if done correctly

Cloud seeding experiments were carried out in Solapur city, which gets less rainfall, from June to September in 2018 and 2019

- There was 18% increase in rainfall over a 100 sq.km area in Solapur city due to cloud seeding
- Approximate cost of producing water through cloud seeding was 18 paise per litre. The cost can drop by over 50% if indigenous seeding aircraft are used
- 20-25% of cumulus clouds produce rainfall if cloud seeding is done correctly
- Cloud seeding alone cannot mitigate droughts but can help produce additional rainfall that can partially address water requirements
- Calcium chloride flare was used for seeding the clouds. The seeding was done at the base of the warm convective clouds and at a time when the clouds were growing
- The study was carried out for two years to understand the microphysics and characteristics of convective clouds that can be targeted to enhance rainfall
- The work provides elaborate protocols and technical guidance to plan and conduct cloud seeding in India

Not all: As microphysics of clouds vary widely, not all clouds produce rainfall through cloud seeding

Key Points Related to the Study:

- The study found that cloud seeding can prove to be an effective strategy to increase rainfall in an area in adverse conditions.
- Seeding was used in the study in which a total

of 276 convective clouds were selected, and 150 were seeded while the remaining 122 clouds were not seeded.

- Seeding was done at the base of warm convective clouds and at a time when the clouds were at their thinnest so that the seed particles could enter the clouds with minimum dispersion.
- The study found that if cloud seeding is done correctly, 20-25% of clouds can produce rainfall.
- The microphysics of clouds varies widely so not all clouds produce precipitation through cloud seeding.

Benefits of Cloud Seeding:

- Cloud seeding can help increase rainfall in water-stressed. It can boost agricultural production by increasing rainfall, since Indian agriculture is mostly rain fed therefore rainfall is required for crop growth.
- Cloud seeding can be used to reduce the size and intensity of storms and hail. This can help prevent hailstorm damage to crops, property and vehicles.

Way Forward:

Cloud seeding can supplement water supplies in reservoirs, lakes, and aquifers, providing municipalities and industry with a more reliable source of freshwater. In some cases, it can also help reduce air pollution by removing pollutants and particles from the atmosphere.

3 Hemoglobin in Human Body

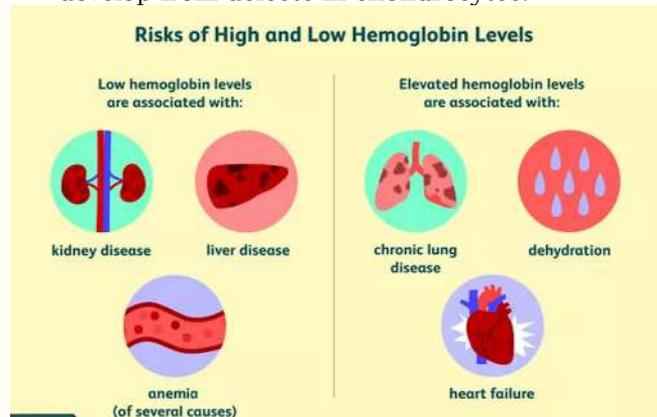
Why in News:

A study recently published in the journal Nature showed that not only RBCs but the cells responsible for cartilage production also produce hemoglobin, which appears to be important for their survival.

Key Points Related to the Study:

- The study was conducted by pathologists from China's Military Medical University, who had been working on bone development since 2010. They said that the cartilaginous tissue at the end of long bones that allowed the bones to become longer, contained hemoglobin.
- Chondrocytes, responsible for the production of collagen and flexible cellular structure, were not only producing hemoglobin in large quantities but were also producing haemoglobin without membranes.
- Scientists used genetically modified mice, in this case, the genes that make hemoglobin was removed. The mice then produced almost no hemoglobin molecules and died as embryos.

- Research has shown that if one looked at the growth plate cartilage tissue of these rats, most of the chondrocytes were dying.
- Studies have shown that chondrocytes adapt to low oxygen by, among other things, using an alternative pathway to break down sugars that release energy, which does not require oxygen.
- Scientists have also found that cartilage in areas outside the growth plate, such as the ribs or spinal cord of mice, also contain hemoglobin.
- Studies have found that several bone disorders develop from defects in chondrocytes.



What is Hemoglobin?

- Hemoglobin is the most abundant protein in the body and is made up of approximately 70% iron.
- Hemoglobin level in men is higher than that of women. Although these levels can be affected by many factors, including diet, exercise and medical conditions.
- Hemoglobin in RBCs carries oxygen and ensures that different parts of the body receive oxygen to function properly.

Some Important Functions of Hemoglobin:

- It transports oxygen from the lungs to the tissues.
- Through this, carbon dioxide is transported from the tissues to the lungs.
- It helps in controlling blood pH and immune function.

Way Forward:

This discovery will establish links between hematology and skeletal biology and will pave the way for further exploration of the relationship between hemoglobin and stem cells.

4 World's First Global Summit on Artificial Intelligence

Why in News:

The world's first Artificial Intelligence (AI) Security

Summit was recently held in Britain. Leaders from 28 countries including India, USA, France, Singapore, China, participated in this AI Security Summit.

Key points related to the global summit:

- This was the first international AI Security Summit focused on cutting-edge frontier AI.
- This summit was a gathering of governments, academicians and companies working in artificial intelligence.
- It identified the risks, opportunities, and the need for international collaboration before uncovering consensus on the scale, importance, and urgency of AI opportunities.
- The UK Government's approach to security will be placed at the heart of AI progress, to enable the significant opportunities it brings.
- A small, select group of artificial intelligence companies, civil society and independent experts participated in the first two-day summit focused on reducing the risks arising from AI technology.
- The summit aimed to highlight the transformative benefits that AI technology can provide, with a key focus on 'areas of education and international research collaboration'.
- Representatives of Alan Turing Institute, Organization for Economic Co-operation and Development (OECD) and Ada Lovelace Institute were also present in this conference.

About Frontier AI:

- It is known to be a highly capable Foundation Generator AI model that may have dangerous capabilities that could pose a serious risk to public safety.
- Artificial Intelligence is a transformative technology, which is bringing many changes in our lives. It can perform complex tasks and mimic human intelligence.

Benefits of Artificial Intelligence:

- AI systems can analyze massive amounts of data, recognize patterns, and provide critical insights that support decision-making.
- They improve production, innovation and economic growth by increasing human capabilities.

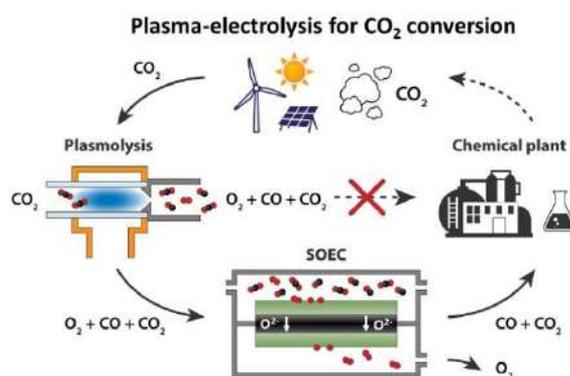
Way Forward:

Artificial Intelligence provides significant benefits including automation, accuracy, greater productivity and better decision making. However, it also involves displacement, ethical concerns, limitations in human-like judgment, dependence on data quality, and potential malfunctions.

5 CO₂ to CO Conversion Technology

Why in News:

A cutting-edge, energy-efficient carbon dioxide (CO₂) capture process has been developed by a team of researchers led by Dr Arnab Dutta and Dr Vikram Vishal, at IIT Bombay's NCoE-CCU. The technology is offering the potential for significant carbon capture and energy savings in the steel industry. This innovative technology transforms carbon dioxide into carbon monoxide under electro catalytic conditions, all at ambient temperatures and in the presence of water.



About the Technology:

- Conventionally, CO₂ to CO conversion processes occur at elevated temperatures (400-750 °C) and require an equivalent amount of hydrogen (H₂) to facilitate the reaction, making the process highly energy-intensive.
- The new CO₂ to CO conversion process pioneered by IIT Bombay's NCoE-CCU stands out for its minimal energy consumption.
- This ground-breaking technology operates at ambient temperatures (25-40 °C) in the presence of water. Moreover, the energy required for the electro-catalysis reaction can be directly harnessed from renewable sources like solar panels or windmills, establishing a carbon-neutral operational framework for facile CO₂ to CO conversion.
- The potential applications of this technology span various industries, with a focus on scaling up its implementation in the steel sector. To further expedite this technology's integration, a startup named UrjanovaC Private Limited has been incubated. The company will actively explore the technology's application within the steel industry, offering a greener and more

sustainable approach to carbon management.

- Additionally, the DST-supported NCoE-CCU has also licensed another technology related to aqueous-based CO₂ capture and conversion to calcium carbonate. This technology is emerging as a critical solution in the carbon capture landscape and is also being pursued by UrjanovaC Private Limited through its incubation at SINE, IIT Bombay.

About CO:

- Carbon monoxide (CO) is a widely used chemical compound in various industries, particularly in the form of synthesis gas (syn gas). Within the steel industry, CO plays a pivotal role in transforming iron ores into metallic iron within blast furnaces.
- Presently, CO is produced through the partial oxidation of coke or coal, resulting in significant CO₂ emissions as a byproduct. The conversion of emitted CO₂ back into CO represents an opportunity to establish a circular economy in this process, significantly reduce carbon footprints, and lower associated costs.

Conclusion:

As part of India's commitment to achieving net-zero emissions by 2070, the National Centre of Excellence in Carbon Capture and Utilization (NCoE-CCU) at IIT Bombay, supported by the Department of Science and Technology (DST), has been actively engaged in the development of scalable and cost-effective methods for capturing CO₂ emissions from diverse sources. The conversion of CO₂ into usable chemicals or permanent storage holds immense promise for mitigating greenhouse gas emissions, a pivotal step in combating climate change.

6 Helicobacter Pylori (H.Pylori)

Why in News:

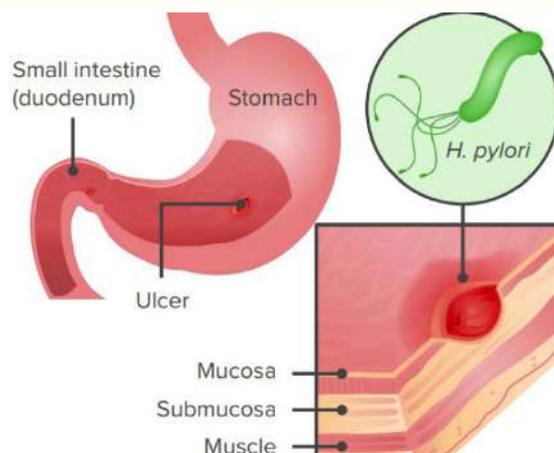
The National Institute of Cholera and Enteric Diseases (ICMR-NICED) in Kolkata has developed a groundbreaking two-step PCR-based assay for the rapid detection of *Helicobacter pylori* (*H. pylori*) infection and the identification of clarithromycin-resistant and drug-sensitive strains.

About Helicobacter Pylori:

- *H. pylori* infection often occurs during childhood. It is estimated to be present in more than half of the world's population.
- *H. pylori* infection is a common cause of stomach ulcers, also known as peptic ulcers. Peptic ulcers can develop in the lining of the stomach (gastric ulcer) or the first part of the

small intestine (duodenal ulcer).

- Most individuals with *H. pylori* infection do not experience any noticeable signs or symptoms. It's not entirely clear why some people remain asymptomatic.
- When signs and symptoms do occur in individuals with *H. pylori* infection, they are often associated with gastritis or peptic ulcers. These symptoms can include an ache or burning pain in the stomach (abdomen), stomach pain that worsens on an empty stomach, nausea, loss of appetite, frequent burping, bloating, and unintentional weight loss.



Key Highlights:

- **Problem Addressed:** *H. pylori* infections are widespread in India, affecting 60-70% of the population. These infections are often asymptomatic but can lead to peptic ulcers and gastric cancer in some cases. The conventional method to detect drug resistance in *H. pylori* involves weeks of culture and sensitivity testing, which is time-consuming and not practical for immediate treatment decisions.
- **Solution Developed:** The NICED research team developed a two-step PCR-based assay for the rapid detection of *H. pylori* infection and identification of clarithromycin-resistant and drug-sensitive strains. This assay significantly shortens the time required for diagnosis, providing results in about six to seven hours.
- **Molecular-Based Assay:** The molecular-based assay demonstrated 100% sensitivity and specificity. It leverages a small region of *H. pylori* bacteria's genetic material, allowing for quick and accurate detection of the infection and its drug sensitivity or resistance.
- **Understanding Drug Resistance:** The research team identified that drug resistance in *H. pylori*

was linked to a specific point mutation in the 23S ribosomal RNA (rRNA) gene of the bacteria. This mutation reduced the binding affinity of clarithromycin to the mutant bacteria, making them resistant to the drug.

- **PCR-Based Assay:** The two-step PCR-based assay first amplifies a segment containing the point mutation using DNA templates isolated from biopsy samples. Then, it uses allele-specific primer sets to differentiate between clarithromycin-resistant and drug-sensitive strains.

Way Forward:

The NICED researchers have developed a rapid and highly accurate molecular-based assay for detecting *H. pylori* infection and clarithromycin resistance. This breakthrough can lead to more informed and effective treatment decisions, especially in regions where *H. pylori* infections are prevalent.

7 Tuberculosis in India

Why in News:

According to the recently released Global Tuberculosis Report 2023 by the World Health Organization (WHO), in 2022, India had the highest number of tuberculosis (TB) cases in the world, accounting for 27 percent of the global total.

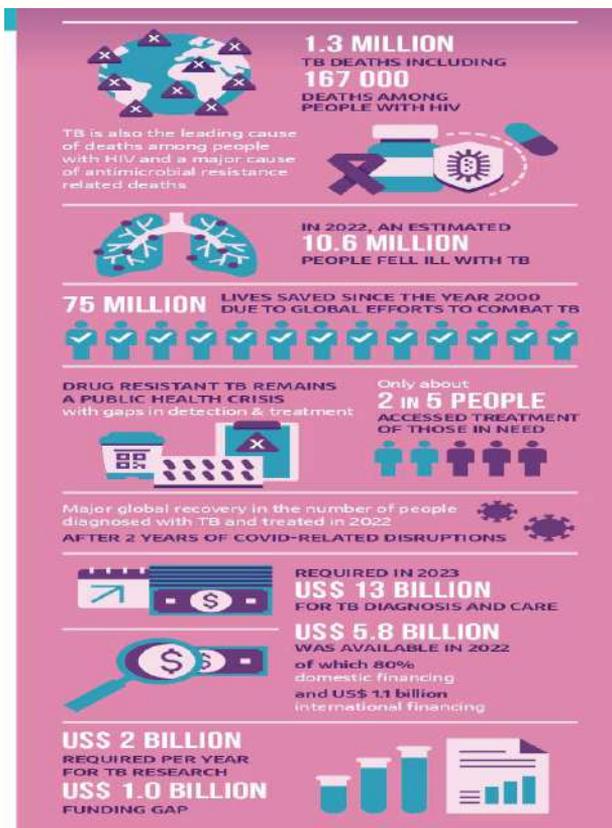
Key points from the Global Tuberculosis (TB) Report:

- According to the report, in 2022, Indonesia (10%), China (7.1%), the Philippines (7.0%), Pakistan (5.7%), Nigeria (4.5%), Bangladesh (3.6%), and the Democratic Republic of the Congo (3.0%) accounted for 87% of tuberculosis cases worldwide.
- In India, 2.8 million (28.2 lakh) cases of tuberculosis were recorded in 2022, with a mortality rate of 12 percent and the number of deaths due to tuberculosis was approximately 342,000.
- The report indicates that multidrug-resistant tuberculosis (MDR-TB) has become a public health crisis, with 1.1 lakh cases recorded in India in 2022.
- Countries like India, Indonesia, and the Philippines, which were responsible for more than 60% of the global decrease in the number of new tuberculosis cases in 2020 and 2021, have all surpassed pre-pandemic levels in 2022.
- The report reveals that in 2022, tuberculosis was diagnosed in 7.5 million people across 192 countries, the highest number since the World

Health Organization began global tuberculosis surveillance in 1995.

What is Tuberculosis (TB)?

- It is an infectious disease usually caused by the bacteria *Mycobacterium tuberculosis* (Mtb).
- It typically affects the lungs but it can also impact other parts of the body.
- It spreads from person to person through the air, often when individuals with TB in their lungs cough or sneeze.



The WHO's TB Elimination Goals:

- The goal of WHO is to reduce the number of deaths from TB by 95% by 2035 and to achieve a 90% reduction in the incidence of TB by 2035. Along with this, it envisages the goal of reaching zero TB-affected families facing catastrophic costs.

Way Forward:

Tuberculosis can have a catastrophic impact on the health structure of a society. To tackle TB, there is a need to focus on universal health coverage (UHC) along with improved levels of social security and comprehensive multi-sectoral actions targeting TB determinants.



Economic Issues



1 India: A \$30 Trillion Economy by 2047

Why in News:

Recently, NITI Aayog CEO BVR Subramaniam has said that a vision document is being prepared to make India a developed economy of about US \$ 30 trillion by 2047. This vision document will outline the institutional and structural reforms that will make the country a developed nation by 2047.

Key points related to the vision document:

- NITI Aayog has estimated that India's economy will be worth \$30 trillion in 2047, with a per capita GDP of \$17,590.
- The vision document will outline structural changes and reforms for India to reach the goal of becoming a \$30 trillion economy by 2047 with a per capita income of \$18,000-20,000.
- NITI Aayog has said that the value of India's exports in 2047 will be \$8.67 trillion while the value of its imports will be \$12.12 trillion.
- Further, India's average life expectancy will increase from 67.2 to 71.8 in 2021 and its literacy rate will increase from 77.8 percent to 89.8 percent in 2021.
- According to NITI Aayog, the economy will need to register an annual average economic growth of 9.2% between 2030-2040, 8.8% between 2040-2047 and 9% between 2030 to 2047.
- However, there will be various disruptive trends including India and Africa's evolving demographics, high income polarization, increase in climate disasters and technological advancements, and geopolitical risks.

Road To \$30 Trillion Economy				
Indicator	Unit	2030	2040	2047
GDP at current prices	\$ trillion	6.7	16.1	29
Per capita GDP at current prices	\$	4,418	10,021	17,590
Exports	\$ trillion	1.6	4.6	8.7
Imports	\$ trillion	1.9	5.9	12.1
Investment	₹ trillion	195.5	591.1	1,273.4
Savings	₹ trillion	207.8	649.4	1,339.7

Source: Niti Aayog

- This vision document has been prepared by 10 regional groups of secretaries (SGOs) of various ministries formed on various subjects including infrastructure, welfare, commerce, industry and technology and governance, a process that

lasted for about two years.

- The ten SGOS, based on the themes of rural and agriculture, infrastructure, resources, social vision, welfare, finance and economy, commerce and industry, technology, governance and security and foreign affairs, have also extensively consulted with various researchers and think tanks.

Present Indian Economy:

- At present the Indian GDP is bigger than the GDP of Britain and France.
- India is currently the fifth-largest economy with a GDP of \$3.7 trillion.
- India's GDP is projected to overtake Japan and Germany by 2030. India's nominal GDP will increase from \$3.4 trillion in 2022 to \$7.3 trillion by 2030.
- Economic expansion will increase the size of Indian GDP, making India the second-largest economy in the Asia-Pacific region.

Way Forward:

NITI Aayog is helping Gujarat and Andhra Pradesh prepare the vision document. While other states like UP, Tamil Nadu, Goa and Uttarakhand are preparing their documents independently.

2 Women's Participation in India's Workforce

Why in News:

The data released by the Statistics and Programme Implementation Ministry in its Periodic Labour Force Survey Report 2022-23 stated that the Female Labour Force Participation Rate in the country has improved significantly by 4.2 percentage points to 37 per-cent this year.

Women and the Workforce:

- Women-centric schemes have helped in increasing women's participation in the workforce.
- Giving priority to women in central policy-making and leadership roles, it has been said that the upliftment of women should be the first priority.
- There is a need to provide skills to women to increase the workforce in the country. The importance of re-skilling and up gradation of working women to adapt to changing technologies needs to be highlighted.
- The unemployment rate in the country decreased from 6 percent in 2017-18 to 3.7 percent in 2022-23.

- According to the Periodic Labor Force Survey Annual Report 2022-2023 released by the National Sample Survey Office (NSSO), the unemployment rate (UR) under normal conditions for people aged 15 years and above at the national level between July 2022 and June 2023) declined from 4.1 percent in 2021-22 to 3.2 percent in 2022-23.
- According to the data, the unemployment rate was 4.2 percent in 2020-21, 4.8 percent in 2019-20, 5.8 percent in 2018-19 and six percent in 2017-18.
- Whereas the unemployment rate among men in India decreased from 6.1 percent in 2017-18 to 3.3 percent in 2022-23. The unemployment rate among women decreased from 5.6 percent to 2.9 percent.

About National Sample Survey Office (NSSO):

- National Sample Survey Organization (NSSO) is an organization under the Ministry of Statistics Implementation, Government of India. It is the largest organization conducting socio-economic survey of India. It was established in 1950.
- It is headed by a Director General and is responsible for conducting large-scale sample surveys in diverse fields on All India basis. Primarily data are collected through nationwide household surveys on various socio-economic subjects, Annual Survey of Industries (ASI), etc.
- Besides these surveys, NSSO collects data on rural and urban prices and plays a significant role in the improvement of crop statistics through supervision of the area enumeration and crop estimation surveys of the State agencies. It also maintains a frame of urban area units for use in sample surveys in urban areas

Way Forward:

The rise in FLFPR, in addition to reflecting women's expanding labour force participation, indicates a broader societal transition where women are increasingly contributing to their own empowerment and the advancement of the country.

3 IMF Keeps Global Growth Rate at 2.9% for 2024

Why in News:

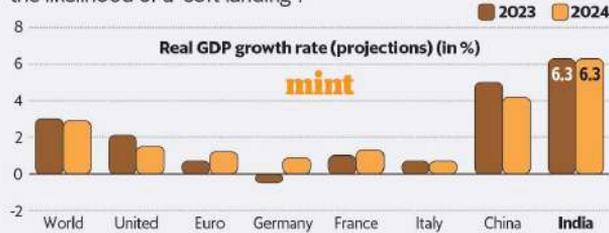
The International Monetary Fund (IMF) has released its latest economic report, which states that the global growth rate is expected to be 3 percent in 2023 and will further decline to 2.9 percent in 2024. This is one of the lowest growth rates in decades.

Key points related to the report:

- According to the report, substantial economic recovery globally faces challenges. Global growth is projected to slow to 3.5 percent in 2022, 3 percent in 2023, and 2.9 percent in 2024, below the historical average of 3.8 percent recorded between 2000 and 2019.
- The report expects global inflation to gradually ease from 8.7 percent in 2022 to 6.9 percent in 2023 and 5.8 percent in 2024.
- The report forecasts a decline in growth in advanced economies from 2.6 percent growth in 2022 to 1.5 percent in 2023 and 1.4 percent in 2024.
- Growing concerns about geo-economic fragmentation have led to concerns about potential disruptions to global trade in goods. It highlights such disruptions on commodity prices, economic activity and green energy transition.

Soft landing

IMF's chief economist Pierre-Olivier Gourinchas said the global growth forecast of 3% for 2023 and 2.9% for 2024 has increased the likelihood of a "soft landing".



Note: For India, the figures are on a fiscal year basis, with 2023 denoting the year ending March 2024, and so on.

Source: IMF World Economic Outlook, October 2023

Reasons for risk:

- Despite the relative resilience demonstrated by the global economy, especially in the early recovery stages, economic activity is still below pre-pandemic levels.
- The main causes of economic slowdown in emerging market and developing economies are widening inequalities between regions.
- Key risks include the continued impact of the pandemic, Ukraine conflict, geo-economic fragmentation, cyclical factors related to monetary policy tightening, withdrawal of fiscal support and extreme weather events.
- China's economic crisis and its potential impact on commodity exporters are of particular concern.
- Climate and geopolitical factors also pose risks, potentially resulting in higher food and energy prices.
- Rising inflation expectations and a poor labor

market could lead to core inflationary pressures, requiring higher-than-expected policy rates.

Way Forward:

Effective policies, coordination and structural reforms are essential to successfully address these challenges and achieve a strong and sustainable recovery.

4 State Food Safety Index (SFSI) 2023

Why in News:

The Food Safety and Standards Authority of India (FSSAI) published a state-wise index on improving food safety, in which 19 out of the 20 largest states recorded a decline in their 2023 scores compared to 2019. After adjusting for a new parameter included in the 2023 index, 15 out of 20 states recorded lower scores in 2023 than 2019.

Highlights of the index:

- The steepest fall in scores over five years was seen in Maharashtra, which scored 45 out of 100 in 2023 compared to 74 out of 100 in 2019, followed by Bihar, which scored 20.5 in 2023 compared to 46 in 2019, and Gujarat, which scored 48.5 in 2023 compared to 73 in 2019.

Category- Union Territories	
Name	Rank
Jammu & Kashmir	1
Delhi	2
Chandigarh	3
Category- Small States	
Small State	Rank
Goa	1
Manipur	2
Sikkim	3
Category- Large States	
Large State	Rank
Kerala	1
Punjab	2
Tamil Nadu	3

About the index:

- To encourage States/UTs to work towards improving the food security in their jurisdiction, FSSAI releases the SFSI annually for every financial year on 7th June on the occasion of World Food Safety Day.
- The Index is a dynamic quantitative and qualitative benchmarking model that provides an objective framework for evaluating food security across all States/UTs.
- The first SFSI was released on June 7, 2019, based on the information submitted by States/UTs.

About the FSSAI:

- The Food Safety and Standards Authority of India (FSSAI) was established under Food Safety and Standards, 2006 which consolidates

various acts & orders that have hitherto handled food-related issues in various Ministries and Departments. FSSAI has been created to lay down science-based standards for articles of food and to regulate their manufacture, storage, distribution, sale and import to ensure the availability of safe and wholesome food for human consumption.

Mandate of FSSAI:

- Framing of Regulations to lay down the Standards and guidelines in relation to articles of food and specifying appropriate systems of enforcing various standards thus notified.
- Laying down mechanisms and guidelines for accreditation of certification bodies engaged in the certification of food safety management systems for food businesses.
- Collect and collate data regarding food consumption, incidence and prevalence of biological risk, contaminants in food, residues of various, contaminants in food products, identification of emerging risks and introduction of rapid alert system.

STATES WITH STEEPEST INDEX FALL

State	2019	2023
Maharashtra	74	45
Bihar	46	20.5
Gujarat	73	48.5
Andhra Pradesh	47	24
Chhattisgarh	46	27

Source: SFSI reports; all scores out of 100

SAFETY MEASURE

Parameter	Weight
Compliance	28
Consumer Empowerment	19
Human Resources and Institutional Data	18
Food Testing Infrastructure	17
Improvement in SFSI Rank (added in 2023)	10
Training and Capacity Building	8
TOTAL	100

Conclusion:

The decline in the performance of states with respect to ensuring food safety is concerning. Ensuring access to safe and nutritious food is vital considering the significant impact of nutrition and health on the development of a nation. Moreover, Goal 2 of the Sustainable Development Goals calls for ending hunger and ensuring access to all people, especially the poor and people in vulnerable situations, including infants, to safe, nutritious, and sufficient food all year round by 2030.

5 Direct Listing on Foreign Exchanges

Why in News:

The government recently permitted certain Indian companies to directly list on select foreign stock exchanges, which will allow these companies to access global capital and boost capital flows. The Ministry of Corporate Affairs (MCA) said the provision, which was announced in the Companies (Amendment) Bill, 2020, came into effect on October 30. In July, the government decided to enable listed and unlisted domestic companies to directly list their equity shares on the International Financial Services Centre (IFSC), Ahmedabad.



About the Notification:

- In the exercise of the powers conferred by sub-section (2) of section 1 of the Companies (Amendment) Act, 2020 (29 of 2020), the Central Government marked the 30th day of October 2023 as the date on which the provisions of section 5 of the said Act shall come into force.
- The amendment empowered the central government to allow certain classes of public companies to list prescribed classes of securities in foreign jurisdictions. This essentially means certain classes of domestic public companies can be listed on prescribed foreign stock exchanges, including GIFT IFSC, Ahmedabad.
- Section 5 also allows the government to exempt such listing from certain procedural requirements such as prospectus, share capital, beneficial ownership requirements, failure to distribute dividends etc.
- Domestic listed companies usually use depository receipts — American Depository Receipts (ADR) or Global Depository Receipts (GDR) — to list in the overseas market. Under this route, Indian companies wanting to get

listed on foreign stock exchanges give their shares to an Indian custodian, and depository receipts are issued to foreign investors.

Conclusion:

With the new provision, domestic companies can tap foreign markets to raise funds. It will offer them better valuation and exposure to trade in foreign currency such as the dollar. It may also benefit the start-up and unicorn community as another avenue to raise funds and increase their profile globally. This will not only add to India's foreign exchange but will provide Indian companies with another medium of raising capital. This would also need them to meet governance norms in such specified jurisdictions.

6 CCI Market Study on Cement Sector

Why in News:

In a move that is likely to spell trouble for cement companies, competition watchdog CCI has decided to launch a pan-India “fact-finding” market study on the cement sector.

About Market Studies:

- Market studies conducted by competition authorities are comprehensive examinations of the dynamics within specific industries or sectors, aimed at assessing the nature and extent of competition among market participants. These studies are crucial for understanding how markets function and are distinct from competition law enforcement actions, which typically focus on the behaviour of individual firms. If serious anti-competitive practices are uncovered, it can lead to enforcement actions against specific entities.

Objectives of the Study:

- To look at the emerging market dynamics in the cement sector across various sectors, including, inter alia, market concentration, entry/exit businesses and consolidation.
- To study market trends which inter alia include trends/fluctuations in cement price, cost, production, capacity, capacity utilization and profitability.
- Understanding cement pricing in traded and non-traded sectors including in-depth analysis of the determinants of cement price movements.
- Liaise with all relevant stakeholders for a holistic understanding of the sector and identify barriers to competition, if any.
- To ensure enforcement and advocacy priorities

for the Commission in the cement sector.

Problems in the cement industry in India:

- Environmental concerns
- Land acquisition issues
- Logistics issues
- Cartelisation

About Cement Industry:

India is the second-largest cement producer in the world and accounts for over 8% of the global installed capacity. Of the total capacity, 98% lies with the private sector and the rest with the public sector. The top 20 companies account for around 70% of the total cement production in India. As India has a high quantity and quality of limestone deposits throughout the country, the cement industry promises huge growth potential.

- Cement is a critical input in crucial sectors of the economy such as housing and infrastructure. These sectors have well-known forward and backward linkages with a range of other industries, thereby having the potential to influence the overall growth trajectory of the economy.

Conclusion:

Given the criticality of cement for many vital sectors, a well-functioning and competitive cement market is of utmost importance. In view of the same and given the structural features of the cement market that make it susceptible to collusion, the market study will be a fact-finding exercise to develop a comprehensive understanding of the functioning of the cement market across regions in India.

7 Surveys for Monetary Policy Insights

Why in News:

RBI has launched two key surveys, 'Inflation Expectations Survey of Households' and 'Consumer Confidence Survey,' to aid its bi-monthly monetary policy decisions.

Inflation Expectations Survey of Households:

- This survey gathers subjective assessments of price movements and inflation.
- It covers 19 major cities in India, including Bhopal, Bhubaneswar, Chandigarh, Chennai, Delhi, and Thiruvananthapuram.
- Qualitative responses focus on households' expectations regarding price changes for the next three months and one year.
- Quantitative responses include current inflation rates and expectations for inflation over the next three months and one year.

- The survey helps the RBI understand how households perceive inflation, providing insights into public sentiment on price stability.

Consumer Confidence Survey:

- This survey measures households' sentiments on various economic aspects.
- It covers 19 cities, including Ahmedabad, Bengaluru, Bhopal, Bhubaneswar, Chandigarh, Chennai, and Delhi.
- It seeks responses on general economic conditions, employment, price levels, household income, and spending.
- The survey helps the RBI gain insights into the economic well-being and sentiments of households across India.

Monetary Policy:

- Monetary policy is the central bank's (like RBI in India) approach to handling interest rates, money supply, and credit availability.
- It is primarily used to control inflation in the country.
- The central bank employs tools like REPO rate, Reverse REPO rate, SLR, CRR, etc., to implement monetary policy.
- In essence, monetary policy uses these tools to regulate interest rates, money supply, and credit availability with the ultimate goal of maintaining price stability.
- Price stability is crucial for sustainable economic growth, and controlling inflation is a key aspect.
- The government of India sets an inflation target for every five years, and RBI plays a significant role in this process.
- In India, the Monetary Policy Committee (MPC), a six-member committee, decides the policy interest rate required to achieve the inflation target.
- The MPC meets at least four times a year, with a quorum of four members. Each member has one vote, and the Governor has a second vote in case of a tie.
- The resolutions adopted by the MPC are made public after each meeting.
- The Reserve Bank also publishes the Monetary Policy Report every six months, which explains the sources of inflation and forecasts inflation for the upcoming 6-18 months.

Conclusion:

RBI has emphasized that the results of these surveys will play an important role in shaping future monetary policy decisions, ensuring that the accuracy and timeliness of data are of importance in formulating effective economic policies.

1 Kozhikode: City of Literature

Why in News:

Kozhikode, a city of Kerala was officially designated as UNESCO City of Literature. Kozhikode is the first city in India to receive such title.

More About Kozhikode:

- Kozhikode Corporation joins the ranks of 55 newly selected creative cities to receive this honor.
- It has been given this honor after Gwalior in Madhya Pradesh which was selected as the 'City of Music'.
- It has more than 500 libraries and more than 70 publishers, which provide a vital base for its application.
- It was acknowledged for its strong commitment and demonstrated innovative practices in using culture and creativity as part of development strategies and human-centered urban planning.

About UNESCO Creative Cities Network (UCCN):

- The UNESCO Creative Cities Network (UCCN) currently comprises 350 cities from over a hundred countries, representing seven creative sectors including crafts, folk arts, design, film, cuisine, literature, media arts and music.
- The newly designated cities will collaborate with network members to strengthen their resilience in the face of emerging threats such as climate change, rising inequality, as well as rapid urbanization.
- Newly designated Creative Cities have been invited to participate in the 2024 UCCN Annual Conference to be held in Braga, Portugal. Its theme is "Bringing youth to the table for the next decade".
- UCCN was formed in 2004 to promote cooperation between cities that designate creativity as a strategic factor for urban development. Their main objective is to keep creative and cultural industries at the center of development plans at the local level.
- This network includes seven creative sectors music, art, folk crafts, design, cinema, literature, digital arts and cuisine.
- This UNESCO network provides a platform for cities that have developed based on their creativity.

Way Forward:

With the rich literary heritage of Kozhikode and the melodious heritage of Gwalior now included in

the prestigious UNESCO Creative Cities Network, India's cultural vibrancy will shine and grace the global stage.

2 Pichhwai Art Exhibition : Chennai

Why in News:

Recently an art exhibition was organized in Chennai's collage. It is an art exhibition showcasing 350 years old Pichhwai paintings.

What are Pichhwai paintings?

- The word Pichhwai means 'that which hangs behind'. It refers to the intricately painted cloth tassels used as backdrops in temples and during religious festivals.
- It originated in Nathdwara, about 70 km from Udaipur.
- The Pichhwai paintings are always made on cloth, usually Khadi.
- In this painting, the artists use stone pigments, especially for the gold and silver tones and the bright orange, red, chrome yellow and saffron colors come from vegetable dyes.
- These paintings mainly depict the stories and legends of Lord Krishna and are housed behind the idol of Shrinathji, a local form of Lord Krishna and the centre of Pushtimarg worship.
- The cloth has to be kept flat on the ground during painting. A painting usually measures around five by eight feet and takes three months to complete.

About Haveli of Shrinathji Pichwai Painting:

- The temple is decorated on the occasion of 'Annakoot' on the next day of Diwali in Pichhwai depicting the mansion or palace of Shrinathji to remind the miraculous events and sacred objects associated with the life of Lord Krishna.
- On this occasion, the painting of the top view of the mansion and the temple show a three-dimensional perspective of the mansion in miniature detail.

Presence of Shri Krishna in the painting:

- In this painting Lord Krishna is shown in black and golden colors, in various postures, surrounded by lush green forests, cows, gopikas, blooming flowers, dancing peacocks and fast-flowing rivers.
- In several paintings, Shri Krishna has been depicted with Radha while performing Raas Leela.
- In Giriraj Pichwai, Lord Krishna is depicted

carrying Govardhan Mountain on his little finger.

Way Forward:

This art form reflects the abundance of nature and the captivating beauty of Krishna. Among them, the Lotus Pichwai, known as 'Kamal Talai', blooms like petals, where Krishna enjoys the playful company of his beloved gopis, the maidens of Vraja.

3 Mizoram: Highest Cancer Rate in India

Why in News:

A recent study published in The Lancet Regional Health South East Asia has shown that cancer incidence and mortality rates are continuously increasing in Mizoram and colon cancer is emerging as an important cause of death in men.

Key Points related to the study:

- According to the study, cancer incidence and mortality rates are also increasing among the younger generation in Mizoram, which may be because of the sedentary lifestyle and dietary patterns prevalent within the endogamous tribal population.
- The study said the increase in mortality can be attributed to lack of specialized diagnostic facilities and skilled human resources, genomic research, treatment strategies and transportation challenges.
- The study showed that the most common cancer in men was stomach cancer, followed by head and neck, lung, oesophagus, colorectal, liver, urinary, non-Hodgkin's lymphoma and prostate cancer.
- Lung cancer was the most common cancer among women, followed by cervical, breast, stomach, head and neck, colorectal, oesophageal, liver and ovarian cancer.
- Among the primary cancer sites contributing to mortality, all except stomach cancer showed annual percentage increases in both men and women.

What is Cancer?

- According to WHO, cancer is a large group of diseases that can begin in almost any organ or tissue of the body. When abnormal cells grow uncontrolled, and go beyond their normal limits and invade nearby parts of the body or spread to other organs, they are termed as cancerous.
- Among the cancer types, lung, prostate, colorectal, stomach and liver cancers are most common in men, while breast, colorectal, lung, cervical and thyroid cancers occur most

commonly in women.

Other cancer statistics in India:

- According to statistics, one in nine people in India is likely to develop cancer in their lifetime, with lung and breast cancer being the leading causes in men and women respectively.
- Lymphoid leukaemia was the leading cancer in childhood (0-14 years) (boys: 29.2% and girls: 24.2%).
- The incidence of cancer cases is projected to increase by 12.8 percent in 2025 compared to 2020.

Way Forward:

Cancer is a serious disease that requires comprehensive strategies related to genetic research in infrastructure, awareness, and lifestyle to develop its effective prevention and timely treatment.

4 Interpretation of Domestic Violence Act

Why in News:

The Supreme Court recently agreed to examine whether a transgender woman can claim maintenance under the Protection of Women from Domestic Violence Act, 2005 (DV Act)

About the Case:

- A trans woman and her male partner entered a legal dispute.
- In this specific case, a trans woman who underwent sex reassignment surgery in June 2016 claimed eligibility as an "aggrieved person" under the DV Act, asserting a transition from transgender to female.
- The trans woman filed a plea for interim maintenance under the 2005 Domestic Violence Act, leading to a trial court's order for the husband to pay Rs. 12,000 per month.
- In his appeal, the husband argued that the trans person did not qualify as an "aggrieved person" as the term referred to "women" in domestic relationships.
- He also claimed that the trans woman did not possess a certificate issued under the Transgender Persons (Protection of Rights) Act, 2019, and thus could not be considered a woman under the DV Act.

Who is An Aggrieved Person?

- Section 2(a) of the Domestic Violence Act, 2005 defines an "aggrieved person" as a woman who has experienced domestic violence in a domestic relationship with the respondent.
- A "domestic relationship," as per Section 2(f) of the Act, pertains to individuals who have

lived together in a shared household due to consanguinity, marriage, a marriage-like relationship, adoption, or as family members in a joint family.

- The 2005 Act was created to enhance the protection of women's rights as guaranteed by the Constitution and includes provisions for monetary relief provided to an aggrieved person by the respondent, following a Magistrate's order, to cover expenses and losses caused by domestic violence.

Process for a Transgender Person to Change Their Gender:

- The Transgender Persons (Protection of Rights) Act, 2019, gives transgender individuals the right to be recognized according to their own sexual orientation
- Section 7 of the Act defines the procedure for changing gender. It allows trans individuals undergoing gender affirmation surgery to apply for an "amended certificate" from a county judge. This certificate allows them to change their first name on their birth certificate and other official documents related to their identity.

About Domestic Violence Act (DV Act):

- The Domestic Violence Act was enacted by the Indian Parliament on September 13, 2005, and it applies throughout the entire country.
- The primary purpose of the DV Act is to safeguard wives or female live-in partners from violence inflicted by their husbands, male live-in partners, or their respective relatives.
- Domestic violence, as defined by the Act, encompasses actual physical, sexual, verbal, emotional, and economic abuse, or threats thereof. It also includes harassment related to dowry demands.
- The Act extends its coverage to all women, including mothers, sisters, wives, widows, or partners living in a shared household. This may involve relationships resembling marriage or adoption, as well as those within families living together as a joint family.

5 Remnants of a massive ancient collision exist in the Earth's deep interior

Why in News:

In a recent study, scientists have proposed the presence of mysterious 'blobs' within the Earth's mantle that are the remains of a collision between Earth and a Mars-sized object called Theia.

Key Points of the Study:

- The research has revealed that this occurred more than 4.46 billion years ago, causing the melted rock to be ejected into space, eventually settling on the moon as it orbited the Earth.
- It is estimated that fragments of Theia may still reside within the Earth, submerged in a specific location just above the solid inner core of our planet, surrounded by the molten and viscous outer core made up of iron and nickel.
- Scientists have conducted computer simulations to investigate the geological properties of the impact, examining the development of Theia and Earth's mantles. The widest and approximately 1,800 miles thick layer among the investigated mantles contributes to the internal structure of our planet.

Most of Theia is absorbed into the Earth:

- Research has shown that most of Theia was absorbed into the Earth, forming blobs, while the remaining debris formed the Moon.
- The base of these droplets is approximately 2,900 kilometers below our feet. Both of these droplets account for about 2% of Earth's total mass.
- The moon, which orbits Earth at an average distance of about 239,000 miles, has a diameter of approximately 2,160 miles, slightly more than one-fourth of our planet's diameter.
- Research has shown that some volcanic rocks reaching the Earth's surface may provide samples of a lost celestial body.
- These droplets are similar to isotopic mantle rocks on the Moon, which could be tested in future lunar missions.

Way Forward:

The study in the direction of presence of Theia remains within the earth could potentially determine the initial conditions for the development of Earth. This study can help us understand whether Earth is distinct from other rocky planets.

6 Personal Data of 815 Million Indians Breached

Why in News:

The American cybersecurity company Riskurity has stated that Personally Identifiable Information (PII) of 815 million Indian citizens, including Aadhaar numbers and passport details, is being sold on the dark web. The data is claimed to have been obtained from the Indian Council of Medical Research (ICMR).

About Personally Identifiable Information (PII):

- Personally Identifiable Information (PII) is information that can identify an individual,

when used alone or with contextual data.

- It can be combined with other information to successfully identify a person.
- The leaked information poses a threat in the following ways:
 - » Recent disturbances in West Asia have exposed personally identifiable data and have heightened the risk of digital identity theft and other cyber threats. With India witnessing a significant rise in cyberattacks, it is particularly concerning from a security point of view.
 - » The exploitation of stolen identity information for online banking theft, tax fraud, and other cyber-enabled financial crimes further poses a significant threat at both individual and country levels.

India's status on Cybercrime Platforms:

- According to various surveys, India is one of the fastest-growing economies globally and ranks fourth, worldwide, in identifying all malware in the first half of 2023.
- The report also reveals that 67% of Indian government, and essential service organizations have experienced a growth of over 50% in destructive cyber attacks.
- There has been a significant increase in incidents related to identity theft, with Indian citizens and residents suffering damage on the ground from cybercriminals issuing threats.

Efforts for Personal Security:

- Email and other information should be sent with caution, as stolen information can be used to target users in phishing attacks.
- Users are advised to change their ID and password to prevent the stolen data from being used for cybercrime.

Way Forward:

To avoid such personal information theft, users should apply authentication for all their accounts and notify relevant authorities if any suspicious activity is observed in their online accounts.

7

Advocate -on - Record (AoR) System

Why in News:

The Supreme Court pulled up an Advocate-on-Record (AoR) for filing a frivolous case and dismissed the Public Interest Litigation. The Court censured the lawyer that an AoR cannot merely be a "signing authority." A bench also called for a "comprehensive plan" for reforming and improving

the AoR system of the top court, which will be drawn up in collaboration with the Bar.

About an AoR system:

- An AOR is a lawyer in the Indian legal system who is registered and authorized by the Supreme Court of India to represent clients in that court.
- AORs have the exclusive right to file and argue cases in the Supreme Court on behalf of their clients.
- An AoR might engage other lawyers including senior counsels to argue before the Court but the AoR is essentially the link between the litigant and the highest court of the country.
- They can file a petition, draft an affidavit, file a Vakaltnama, or any other application at the Supreme Court on behalf of the party.

How does one become an AoR:

- The Supreme Court Rules, 2013 prescribe eligibility criteria for an AoR.
- While an advocate has to clear an examination set by the Court itself, the advocate has to meet specific criteria to be eligible to appear for the exam. The advocate must train with a court-approved AoR for at least one year to take the exam. They must also have at least four years of practice before starting the training itself.
- An advocate needs to score at least 60% i.e. a minimum of 240 marks out of 400 with at least 50% in each subject in a three-hour exam. The subjects include Practice and Procedure, Drafting, Professional Ethics and Leading Cases.

Rules governing the AoR System:

- According to Section 30 of the Advocates Act, any lawyer enrolled with the Bar Council is entitled to practice law before any Court or tribunal in the country. However, the provision also categorically states that "nothing in the provision shall be deemed to affect the power of the Supreme Court to make rules under Article 145 of the Constitution."
- Under Article 145 of the Constitution, the Supreme Court is empowered to make rules and regulate its own procedure for hearing cases.

Conclusion:

The Advocates Act, 1961 makes a provision for two kinds of advocates i.e. Senior Advocates and advocates. However, the Supreme Court of India has, in the exercise of its rule-making power, made a provision for an Advocate on Record. However, there is a need for more specific provisions that will guide the Advocate on Record system so that judicial litigation becomes more transparent.

BRAIN BOOSTERS

Train Collision Avoidance System

Why in Broadcast

The deadly collision between two passenger trains in Andhra Pradesh which killed 14 people and injured 50 persons could have been averted if Train Collision Avoidance Systems (TCAS, Kavach) were in place.

Kavach Deployment Strategy

- Kavach implementation is being taken up in a focused manner by the Railway Board.
- The first priority are the High Density Routes and the New Delhi-Mumbai and New Delhi-Howrah Sections, as they have higher chances of accidents because the trains run closer to each other.
- The second priority lines are the Highly Used Networks.
- The third ones are other Passenger High Density Routes.
- The final priority is to cover all other routes.

Kavach in Indian Railways

- The South Central Railway (SCR) Zone is a pioneer in the implementation of the KAVACH – (TCAS).
- The Kavach system has been deployed over 1,465 kms in the SCR limits in 77 locomotives and 135 stations till March this year.
- Additionally, the Secunderabad-based Indian Railways Institute of Signal Engineering & Telecommunications (IRISET) hosts the 'Centre of Excellence' for Kavach.
- IRISET has been mandated by the Railway Board to train the inservice railway staff on Kavach. The Institute's Kavach lab carries out round the year training programmes.

About Kavach

- Kavach is a cab signalling train control system with anti-collision features.
- It is a set of electronic devices as well as Radio Frequency Identification devices installed in train locomotives, in the signalling system and rail tracks, that talk to each other utilizing ultra-high radio frequencies in order to control the train brakes and also alert drivers, based on the logic programmed into the system.
- Kavach continuously refresh a train's movement information, so it is able to send out triggers when a loco pilot jumps signal.
- The devices relay the signals continuously ahead to the loco, making it useful for locomotive pilots in low visibility, especially when there is dense fog.
- The Kavach system's current form adheres to Safety Integrity Level 4 which is the highest level of safety and reliability standard.
- It was developed over a period of 10 years, starting in 2012, by the Indian Railways' Research Designs and Standards Organisation (RDSO).

Modification in the Train Protection System

- The government wants to position Kavach as an exportable system, a cheaper alternative to the European systems.
- At present, Kavach uses Ultra High Frequency, however, work is on to make the system compatible with 4G Long Term Evolution technology and make it for global markets.
- Also, work is going on to make Kavach such that it can be compatible with other installed systems across the globe.
- The Kavach system, in the next phase, will also be able to recalibrate as per temporary speed restrictions en route.

BRAIN BOOSTERS

Monkeypox

Why in Broadcast

A new analysis shows that the monkeypox virus is rapidly diverging into several lineages characterized by mutations resulting from continued interaction with the human immune system.

Treatment and Vaccine

- There is no specific treatment or vaccine available for Monkeypox infection.
- In the past, the anti-smallpox vaccine has shown 85% effectiveness to prevent monkeypox.
- But the world was declared free of smallpox in 1980 so the vaccine isn't widely available anymore.

- This designation entails accelerating international efforts to contain the spread of the disease before it escalates into a pandemic.
- Three criteria for declaring emergency:
 - » Extraordinary Event.
 - » Constitutes a Public Health Risk.
 - » Potentially requires a coordinated international response.
- **Previously Declared Emergency**
 - » Covid-19 pandemic.
 - » The West African Ebola outbreak, 2014.
 - » The Zika virus in Latin America, 2016
 - » Polio, 2014.

About Monkeypox

- First discovered in 1958, in monkeys at the Statens Serum Institute in Denmark, monkeypox is a zoonotic virus that can infect humans as well as other animals, including rodents and other primate species.
- Currently the virus has become endemic in Democratic Republic of the Congo, Central and West Africa.
- The virus belongs to the same family of viruses as variola that causes smallpox.
- Symptoms are similar to those in smallpox patients, although it is less contagious and less severe.

Symptoms

- Symptoms include fever, headache, muscle pain, and lethargy along with rashes and blisters commonly on the face, palms, feet, mouth, eyes, or genitalia.
- Symptoms generally appear within two weeks since infection but can last for two to four weeks, with severe cases occurring mostly among children.
- In most cases, monkeypox is a self-limited disease that resolves spontaneously without any specific treatment.

Virus Transmission

- The virus can be transmitted from both animals to humans and between humans.
- Animal-to-human transmission of the virus can result from close contact with blood, fluids, or skin lesions of infected animals.
- Human-to-human transmission could happen through close contact, and through body secretions, skin lesions, or contaminated articles of individuals infected with monkeypox.
- Close human contact during sexual activities is believed to be a driver of the current spread of the disease, as evidenced by its predominant spread in gay, bisexual and MSM communities.

Declaring an Emergency

- The WHO defines a PHEIC as a disease outbreak that "constitutes a public health risk through the international spread of disease" which may require an immediate and coordinated international response.

BRAIN BOOSTERS

Green Buildings

Why in Broadcast

Green buildings help reduce negative impacts on the natural environment by using less water, energy, and other natural resources; employing renewable energy sources and eco-friendly materials; and reducing emissions and other waste.

Green Building Rating Agencies in India

- **IGBC:** Indian Green Building Council
- **GRIHA:** Green Rating for Integrated Habitat Assessment
- **LEED:** Leadership In Energy And Environment Design
- **ECBC:** Energy Conservation Building Code

About Green Building

The green buildings concept aims to comprehensively minimize the negative impact and maximize the positive impact a building has on its natural environment and human occupants.

Characteristics of Green Buildings

- **Location & Transport:** Do not build in environmentally sensitive locations and provide public transport to reduce private car use.
- **Sustainable Sites:** Protect and maintain the natural habitat, reduce pollution and the use of natural resources and facilitate interaction with nature.
- **Efficient Use of Water:** Minimise the use of water during construction and provide mechanisms to reduce the building's water footprint.
- **Energy & Atmosphere:** Reduce energy consumption, use renewable energy and increase energy efficiency to reduce pollution.
- **Materials & Resources:** Incorporate recycling systems, use sustainable materials and save as many resources as possible during construction.
- **Design Innovation:** Implement innovative sustainability strategies during its construction.
- **Regional Priority:** Achieve improvements for the place where it is located in terms of the environment, social equity and public health.

Benefits

Environmental Benefits:

- **Reduces Wastage of Water and Energy:** Green buildings certified by the Indian Green Building Council (IGBC) results in water savings of 20 – 30% and energy savings of 40 – 50% compared to conventional buildings in India.
- **Conserves Natural Resources:** The building sector has the potential to make energy savings of 50% or more in 2050, in support of limiting global temperature rises to 2°C (above pre-industrial levels) – UNEP, 2016.

Economic Benefits:

- **Reduces Costs and Increase Value:** These buildings lower construction costs and higher property value for building developers.
- **Improves Occupant Productivity:** Green Building focuses on creating buildings that

are not only good for the environment but also support healthier, happier and more productive lives.

- **Creates a Market For Green Product & Services:** Different countries and regions have a variety of characteristics which shapes up the green building and make green buildings best suited to their own markets.

Social Benefits:

- **Improves the Quality of Life:** In green buildings, the quality of life of occupants is considered in design, construction and operation. It Improves occupant health and comfort.
- **Minimizes Strain on Local Infrastructure:** Green buildings work with local governments and utilities to provide training and incentives for green building and energy efficiency.

BRAIN BOOSTERS

Constitution Day

Why in Broadcast

India will celebrate 9th 'Constitution Day' on 26th November, 2023. The Ministry of Social Justice and Empowerment on 19th November 2015 notified the decision of Government of India to celebrate the 26th day of November every year as 'Constitution Day' to promote Constitution values among citizens.

Constitution's Enforcement

- On 26th November 1949, Constitution of India was partially enforced.
- Articles 5, 6, 7, 8, 9, 60, 324, 366, 367, 379, 380, 388, 391, 392 and 393 came into force on 26th November 1949.
- On 26th January 1950 rest of the articles came into force.
- "Commencement of the Constitution" took place on 26 January 1950.

Enactment of the Constitution

- Final draft of the Constitution of India was introduced on 4th November, 1948 and the first reading took place.
- Second reading took place from 15th November, 1948 to 17th October 1949.
- Third reading took place from 14th November 1949 to 26th November 1949.
- On 26th November 1949, Constituent Assembly adopted the "Constitution of India". It had a Preamble, 395 Articles in 22 parts and 8 Schedules.

Constituent Assembly Demanded

- For the first time, M. N. Roy in 1934 demanded a Constituent Assembly for India.
- Indian National Congress officially demanded a Constituent Assembly for the first time in 1935.
- By "August offer" in 1940, British government finally accepted the demand in principle.
- Cripps Mission came to India in 1942 and offered full dominion status after the end of World War-II. Gandhi called the Cripps offer a "Postdated Cheque drawn on a falling Bank".
- Cabinet Mission came to India in 1946; it put forth a scheme for the Constituent Assembly.

First Meeting of Constituent Assembly

- First meeting of the Constituent Assembly was held on December 9, 1946.
- Dr. Sachidananda Sinha was elected as the temporary President of the assembly.
- Dr. Rajendra Prasad was elected as the President of the Constituent Assembly.

Indian Independence Act Passed

Due to Indian Independence Act 1947:

- The Constituent Assembly became fully sovereign body.
- Now Constituent Assembly had to perform two task:-
 1. **Constitution making:** It was chaired by Dr Rajendra Prasad. Later Dr Rajendra Prasad became the first President of India.
 2. **Provincial Legislature:** It was chaired by G V Mavalankar. Later he became the first Speaker of Lok Sabha of India.

Drafting Committee

- On 29th August, 1947 Constituent Assembly appointed the Drafting Committee. Its 7 members were:
 1. Dr B R Ambedkar (Chairman)
 2. N Gopalaswamy Ayyangar
 3. Alladi Krishnaswamy Ayyar
 4. Syed Mohammed Saadullah
 5. Dr K M Munshi
 6. N Madhava Rau (Replaced B L Mitter)
 7. T T Krishnamachari (Replaced D P Khaitan)
- On 21st February, 1948 the first draft of the Constitution of India was published.

BRAIN BOOSTERS

Biosphere Reserve

About Biosphere Reserve

Biosphere reserves (BR) are sites established by countries and recognized under UNESCO's Man and the Biosphere (MAB) Programme to promote sustainable development based on local community efforts and sound science. The programme of Biosphere Reserve was initiated by UNESCO in 1971.

Structure & Functions of BR

Biosphere reserves are demarcated into following 3 inter-related zones:

- **Core Zone:** Core zone must contain suitable habitat for numerous plant and animal species, including higher order predators and may contain centres of endemism.
- **Buffer Zone:** The buffer zone, adjoins or surrounds core zone, uses and activities are managed in this area in the ways that help in protection of core zone in its natural condition.
- **Transition Zone:** The transition area is the outermost part of a biosphere reserve. This includes settlements, crop lands, managed forests and area for intensive recreation and other economic uses characteristics of the region.

Purpose

- The purpose of the formation of the biosphere reserve is to conserve in situ all forms of life, along with its support system, in its totality.
- So that it could serve as a referral system for monitoring and evaluating changes in natural ecosystems.
- The first biosphere reserve of the world was established in 1979.

The Counting

There are 748 biosphere reserves in 134 countries, including 23 transboundary sites. They are distributed as follows:

- 93 sites in 33 countries in Africa
- 36 sites in 14 countries in the Arab States
- 176 sites in 24 countries in Asia and the Pacific
- 309 sites in 41 countries in Europe and North America
- 134 sites in 22 countries Latin America and the Caribbean.

Designation Criteria for Biosphere Reserves

- A site that must contain an effectively protected and minimally disturbed core area of value of nature conservation.
- The core area should be typical of a biogeographical unit and large enough to sustain viable populations representing all trophic levels in the ecosystem.
- The management authority to ensure the involvement/cooperation of local communities to bring variety of knowledge and experiences to link biodiversity conservation and socio-economic development while managing and containing the conflicts.
- Areas potential for preservation of traditional tribal or rural modes of living for harmonious use of environment.

Biosphere Reserves in India

- | | | |
|------------------|-------------------|---------------------|
| ➤ Nilgiri | ➤ Simlipal | ➤ Achanakamar - |
| ➤ Nanda Devi | ➤ Dibru-Saikhowa | ➤ Amarkantak |
| ➤ Nokrek | ➤ Dehang-Dibang | ➤ Kachchh |
| ➤ Great Nicobar | ➤ Pachmarhi | ➤ Cold Desert |
| ➤ Gulf of Mannar | ➤ Khangchendzonga | ➤ Seshachalam Hills |
| ➤ Manas | ➤ Agasthyamalai | ➤ Panna |
| ➤ Sunderbans | | |

BRAIN BOOSTERS

India's Aviation Industry

Why in Broadcast

India's ambitious vision of becoming 'Atmanirbhar' (self-reliant) in critical and emerging technologies by 2030, establishing itself as a global drone hub, and achieving developed nation status by 2047 hinges significantly on the robustness of its aviation sector.

Government Initiatives Empowering India's Aviation Sector

- Reduced GST for Maintenance, Repair, and Overhaul (MRO) Services.
- Support through Emergency Credit Line Guarantee Scheme (ECLGS) 3.0.
- Promoting Private Investments.
- Regional Connectivity Scheme (RCS) - UdeDeshKaAamNagrik (UDAN) Revolution.
- Efficient Airspace Management.

Opportunities in India's Aviation Sector

- **Rapid Fleet Expansion:** Indian carriers are on track to expand their fleet to 1,100 aircraft by 2027, indicating substantial growth prospects.
- **Surging MRO Demand:** The demand for Maintenance, Repair, and Overhaul (MRO) services is soaring, fueled by consistent double-digit growth in the aviation sector.
- **Strategic Regional Development:** The Airports Authority of India (AAI) aims to transform Guwahati into an inter-regional hub, boosting aviation development in the North-Eastern states.
- **Innovative Revenue Models:** Indian airports are adopting the Special Economic Zone (SEZ) Aerotropolis model, focusing on revenue generation from retail, advertising, parking, security services, and equipment.
- **PPP Development Initiatives:** Public Private Partnership (PPP) airports in Delhi, Hyderabad, and Bengaluru are investing INR 30,000 Crores in developmental projects by 2025, enhancing infrastructure and services.
- **Air Sports Revolution:** The Government of India envisions making the country one of the top air sports nations by 2030, fostering a safe, affordable, accessible, enjoyable, and sustainable air sports ecosystem.

Size of India's Aviation Industry

- As of March 2023, India's domestic carriers facilitated travel for a staggering 13 million passengers.
- The Civil Aviation Ministry projects a remarkable increase, estimating over 140 million passengers in FY2024 alone.
- Looking ahead, India aims to handle a colossal 1.3 billion passengers annually over the next two decades.
- Currently boasting 148 operational airports, India stands proudly as the world's third-largest domestic market concerning seat capacity.

Financial Viability of the Indian Aviation Sector

- **Intense Competition:** Despite being recognized as the world's fastest-growing aviation sector, airlines in the country have faced significant challenges in the fiercely competitive aviation industry.
- **Pandemic-Induced Losses:** In the fiscal year 2020-2021, airlines incurred substantial losses amounting to Rs. 15,000 crore due to the impact of the pandemic.
- **Financial Struggles:** 17 airlines, both domestic and regional, have ceased operations due to financial hardships, primarily caused by liquidity issues and low ticket prices.
- **Unequal Market Share:** The merger of four carriers has resulted in consolidated market dominance. Air India and Indigo, after the merger, are set to capture 75-80% of the market share, leaving only about 20% for other players.

Circular Economy Concept

Why in Broadcast

In recent times, there has been a growing focus on the Circular Economy (CE) concept, which provides a solution to various environmental and economic issues.

Global Initiatives

- **UNEP's Report on Lifestyles:** UNEP provides the latest science-based evidence on lifestyles. Its report, '1.5-Degree Lifestyles: Towards A Fair Consumption Space For All,' offers policy recommendations on reducing lifestyle carbon footprints.
- **The Life Cycle Initiative:** This initiative offers tools and frameworks to support sustainable consumption and production.
- **Global Opportunities for Sustainable Development Goals (GO4SDGs):** This initiative aims to promote sustainable development by aligning efforts with the Sustainable Development Goals (SDGs).
- **International Resource Panel (IRP):** IRP provides scientific assessments to guide resource management & policy options for achieving sustainable consumption and production.
- **10-Year Framework of Programmes on Sustainable Consumption & Production:** This framework focuses on the promotion of sustainable consumption and production patterns.
- **Sustainable Consumption and Production Hotspots Analysis Tool (SCP-HAT):** This tool supports the identification of areas where sustainable consumption and production efforts can have the most significant impact.

Principles of Circular Economy

The following '5R' principles lie at the heart of achieving circularity.

- **Reduce:** The emphasis is on prioritizing the use of regenerative and restorative resources.
- **Reuse:** This encompasses to reuse of the useful parts/components of a product, wherever possible.
- **Recycle:** utilizing discarded material as a source of secondary resources, through extensive recycling.
- **Re-manufacture:** To create new products by utilizing waste streams.
- **Repair/Refurbish:** The aim is to preserve and extend the life of a product.

Achieving Sustainability & Low-Carbon Living

Four key areas are central to achieving sustainability and low-carbon living:

- **Mobility:** Transitioning towards eco-friendly modes of transportation and reducing the carbon footprint associated with travel.
- **Housing & Energy Use:** Embracing energy-efficient practices in housing and reducing energy consumption.
- **Dietary Choices & Food:** Shifting towards sustainable food sources and reducing food waste.
- **New Business Models:** Reimagining industries which have witnessed an alarming increase in consumption and waste.

India's Proactive Approach

- The Government of India has shown a proactive approach to advancing the circular economy, resource efficiency, and sustainable consumption and production.
- India's transition to manufacturing-led growth offers a promising opportunity to integrate circular economy approaches into various manufacturing sectors.
- Reports indicate that this transition could generate a net economic benefit of approximately USD 624 billion annually in India by 2050, compared to a business-as-usual scenario.
- Transitioning to a circular economy can also have a global impact on employment, potentially creating six million jobs.

News Of National and International Importance

ATL Marathon 2023-24

Atal Innovation Mission (AIM), NITI Aayog opened applications for 'ATL Marathon 2023-24' - a flagship innovation challenge organised this year in collaboration with the Ministry of Education, YuWaah and UNICEF.

About ATL Marathon:

- Atal Tinkering Lab (ATL) Marathon is a national level innovation event for young innovators from all over India, who can solve community problems of their choice, and develop innovative solutions in the form of working prototypes.
- The theme of this year's ATL Marathon is based on "75th Republic Day of India".
- Amazon Web Services (AWS) is the hosting partner for this edition of the ATL Marathon.
- ATL Marathon will allow teams to come together and work on a project on a collective basis.
- ATL Marathon will serve as the future of education, where these students can solve real problems of their community.
- The coming together of School Innovation Council and ATL Marathon is a very important step to establish innovation ecosystem in schools.

British Academy Book Prize 2023

India-born author Nandini Das has been named the winner of the 2023 British Academy Book Prize for Global Cultural Understanding, a leading international non-fiction prize, for her book 'Courting India: England, Mughal India and the Origins of Empire'.

Key Points:

- Through this book, the relations between Britain and India have been described through the diplomat of England in the Mughal court.
- Nandini Das is Professor of English at Oxford University London.
- It is a book prize awarded by the British Academy to promote cultural understanding, it was known as the Nayef Al-Rodhan Prize.
- This award is given for notable work in non-fiction literature.
- It was established to reward works of non-fiction that demonstrate rigor and originality and contribute to the public understanding of other world cultures and their interactions.
- The British Academy is a national academy of Britain working in the fields of humanities and social sciences.

Philippines Quits BRI

Recently the Philippines became the latest country to pull out of the Belt and Road Initiative (BRI). The announcement was made by Philippines' Department of Transportation to favor Japanese and other Western allies against China.

Key Points:

- The Philippines' decision to distance itself from the Belt and Road Initiative stems from a long-running bilateral dispute over disputed areas in the South China Sea.
- Philippines Transportation Secretary Jaime Batista announced the scrapping of infrastructure projects worth \$4.9 billion, including two railway projects in Luzon and another in Mindanao, the home island of former President Rodrigo Duterte.
- Overall BRI activity has declined by a massive 40% from its 2018 peak due to the economic crisis in China and the debt crisis of participating countries.
- Chinese projects expected to be put on hold in Manila include the Mindanao Railway Project Tagum-Davao-Digos Section, the Chico River Pumped Irrigation Project, the New Centennial Water Source Kaliwa Dam Project and the Samal Island-Davao City Connector Project.

Kaleshwaram Lift Irrigation Project

Recently, after the National Green Tribunal (NGT) completed substantial work on the Kaleshwaram Lift Irrigation Project (KLIP), it was granted environmental clearance by the Ministry of Environment, Forest and Climate Change.

Key points related to the project:

- Kaleshwaram Lift Project has become one of the world's largest lift irrigation projects to be built on the Godavari River.
- This project has been built in just three years at a cost of Rs 82000 crore in collaboration with Megha Engineering and Infrastructure Limited (MEIL) and BHEL.
- The project plans to lift 3 TMC water a day through 20 pump houses for which 120 machines with one pump and one motor in each machine have been installed.
- The project will require 7152 MW power to pump 3 TMC water per day, out of which 4992 MW power is being used in the first phase to pump 2 TMC water.
- In the first phase, Medigadda, Annaram and Sundilla pumphouses as Linga-1 are being partially prepared for pumping water.

GST Waiver Scheme

Recently the Finance Ministry has come up with an amnesty scheme for filing appeals against Goods and Services Tax (GST) demand orders.

Key points related to the scheme:

- The scheme will be open till January 31, 2024. It will be available to those entities who were unable to submit their appeal against the orders issued by the tax officer on or before March 31, 2023.
- Institutions wishing to avail the benefit of this scheme will have to deposit 12.5 percent of the tax demand in advance.
- The scheme will be a lifeline for those who have missed the appeal deadline due to administrative errors or unexpected circumstances.
- This initiative may also promote better compliance among taxpayers. By offering a fair and liberal approach to filing appeals, it will encourage better cooperation with tax authorities and a willingness to resolve disputes or clarify tax matters.

Rajyotsava Awards 2023

Recently 68 people and 10 organizations including ISRO Chairman S. Somnath, golfer Aditi Ashok and retired Supreme Court judge V. Gopal Gowda were awarded the Rajyotsava Awards 2023 by the Karnataka government.

Key points related to the award:

- The award carries Rs 5 lakh cash, 25 grams of gold and a plaque.
- Lieutenant General Kodanda Poovaiah Cariappa, who served in various positions in the Indian Army, and actor 'Dingri' Nagaraj, and B. Janardhan has been selected for the award in the cinema category.
- These award winners include 13 women, 13 members of minority communities and one transgender person.
- The ten organizations include Karnataka Association, BN Shivaram Book Publications, Mythic Society, Karnataka Sahitya Sangh, Maulana Azad Education and Social Welfare Cultural Association, Muslim Education Institutions Federation, Sneharanga Havyasi Kala Sanstha, Chinnara Bimba, Maruti Janaseva Sangh, and Vidyadan Samiti. .
- Three centenarians K. Rupa Naik (social service) from Davangere, Husenbi Budden Sab Siddi of Uttara Kannada (folk art) and freedom fighter Puttaswami Gowda (Ramanagar) also received the award.

Sixth Driest October in Southern Peninsular India

Recently, the India Meteorological Department (IMD) said that southern peninsular India had the sixth driest October in 123 years this year.

Key points:

- Southern peninsular India receives rainfall during October from both the retreating south-west monsoon and the advancing north-east monsoon.
- This year the area remained dry for about 25 days in October. Unlike the last few years, this year the southwest monsoon ended almost on time after a season of 134 days.
- These areas include Coastal Andhra Pradesh, Yanam (18 mm, -90 percent), Rayalaseema (12.7 mm, -90 percent), Tamil Nadu, Karaikal and Puducherry (98.5 mm, -43 percent), South Interior Karnataka (64.5 mm, -53 percent) and Kerala (311 mm, 1 percent).
- Monthly rainfall over south peninsular India during November is likely to be normal and between 77-123 per cent of the long period average, which is 118.69 mm (1971-2020 record), according to the IMD.

Eight Cape Town Beaches Awarded Blue Flags

Eight urban beaches were recently awarded Blue Flag status by the Wildlife and Environment Society of South Africa (WESSA), while two others have been awarded Pilot Blue Flag status.

Key Features:

- This Blue Flag recognition was awarded Bikini Beach, Camps Bay, Clifton, Fish Hoek, Llandudno, Melkbosstrand, Muizenberg and Silwerstroom. Pilot blue flag status was awarded to Mnandi and Strandfontein
- Wildlife and Environment Society of Africa The beach meets the requirements for Blue Flag accreditation using four categories and 33 criteria, which include environmental education and awareness, water quality, environmental management and safety services.
- Criteria include universal access, effective waste management, availability of interpretive signage and control of domestic animals.

ATMAN by IIT Kanpur

Recently, Indian Institute of Technology (IIT) Kanpur has set up a new Center named ATMAN (Advanced Technologies for Monitoring Air-quality iNDicators). It is focusing on building indigenous low-cost sensor manufacturing and Artificial Intelligence (AI)/Machine Learning (ML) capabilities to enhance air quality across urban and rural areas of the country.

Key points related to Center of Excellence:

- Its main goal is to transform sustainable technologies and business models into practical products and services with cutting-edge technology.
- AMRIT, one of the projects under ATMAN, will deploy a dense sensor ambient air quality monitor network with 1,400 nodes in rural areas of Bihar and Uttar Pradesh.
- This initiative is the first of its kind to comprehensively monitor air quality.
- Supported by philanthropies including Bloomberg Philanthropies, Open Philanthropy, and Clean Air Fund, ATMAN aims to address critical air quality challenges with cutting-edge technology.

Animal Husbandry and Dairy Department Pavilion

Recently the Minister of Fisheries, Animal Husbandry and Dairying inaugurated the pavilion of the Department of Animal Husbandry and Dairying at the World Food India Program 2023 held in New Delhi.

Key points related to the pavilion:

- In the pavilion, the Department of Animal Husbandry and Dairying showcased its major schemes, programmes, new initiatives and innovative technologies in the livestock and dairy sector.
- Under this, 20 stalls including National Dairy Development Board, start-ups, companies working in animal husbandry and dairy sector were also included.

- Its main attraction was 'Selfie Point', live demonstration of various innovative products by start-ups and companies. The exhibition highlighted the department's commitment in promoting technological advancements and facilitating the growth and development of the sector.
- The objective of the World Food India Program was to emphasize the importance and valuable contribution of women in the food processing industry, especially in the primary production of milk, meat and eggs.

IIT Madras sets up First International Campus in Zanzibar, Tanzania

Recently the Indian Institute of Technology Madras became the first Indian Institute of Technology to set up an international campus in Tanzania. India and the East African nation recently signed a Memorandum of Understanding (MoU).

Key points related to the campus:

- The Zanzibar Campus, IIT Madras, will be located on the island of Zanzibar, off the East African mainland and part of the Republic of Tanzania.
- The campus in Bwelio district, located approximately 15 km south of Zanzibar Town, is equipped with international facilities designed to meet the current needs of students.
- The first batch of IITM Zanzibar admitted students from Zanzibar, Tanzania, Nepal and India, with 40 per cent of the students being women.
- In addition to a comprehensive curriculum covering all aspects of Data Science and Artificial Intelligence, students will have access to a number of valuable opportunities during their studies.

Indian Navy Sailing Championships (INSC) 2023

Recently, the most awaited and biggest sailing regatta of the Indian Navy, the Indian Navy Sailing Championship (INSC) was held in Mumbai.

About INSC:

- It is an annual event organized under the aegis of the Indian Naval Sailing Association (INSA) at Naval Headquarters to encourage participation of naval personnel in competitive sailing.
- Teams from three Naval Commands comprising officers, cadets and sailors (including firemen) will participate in this edition.
- Fleet racing in the three most popular formats of sailing will take place in ILCA-6 class boats for women, ILCA-7 class boats for men and Bikanova class board open for windsurfing.
- The Indian Navy will give special emphasis to aquatics activities and recognize the sport of sailing as a means of developing seamanship, camaraderie, courage and other leadership qualities in the personnel.

New Island in Japan

Recently, the undersea volcano off the southern coast of Japan, near Loto Island (Iwo Jima), captured global attention as it erupted, giving rise to the formation of a new island.

About Loto Island:

- Loto Island, also known as Iwo Jima, is situated approximately 1 kilometer off the southern coast of Japan. The newly formed island has dimensions of about 100 meters in diameter and rises as high as 20 meters above the sea level.
- The island's formation is attributed to volcanic activity and experts note its "crumbly" composition, making it susceptible to erosion from waves.
- Iwo Jima holds historical significance as a site of intense fighting during World War II. The recent volcanic activity adds a geological dimension to its importance. Japan, including Iwo Jima, is situated on the "Pacific Ring of Fire," a region known for high seismic and volcanic activity, hosting about 1,500 active volcanoes.

Current Affairs at a Glance

1. Saima Wajid of Bangladesh will be the regional director for South East Asia in the World Health Organization. Saima Wajid is the daughter of Bangladesh PM Sheikh Hasina. She has done extensive work in the field of autism and mental illness.
2. RBI has allowed district central cooperative banks to close their unprofitable branches without prior permission of the central bank, although this will require approval from the Registrar of Cooperative Societies of the concerned state.
3. PM Narendra Modi inaugurated the second edition of the mega food event 'World Food India 2023' at Bharat Mandapam, Pragati Maidan, New Delhi.
4. Thai Tourism recently announced visa-free entry for Indian and Taiwanese tourists from November 10, 2023 to May 10, 2024. Thailand has waived visa requirements to attract more tourists from India and Taiwan. In September 2023, similar exemptions were extended to Chinese citizens.
5. All doctors in India will get a unique identification number on the National Medical Register which is likely to be implemented by the end of next year. A pilot for the assessment system has already been conducted in eight colleges across the country.
6. Recently Leela Omchery passed away in New Delhi. She was an expert in Carnatic music, Hindustani music, Sopana Sangeetham and folk songs. She was known for her research work related to various streams of Indian classical and folk music. She received the Padma Shri in 2005 for her contribution in the field of music.
7. Manoranjan Mishra has been appointed as Executive Director by RBI. As Executive Director, he will look after the Enforcement Department, Risk Monitoring Department and External Investment and Operations Department.
8. HCL Tech founder Shiv Nadar has topped EdelGive Hurun India's Philanthropy List 2023. Azim Premji of Wipro stood second. India's richest man, Mukesh Ambani was ranked third in the list.
9. Bangladesh will host the 24th Asian Archery Championships in 2025.
10. Philippines announced its withdrawal from China's Belt and Road Initiative.
11. Women's participation in India's workforce increased to 37%.
12. The Indian hockey team won the Women's Asian Champions Trophy title by defeating Japan 4-0 in the final in Ranchi. Salima Tete was declared player of the tournament.
13. IPS officer Praveen Madhukar Pawar has been appointed joint director of the Central Bureau of Investigation for five years.
14. The Kerala Responsible Tourism Mission wins the Global Responsible Tourism Award 2023 for promoting sustainable and women-inclusive initiatives. It won in the 'Best for Local Sourcing - Craft and Food' category.
15. Chile became the 95th member of the International Solar Alliance (ISA).
16. Hiralal Samaria was sworn in as the chief of the Central Information Commission (CIC) by President Droupadi Murmu.
17. Government launched 'Bharat Atta' to provide wheat flour at subsidized rates. The government is providing 'Bharat Atta' at a concessional price of Rs 27.50 per kg under this scheme.
18. Myanmar-Russia Maritime Security Exercise (MARUMEX), held for the first time in the Andaman Sea, concluded.
19. The International Cricket Council (ICC) has suspended the membership of Sri Lanka Cricket (SLC) with immediate effect due to government interference in the operations of the Sri Lankan cricket board. According to ICC rules, there should be no government interference in the governance, regulation or administration of the cricket board.
20. CJI DY Chandrachud inaugurated 'Mitti Café' in the Supreme Court complex. This café is completely run by differently-abled people. It has 38 outlets in different parts of the country.
21. Former British Prime Minister David Cameron has been appointed Foreign Secretary of Britain.
22. Bhutan became the first country in the world to sterilize all stray dogs. To control the population of stray dogs in Bhutan, a campaign to sterilize dogs was going on for 14 years.

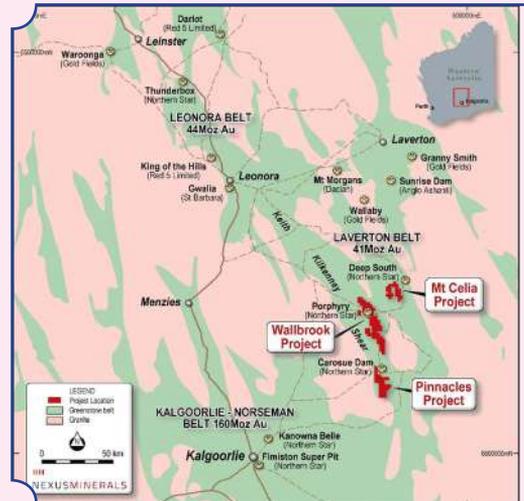
Places in News

Kalgoorlie (Australia)

- Recently, National Mineral Development Corporation, a State-owned Steel CPSE, inaugurated the Mount Celia Gold Operation in Western Australia, expanding its mineral portfolio.
- It is located in Western Australia, specifically 180km northeast of Kalgoorlie.
- NMDC's First Venture into Gold Mining:
- The project marks the National Mineral Development Corporation's (NMDC) first foray into gold mining. NMDC is a State-owned Steel CPSE (Central Public Sector Enterprise).

Rich Gold Mining History:

- Kalgoorlie, the region where Mount Celia is located, has a rich history in gold mining and played a crucial role in the Western Australian gold rush of the late 19th century.
- **Golden Mile:** Kalgoorlie is home to the "Golden Mile," which is a vast stretch of gold-bearing land, making it one of the most productive gold mining regions globally.



Seattle

- Recently, India has announced to set its sixth consulate in Seattle.

Geographical Location:

- Seattle is a seaport city on the West Coast of the United States and is the largest city in both Washington state and the Pacific Northwest.

Geographical Position:

- Seattle is situated on an isthmus between Puget Sound (an arm of the Pacific Ocean) to the west and Lake Washington to the east.
- The city's location in the Pacific Ring of Fire makes it susceptible to earthquakes, with a major earthquake zone.
- Significance: Seattle is a major hub for technology companies, including Microsoft, Amazon, Boeing, and more.

Embassy vs. Consulates:

- An embassy is a representation of one country's government in another and is usually located in the host country's capital, with an ambassador as the head.
- Consulates are smaller offices located in major cities of the host country, focusing on providing consular services to citizens living or traveling abroad, such as issuing visas and passports and offering assistance during emergencies and legal aid.



Galápagos Islands

- Recently, pristine coral reefs near the Galápagos Islands were discovered, revealing a world teeming with abundant marine life.
- Geographical Location: The Galápagos Islands are located in the Eastern Pacific Ocean, approximately 900 km (560 mi) west of the South American continent.
- **Political Division:** The province is divided into the cantons of San Cristóbal, Santa Cruz, and Isabela,

which are the three most populated islands in the chain.

Geographical Features:

- The Galápagos consist of 19 main islands (13 major and 6 smaller), including Isabela, Española, Santa Cruz, San Cristóbal and others.
- They are numerous smaller islets, rocks and reefs surrounding the main islands, which are essential to note for mapping purposes.
- Equator passes through the islands.
- The islands are formed of lava piles and dotted with shield volcanoes, some of which are periodically active.
- Its largest Island is Isabela.
- Highest Point is Peak of Wolf Volcano (on Isabela Island).



Iceland

Recently, emergency has been declared in Iceland due to escalating concerns over Fagradalsfjall volcano eruption.

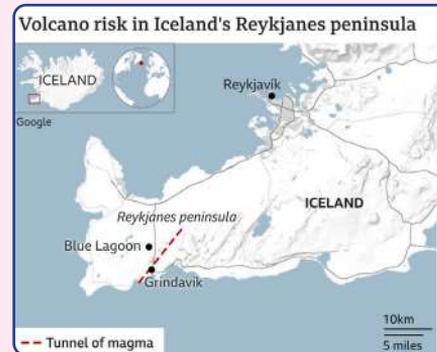
- **Location:** Iceland is located at the confluence of the North Atlantic and Arctic Oceans, east of Greenland and within the Arctic Circle. To the west, it shares proximity with Greenland.

Geographical Region:

- The country is divided into eight main regions, including Capital Region, Southern Peninsula, West, Westfjords, Northwest, Northeast, East and South.

Physical Features:

- **Major Rivers:** The longest river in Iceland is Þjórsá, spanning a length of 230 km.
- **National Parks:** Notable national parks include Vatnajökull, Snæfellsjökull and Þingvellir.
- **Volcanic Activity:** Iceland is home to around 30 active volcanic systems, with notable volcanoes such as Hekla, Eldgjá, Katla and the infamous Eyjafjallajökull, which erupted in 2010.



Tuvalu

- Recently, Australia and Tuvalu agreed to provide residency in Australia to Tuvalu citizens affected by climate change.
- Capital of Tuvalu is Funafuti.
- Location: Tuvalu is located in the South Pacific Ocean between Hawaii and Australia.
- **Political Boundaries:** It shares borders with Kiribati, Nauru, Solomon Islands, Vanuatu, Tokelau, Fiji, Samoa, Wallis and Futuna and Tonga.

Geographical Features:

- It comprises three reef islands and six true atolls.
- Funafuti, the largest atoll, includes various islets around a central lagoon.

Historical Significance:

- It was initially settled by Polynesians around 3,000 years ago, it was first contacted by Spanish navigator Álvaro de Mendaña in 1569. Later, it was colonized by Great Britain and gained independence in 1978.



D. None of the above

14. Consider the following statements with reference to the report of the 28th session of the International Renewable Energy Agency (IRENA) and the Global Renewables Alliance:

1. The report says 22 gigatonnes of greenhouse gases need to be cut over the next seven years to keep 1.5°C within reach.
2. The report says wind installations need to exceed 3,500 GW, up from 899 GW by 2022.
3. The report says there is an urgent need to boost infrastructure planning, enhance cross-border cooperation and develop regional power grids.

Which of the above statements is true?

- A. Only 1
- B. 1 and 3
- C. 1, 2 and 3
- D. None of the above

15. Consider the following statements with reference to cloud seeding:

1. It refers to a method of changing precipitation in the form of rain or snow by adding certain substances to the air which affects the condensation of clouds and their physical properties.
2. For cloud seeding, sulfur oxide is released into the clouds through rockets or airplanes.
3. In this process clouds absorb moisture from the air and their mass increases. Due to this, rain drops start forming and it starts raining.

Which of the above statements is true?

- A. Only 1
- B. 1 and 3
- C. 1, 2 and 3
- D. None of the above

16. Consider the following statements regarding women's participation in the Indian workforce:

1. Women-centric schemes have helped in increasing women's participation in the workforce.
2. The unemployment rate in the country decreased from 6 percent in 2017-18 to 3.7 percent in 2022-23.

3. According to the data, the unemployment rate was 4.2 percent in 2020-21, 4.8 percent in 2019-20, 5.8 percent in 2018-19 and six percent in 2017-18.

Which of the above statements is true?

- A. Only 1
- B. 1 and 3
- C. 1, 2 and 3
- D. Nobody

17. Consider the following statements regarding the relationship between air pollution and Parkinson's disease:

1. Studies have shown that fine particulate matter, or PM2.5, can cause inflammation in the brain, which is a known mechanism by which Parkinson's disease can develop.
2. Researchers also found that the relationship between air pollution and Parkinson's disease was not the same in each part of the country.
3. Parkinson's disease is a degenerative disorder of the central nervous system in which tremors and impaired muscular coordination happen.

Which of the above statements is true?

- A. Only 1
- B. 1 and 3
- C. 1, 2 and 3
- D. None of the above

18. Consider the following statements with reference to Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome:

1. This disease usually occurs in 1 in 4,000 to 5,000 girls.
2. Girls are unable to conceive due to the absence of a uterus, but assisted reproductive technologies such as surrogacy may be an option.
3. In the embryo this structure develops into the uterus, fallopian tube, cervix and upper part of the vagina.

Which of the above statements is true?

- A. Only 1
- B. 1 and 3
- C. 1, 2 and 3
- D. None of the above

Answer

- | | | | | | |
|------|------|------|-------|-------|-------|
| 1. C | 4. C | 7. B | 10. C | 13. D | 16. C |
| 2. C | 5. D | 8. B | 11. C | 14. C | 17. C |
| 3. D | 6. C | 9. C | 12. C | 15. B | 18. C |

Environment & Ecology Part-II

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Climate Change

India Climate Energy Dashboard (ICED) 3.0

Why in News?

Recently NITI Aayog in collaboration with the energy and climate think-tank Vasudha Foundation has developed India Climate Energy Dashboard.

- It is the country's one-stop platform for near real-time data on the energy sector, climate, and related economic datasets based on government published sources.



Features of the Dashboard:

- It will provide insight and increase understanding about the energy and climate sectors. It is also identifying key challenges related to climate action.
- The portal will draw insights from available data parameters and hence is extremely useful in monitoring the progress of India's clean energy transition journey.
- Apart from energy and climate, the dashboard also provides information on economy and demography for comparative study and joint analysis of energy and climate issues as well.

Excessive Water Stress

Why in News?

New data from WRI's Aqueduct Water Risk Atlas show that 25 countries housing one-quarter of the global population face extremely high water stress each year, regularly using up almost their entire available water supply. At least 50% of the world's population around 4 billion people live under highly water-stressed conditions for at least one month of the year.

- Living with this level of water stress jeopardizes people's lives, jobs, food and energy security. Water is central to growing crops and raising livestock, producing electricity, maintaining human health, fostering equitable societies and meeting the world's climate goals.

Atlantification

Why in News?

A recent study has identified the cause of the decline in Arctic Ocean Sea ice since 2007. Researchers found that the periodic reversal of an atmospheric phenomenon known as Atlantification and Arctic dipole plays a significant role in driving drops in sea ice. This phenomenon referred as Atlantification.

- The Arctic dipole follows a roughly 15-year cycle. The current "positive" phase of the Arctic dipole, which has been in place since 2007, involves high pressure over the Canadian Arctic and low pressure over the Siberian Arctic.
- This wind pattern drives upper ocean currents and has year-round impacts on air temperatures, heat exchanges, sea-ice drift, and ecological consequences.

1.5°C Target

Why in News?

The World Meteorological Organization (WMO) released two decadal prediction reports in which it says, the average global temperature will exceed the critical point of 1.5 degree Celsius by 2027.

- Report said that in 2022, the annual mean global surface temperature was 1.15 degrees above the baseline temperature of pre-industrial levels (1850-1900).
- The global surface temperature will be 1.1-1.8 degree Celsius higher than the baseline temperature between 2023 and 2027.
- This average global temperature will exceed 1.5 degrees by 2027.

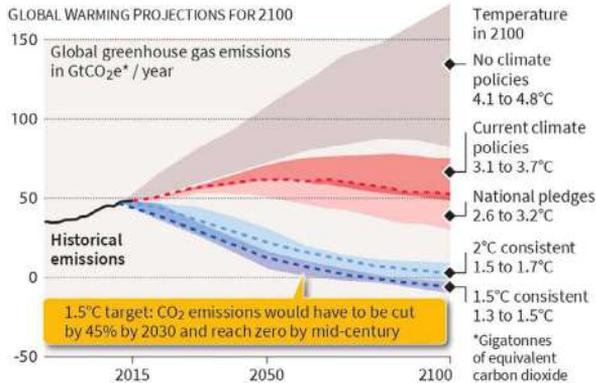
About 1.5°C Celsius Target:

- Countries agreed to limit the global average warming to below 2 degree Celsius, in 2010 at

- the Cancun COP16 to UNFCCC.
- The Paris Agreement (2015) also pledged to limit the average temperature rise to below 2 degree and actively aimed for 1.5 degrees.

The threat of rising temperatures

In 2018, the IPCC released a report on the impact of global warming when temperature reaches 1.5 degree Celsius above the baseline temperature of pre-industrial levels. It also drew a comparison with the effects of 2 degree Celsius warming

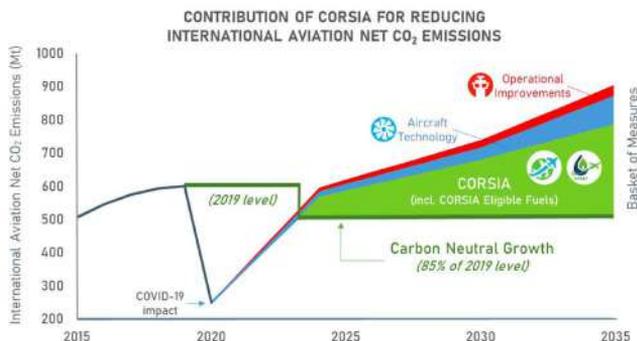


- The 1.5 degree Celsius target is the global climate target that aims to limit warming to said level by 2100, in order to prevent the planet from slipping into further climate crises.

CORSIA

Why in News?

Recently, sustainable aviation fuels (SAF) have been certified under the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).



- CORSIA is the first global market-based measure for any sector and represents a cooperative approach that moves away from a “patchwork” of national or regional regulatory initiatives. It offers a harmonized way to reduce emissions from international aviation, minimizing market distortion, while respecting the special circumstances and respective capabilities of ICAO Member States.

- Rajasthan ranks first in State Energy Efficiency Index 2021-22.

State Energy Efficiency Index

Why in News?

Central Energy released the State Energy Efficiency Index (SEEI) 2021-22 report during the RPM (Review, Planning and Monitoring) meeting of states and state utility companies in New Delhi, in which Rajasthan along with four other states (> 60 points) has been ranked I remained on top.

- Developed by the Bureau of Energy Efficiency (BEE) in collaboration with the Alliance for an Energy-Efficient Economy (AEEE), the index assesses the annual progress of states and union territories in energy efficiency implementation for the financial years 2020-21 and 2021-22.
- CORSIA complements the other elements of the basket of measures by offsetting the amount of CO₂ emissions that cannot be reduced through the use of technological improvements, operational improvements, and sustainable aviation fuels with emissions units from the carbon market.

World Energy Transition Outlook Report

Why in News?

Recently, the International Renewable Energy Agency (IRENA) released the World Energy Transition Outlook report.

Highlights of the Report:

- The global energy transition is still “off-track” and below the 1.5°C pathway.
- To survive at 1.5 degrees Celsius, deployment levels must increase from about 3,000 gigawatts (GW) today to more than 10,000 GW in 2030, an average of 1,000 GW annually.
- Public sector intervention is needed to spread investment more evenly across different countries.
- Global investment in energy transition technologies reached a new record of \$1.3 trillion in 2022, more than quadrupling the annual investment required to stay on the 1.5°C pathway to more than \$5 trillion.
- By 2030, cumulative investment should amount to US\$44 trillion, with transition technologies representing 80 percent of the total, or \$35 trillion, “prioritizing efficiency, electrification, grid expansion and resilience”.

- Current pledges and plans fall well short of IRENA's 1.5°C pathway and would result in an emissions gap of 16 gigatonnes (Gt) in 2050.

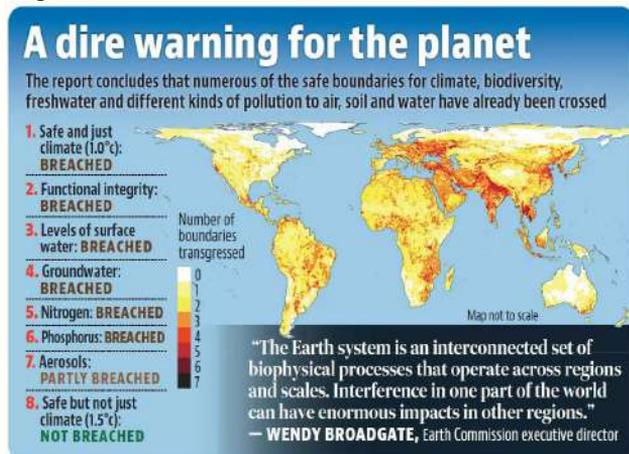
About IRENA:

- The International Renewable Energy Agency (IRENA) is an intergovernmental organization that assists countries in their transition to a sustainable energy future.
- It was officially founded on 26 January 2009 in Bonn, Germany.
- Its headquarters is in Abu Dhabi United Arab Emirates.
- Its membership includes 167 countries and the European Union.
- In 2009, India became the 77th member of this organization.
- It is an official observer of the United Nations.

State of the Global Climate 2022

Why in News?

Recently, the World Meteorological Organization (WMO) has released the State of the Global Climate Report 2022.



- The report focuses on key climate indicators – Greenhouse Gasses, Temperatures, Sea level rise, Ocean Heat and Acidification, Sea ice and Glaciers. It also highlights the impacts of climate change and extreme weather.
- Earlier, the WMO released the provisional State of the Global Climate report, 2022.

Findings of the Report:

- Global mean temperature in 2022 was 1.15 °C above the 1850-1900 average.
- The years 2015 to 2022 were the eight warmest in the instrumental record back to 1850.
- This was despite three consecutive years of a cooling La Niña – such a “triple-dip” La Niña has

happened only three times in the past 50 years.

Climate Red Lines

Why in News?

Seven out of eight Earth System Boundaries (ESBs) that are critical for the stability of the planet's health and the survival of species have already been crossed, according to a new Earth Commission study published in Nature, implying that humanity's future is now at risk of a climate catastrophe.

About the ESBs:

- The Earth Commission developed a set of ESBs for climate, biosphere, fresh water, nutrients and air pollution at the global and sub-global levels.
- These features were chosen because they span the major components of the Earth system (atmosphere, hydrosphere, geosphere, biosphere, and cryosphere).
- Their interconnected processes (carbon, water and nutrient cycles) defined them as a global common lines.

WMC Approves Global Greenhouse Gas Watch

Why in News?

Recently, the 19th World Meteorological Congress (WMC) approved the Global Greenhouse Gas (GHG) Watch (G3W), a GHG monitoring initiative to reduce heat-trapping gases and combat climate change.

- The World Meteorological Organization (WMO), in collaboration with WHO, also prepared a 2023–2033 implementation plan to advance climate, environment and health science and services to manage the impacts of climate change.

About WMO:

- WMO is an intergovernmental organization with a membership of 192 member states and territories.
- India is a member of WMO.
- It originated from the International Meteorological Organization (IMO), which was founded after the 1873 Vienna International Meteorological Congress.
- Established by the ratification of the WMO Convention on 23 March 1950, WMO became the specialized agency of the United Nations for meteorology (weather and climate), operational hydrology and related geophysical sciences.
- The headquarters of WMO is in Geneva,

Switzerland.

Climate Emergency in Asia

Why in News?

A new WMO report says the effects of climate events on Asia in 2022 were much more pronounced, with an increase in the number of fatalities, people affected and economic damage.

Key Findings:

- Asia is the world's most disaster-prone region and more than 50 million people were directly affected due to 81 weather, climate, and water-related disasters in Asia during 2022.
- The economic losses associated with floods in 2022 exceeded the average over the past 20 years (2002-2021).
- This was primarily due to the significant economic losses from floods in Pakistan (over \$15 billion), China (over \$5 billion) and India (over \$4.2 billion).
- Climate change has likely increased extreme monsoon rainfall and flooding in Pakistan.
- The economic losses associated with drought in 2022 (\$7.6 billion), which mainly occurred in China, exceeded by nearly 200 per cent, the 20-year average from 2002 to 2021 (\$ 2.6 billion).
- If compared with 2021, the economic cost of drought had more than doubled.

Centre on Climate Change and Health

Why in News?

As per the latest update, India is going to open a Center on Climate Change and Health in New Delhi in partnership with the Asian Development Bank (ADB). The new Center for Climate Change and Health will also promote knowledge sharing, partnerships and innovations and help countries beyond the G-20, especially developing countries.

Aim of the Centre:

- Prioritize the development of climate-resilient health systems.
- Build sustainable and low carbon/low greenhouse gas (GHG) emission health systems and health care supply chains that deliver high quality health care.
- Mobilizing resources for resilient, low-carbon sustainable health systems.
- Facilitate collaboration, including through initiatives such as the WHO-led Alliance for Transformative Action on Climate and Health (ATAACH).

- The new Center on Climate Change and Health in New Delhi will help countries around the world use science and risk-based approaches to identify new drivers and address existing drivers and strengthen existing infectious disease surveillance systems.

Kampala Declaration on Climate Change

Why in News?

Recently total of 48 African countries have now agreed to adopt the Kampala Ministerial Declaration on Migration, Environment and Climate Change (KDMECC) to address the nexus of human mobility and climate change in the continent.

- The decision was discussed at a conference of states co-hosted by Kenya and Uganda. The initiative was supported by the International Organization for Migration (IOM) and the United Nations Framework Convention on Climate Change (UNFCCC).
- Africa is highly vulnerable to the impacts of climate change, leading to increased migration due to extreme weather events.
- The KDMECC was originally signed by 15 African states in July 2022 in Kampala, Uganda. The Declaration is the first comprehensive, action-oriented framework led by Member States to address climate-induced dynamics in a practical and effective way.
- KDMECC-Africa will ensure that all voices, including youth, women and persons living in vulnerable circumstances, are a priority for the expanded declaration.

Centre to Protect Industry from EU's CBAM

Why in News?

The government has said that we will take all necessary steps to protect Indian industry from any adverse impact of the European Union's Carbon Border Adjustment Mechanism (CBAM) which mandates reporting of carbon emissions for certain exports to Europe from October.

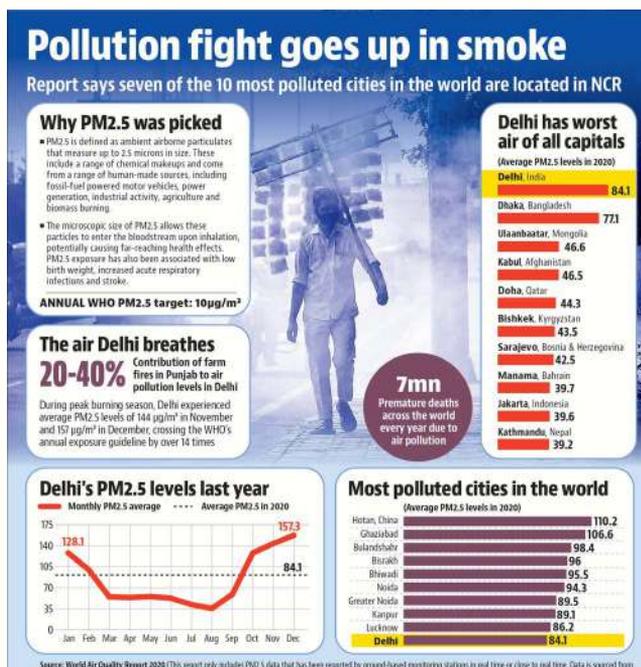
- The Minister's remarks assume significance as the CBAM framework involves onerous reporting requirements for cement, iron and steel, aluminium, fertilisers, and electricity imports in the region, to start with, with additional import levies to be imposed on such carbon-intensive products from 2026.

Pollution

Annual World Air Quality Report

Why in News?

According to the World Air Quality Report prepared by IQAir, Delhi is ranked fourth among the 50 most polluted cities in the world in terms of PM2.5 levels in 2022.



- Among 131 countries, India ranks 8th with population weighted average PM2.5 level of 53.3 µg/m3 in 2022.

Main findings of the report:

- IQAir, a Swiss air quality technology company, produces the annual World Air Quality Report based on data from monitoring stations operated by governments and other institutions and organizations around the world.
- The 2022 report is based on PM2.5 data from 7,323 cities and 131 countries.
- Chad, Iraq, Pakistan, Bahrain, Bangladesh are the 5 most polluted countries in 2022.
- The average PM2.5 level in Delhi in 2022 was 92.6 µg/m3, slightly lower than the 2021 average of 96.4 µg/m3.
- The report differentiates between New Delhi and Delhi, with the annual average PM2.5 level in

New Delhi being 89.1 µg/m3.

- The WHO guideline for annual PM2.5 level is 5 µg/m3.
- Lahore was the most polluted city in the world, followed by Hotan in China and Bhiwadi in Rajasthan.
- New Delhi is the second most polluted capital city in the world, with Chad's N'Djamena topping the list.
- A total of 39 Indian cities (including 'Delhi' and 'New Delhi') feature in the list of the world's 50 most polluted cities based on annual average PM2.5 levels in 2022.

UNEP Report on Plastic Pollution

Why in News?

A recent report 'Turning the Tap: How the World Can End Plastic Pollution and Create a Circular Economy' has been released by the United Nations Environment Program (UNEP).

- This report outlines the magnitude and nature of the changes needed to end plastic pollution and create a sustainable circular economy that is friendly to humans and the environment.
- Plastic pollution is the accumulation of plastic objects and particles (such as bags, plastic containers, and microbeads) in the environment that harm wildlife, natural and wildlife habitats, and mankind. This is most visible in developing Asian and African countries, where waste collection systems are often inefficient.

What is Circular Economy?

- The circular economy is a model of production and consumption that involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products for as long as possible. Thus, the life cycle of products is extended.

Key Points of the Report:

- Currently, the world produces 430 million metric tons of plastic each year, more than two-thirds of which are short-lived products.
- Plastics could emit 19% of permitted global greenhouse gas emissions under a 1.5°C scenario by 2040 and production could triple by 2060 if "business as usual" continues.
- Global plastic pollution could be reduced by 80%

by 2040 if countries and companies make policy changes towards a circular economy.

- Countries need to eliminate the use of unnecessary and problematic plastics. They need to make three market changes: reusing, recycling, and reviving and diversifying.

One Stop Centre for Zero Waste

Why in News?

In a step towards cutting down waste generation in urban India, the government is launching one-stop centres where citizens can deposit old clothes, shoes, books, toys and plastic that can be reused or recycled.

About One Stop Centre for Zero Waste:

- The main objective is to take collective action for the protection and conservation of the environment by adopting sustainable daily habits.
- **Backbone of 'Waste to Wealth':** The 3Rs can empower many craftsmen, recyclers, self help Groups, entrepreneurs, startups, etc. to recycle waste into a host of products.
- They would be set up as part of a nationwide campaign 'Meri LiFE, Mera Swachh Shehar' ('My Life, My Clean City') under the aegis of the Swachh Bharat Mission – Urban 2.0 (SBMU 2.0).

Short-Lived Halogens

Why in News?

A new study reveals that oceans play a crucial role in cooling the planet by releasing short-lived halogens, including chlorine, bromine, and iodine.

- These halogens currently contribute 8-10% of cooling, a figure projected to increase to 18-31% by 2100.
- Short-lived halogens refer to chlorine, bromine, and iodine compounds that have a relatively short lifespan in the atmosphere, typically less than six months. These halogens play a role in the Earth's climate system by contributing to cooling and warming effects.

Swachh Vayu Survekshan

Why in News?

Recently, the Swachh Vayu Survekshan (Clean Air Survey) 2023 awards were announced. The survey was conducted by the Central Pollution Control Board (CPCB).

Ranking:

- Top 3 cities under the first category (million plus population): Indore, Agra and Thane.
- **Worst performers:** Madurai, Howrah and Jamshedpur
- Top 3 cities under the second category (3-10 lakh population): Amravati is followed by Moradabad and Guntur.
- Worst performing: Jammu, Guwahati and Jalandhar
- Top 3 cities under third category (<3 lakh population): Parwanoo, Kala Amb and Angul.
- Worst performance: Kohima

Marine Noise Pollution

Why in News?

According to a news study, "Measuring underwater noise levels emitted by ships in Indian waters", said that increasing underwater noise emissions (UNEs) from ships in Indian waters is posing a threat to the marine ecosystem. Measurements of ambient noise levels were made by deploying a hydrophone autonomous system at a distance of approximately 30 nautical miles from the Goa coastline.



Main Points of the Study:

- The sound pressure level of UNE in Indian waters is 102–115 decibels relative to one micro Pascal.
- Scientists have agreed to use 1μPa as the reference pressure for underwater sound.
- The level on the east coast is slightly higher than that on the west coast. At 1μPa the critical value increases by about 20 dB.

Plastic Overshoot Day

Why in News?

Recently, Plastic Overshoot Day was observed on Earth on July 28, 2023. This is the point in the year when the amount of plastic waste generated exceeds global waste management capacity.

- Plastic Overshoot Day is determined based on the

country's Mismanaged Waste Index (MWI). The difference between waste management capacity and plastic consumption is called MWI.

- Plastic Overshoot Day reported by Swiss-based research consultancy Earth Action (EA).

Key findings of the report:

- The report projects that an additional 68,642,999 tons of plastic waste will enter nature in 2023, indicating a serious plastic pollution crisis.
- The report identifies 12 countries responsible for 52% of the world's mismanaged plastic waste. India is one of them, along with China, Brazil, Indonesia, Thailand, Russia, Mexico, United States, Saudi Arabia, Democratic Republic of the Congo, Iran and Kazakhstan.
- The three countries with the highest percentage of mismanaged waste—Mozambique (99.8%), Nigeria (99.44%), and Kenya (98.9%) belong to Africa.
- India ranks fourth in MWI with 98.55% of waste generated.

Other information:

- Plastic now contaminates the entire planet, from the summit of Mount Everest to the deepest oceans. People consume microplastics via food and water, as well as breathing them in, and the particles have been found in people's blood and breast milk.
- In March 2022, 193 countries agreed to end plastic pollution, with negotiations on a legally binding agreement by 2024 now under way, hosted by UNEP. The world currently produces 430m tons of plastics a year, two-thirds of which are short-lived products that soon become waste. Production is set to triple by 2060 on current trends.
- Increased reuse of plastics could reduce 30% of plastic pollution by 2040, with measures including deposit-return schemes for containers.
- The careful replacement of plastic products, such as takeaway food containers, with alternative materials such as paper or compostable materials could cut another 17% from pollution in 2040, the report said.
- Plastic items from takeaway food and drink dominate the litter in the world's oceans, according to a 2021 study. There would still be a lot of plastic waste to be disposed of safely in 2040, and making manufacturers responsible for this would help, the UNEP report said.
- The UN estimated that over the next 20 years, cutting plastic pollution by 80% would prevent damage valued at more than \$3tn, including impacts on health, climate, air pollution, the ocean environment and legal costs for cases brought against plastic companies.

Graded Response Action Plan (GRAP)

Why in News?

Recently the Commission for Air Quality Management in NCR & Adjoining Areas (CAQM) has announced a revision in the existing Graded Response Action Plan (GRAP) to combat air pollution in the region.

Fight against pollution
A look into the city's Graded Response Action Plan to fight air pollution

STAGE 1 MODERATE-TO-POOR QUALITY AIR (PM _{2.5} above 61µg/m ³ or PM ₁₀ above 101µg/m ³)	STAGE 2 VERY POOR AIR (PM _{2.5} above 121 µg/m ³ or PM ₁₀ above 351 µg/m ³)	STAGE 4 EMERGENCY (also known as severe- PM _{2.5} above 300 µg/m ³ or PM ₁₀ above 500µg/m ³)	
<ul style="list-style-type: none"> • Mechanized sweeping, washing roads with water • Enforcing ban on firecrackers, increased scrutiny of vehicles for pollution standards 	<ul style="list-style-type: none"> • Ban on diesel generators • Parking fee to surge by 3-4 times • Stop use of coal/firewood in eateries • Urge people with respiratory or cardiac problems to stay inside 	<ul style="list-style-type: none"> • Ban entry of trucks (except for essential items) • Halt construction work • Begin odd-even road scheme for private vehicles 	
	<th>STAGE 3 SEVERELY POLLUTED AIR (PM_{2.5} above 250µg/m³ or PM₁₀ above 430µg/m³)</th> <td></td>	STAGE 3 SEVERELY POLLUTED AIR (PM _{2.5} above 250µg/m ³ or PM ₁₀ above 430µg/m ³)	
	<ul style="list-style-type: none"> • Increase frequency of road cleaning and washing • Shut down of brick kilns • Restrictions on operation of coal-based power plants in NCR 		

About Revision Graded Response Action Plan:

- **Stage I (Poor air quality – AQI 201-300):** Implement NGT orders on old diesel and petrol vehicles.
- **Stage II (Very poor – AQI 301-400):** Targeted action to tackle air pollution at identified hotspots in the area.
- **Stage III (Severe - AQI 401-450):** impose strict restrictions on BS III petrol and BS IV diesel four-wheelers in some areas and may suspend physical classes in schools for children from primary classes till class 5.
- **Stage IV (Severe Plus- AQI more than 450):** When AQI exceeds 450, four-wheelers registered outside Delhi, except electric vehicles, CNG vehicles and BS-VI diesel vehicles and vehicles carrying essential commodities Vehicles will not be allowed.

About Graded Response Action Plan (GRAP):

- GRAP is emergency measures that kick in to prevent further deterioration of air quality once it reaches a certain threshold in the Delhi-NCR region.
- Till 2020, the Supreme Court-appointed Environment Pollution (Prevention & Control) Authority (EPCA) used to order States to implement GRAP measures.
- From 2021 onwards, the GRAP is being implemented by the CAQM.



Geography



Standing Committee Report on Ground Water

Why in News?

Recently, Parliamentary Standing Committee report on Water Resources was tabled in parliament.

Key Finding of the Report:

- Groundwater levels in Delhi, Ghaziabad, Faridabad and 20 other cities have fallen by more than 20 meters from 2017 to 2020.
- The report notes that 14% of India's groundwater assessment units are classified as overexploited, while another 4% fall in the critical category.
- Faridabad is already 100% dependent on groundwater use, while Ghaziabad is on the verge of becoming completely dependent on it.
- According to the Ministry of Housing and Urban Affairs (MoHUA), groundwater depletion in these cities is a result of increasing demand and unsustainable extraction practices.
- As of 2020, India's total annual extractable groundwater resource was 398 billion cubic meters (BCM), of which 245 BCM was being extracted.
- Depletion of groundwater resources in India is a significant concern, given that groundwater is the primary source of drinking water for many people and is also important for irrigation and industrial use.
- Sustainable water management practices such as rainwater harvesting, groundwater recharge and efficient use of water resources are essential to address the problem of groundwater depletion in India.
- The government, civil society organizations and individuals should work together to promote responsible water use and ensure the sustainability of India's groundwater resources.

Plastic Rocks

Why in News?

Brazilian researchers find 'terrifying' plastic rocks on remote Trindade Island.

About Plastic rocks:

- They are made of a mixture of sedimentary granules and other debris (plastic). Melted plastic has become intertwined with rocks on the island, located 1,140 km (708 miles) from the southeastern state of Espirito Santo.

About the Trindade Island:

- It is located in the South Atlantic Ocean.

- It is one of the world's most important conservation spots for green turtles, or *Chelonia mydas*, with thousands arriving each year to lay their eggs.

Sun Halo

Why in News?

Recently, the people of Prayagraj experienced extremely surprising phenomenon called Sun Halo.

About Sun Halo:

- It is an optical phenomenon that occurs due to the refraction of sunlight by millions of hexagonal ice crystals suspended in the atmosphere.
- When white light passes through the unique hexagonal ice crystals found in upper-level cirrus clouds, the halo appears.
- The clouds contain millions of tiny ice crystals, which refract and split light to give the appearance of a circular rainbow ring.

Aurora:

- An aurora is a natural phenomenon which is characterised by a display of a natural-coloured (green, red, yellow or white) light in the sky. It is a light show which is caused when electrically-charged particles from the sun collide with particles from gases such as oxygen and nitrogen present in the Earth's atmosphere.

Shelf Cloud

Why in News?

Amid the heavy rains, a massive shelf cloud appeared in Haridwar.

About Shelf Cloud:

- A shelf cloud is a low, horizontal, wedge-shaped arcus cloud attached to the base of the parent cloud, which is usually a thunderstorm cumulonimbus, but could form on any type of convective clouds.
- Shelf clouds form when cold and dense air is forced into a warmer air mass by wind.

Anthropocene Epoch

Why in News?

Recently, geologists have said that sediments at Crawford Lake in Canada's Ontario have provided evidence of the beginning of the Anthropocene epoch.

About Anthropocene Epoch:

- The Anthropocene Epoch is an unofficial unit of geologic time, used to describe the most recent period in Earth's history when human activity started to have a significant impact on the planet's climate and ecosystems.
- There are numerous phenomena associated with this proposed epoch, such as global warming, sea-level rise, ocean acidification, mass-scale soil erosion, the advent of deadly heat waves, deterioration of the biosphere and other detrimental changes in the environment.

About Geological Time Scale:

- Earth's history is divided into a hierarchical series of smaller chunks of time, referred to as the geologic time scale.
- These divisions, in descending length of time, are called eons, eras, periods, epochs, and ages.
- These units are classified based on Earth's rock layers, or strata, and the fossils found within them.
- From examining these fossils, scientists know that certain organisms are characteristic of certain parts of the geologic record. The study of this correlation is called stratigraphy.

Fujiwhara Effect

Why in News?

Recently the West Coast of the United States has experienced an unusual weather phenomenon called the Fujiwhara Effect.

About the Fujiwhara Effect:

- The Fujiwhara Effect is any interaction between tropical storms formed around the same time in the same ocean region with their centres or eyes at a distance of less than 1,400 km, with intensity that could vary between a depression (wind speed under 63 km per hour) and a super typhoon (wind speed over 209 km per hour).
- The interaction could lead to changes in the track and intensity of either or both storm systems. In rare cases, the two systems could merge, especially when they are of similar size and intensity, to form a bigger storm.

Kilauea Volcano

Why in News?

Recently The Kilauea volcano on Hawaii's Big Island erupted.

About Kilauea Volcano:

- It is the youngest and most active Hawaiian shield volcano, located on the southern part of the Island of Hawai'i, known as Big Island.

- Kilauea is viewed by many Native Hawaiians as the home of the volcanic deity Pelehonuamea.

About Shield Volcano:

- Shield volcanoes are a type of volcano that tend to erupt basalt lava, a type of lava that is very fluid when erupted.
- Although shield volcanoes are the largest volcanoes on Earth, they do not form soaring mountains with conical peaks like composite volcanoes. Instead, they are broad volcanoes with gentle slopes.
- They are characterized by low-explosivity fountaining that forms cinder cones and spatter cones at the vent.

Pacific Decadal Oscillation (PDO)

Why in News?

According to the study published in the journal Nature Communications, the combination of global warming and the Pacific Decadal Oscillation (PDO) could make such cyclones more frequent in the coming years.

About Pacific Decadal Oscillation:

- The Pacific Decadal Oscillation is a sea surface temperature (SST) climate cycle describing sea surface temperature anomalies over the Northeastern Pacific Ocean. The PDO can influence the weather conditions across North America and the Pacific Ocean basin including India.
- The PDO oscillates between positive and negative phases. The positive phase is characterized by cool SSTs north of Hawaii and warmer-than-normal sea surface temperatures along the western coast of North America. The negative phase is a warm ocean temperatures in the Central North Pacific and cooler than normal waters along the western coast of North America.

Palghat Gap

About the Palghat Gap:

- Palghat Gap is a 40 km wide corridor in the Western Ghats.
- It is known as the gateway to Kerala.
- It is an important route for roads and railways connecting Coimbatore and Palakkad.
- Bharatappuzha river flows through Palghat Gap.
- The vegetation in the gap is classified as dry evergreen forest, which is different from the tropical rainforests of the Western Ghats.
- The Palghat Gap marks a distinct divide in the

flora and fauna of the region.

15 Rare Earth Elements Discovered in Andhra Pradesh

Why in News?

The Hyderabad-based National Geophysical Research Institute has found in Andhra Pradesh's Anantapur district large deposits of 15 rare earth elements.

About Rare Earth Elements (REEs):

- The rare earth elements (REE) are a set of seventeen metallic elements. These include the fifteen lanthanides on the periodic table plus scandium and yttrium. Rare earth elements are an essential part of many high-tech devices.
- Although they are called rare, they are actually found relatively abundantly in the Earth's crust.

Application:

- REEs and the alloys they contain are used in many devices that people use every day such as computer memory, DVDs, rechargeable batteries, cell phones, catalytic converters, magnets, fluorescent lighting and more. Rare earths are used as catalysts, phosphorus and polishing compounds.

Cyclone Mocha

Why in News?

Cyclone Mocha has made a landfall at Myanmar and Bangladesh coasts, uprooting trees and bringing torrential rainfall in the two countries located in the Asian-Pacific countries.

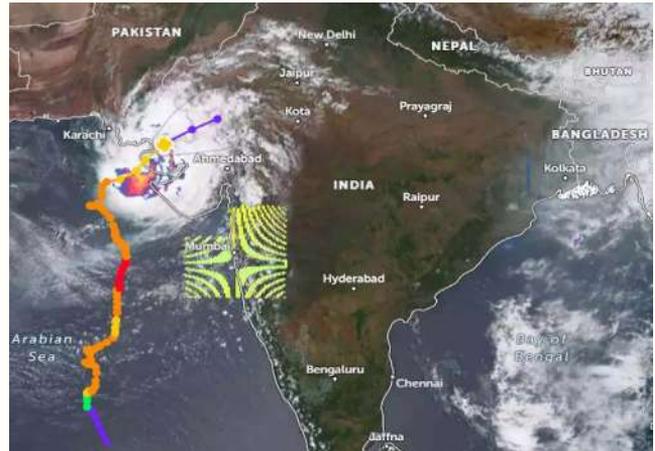
About the Mocha Cyclone:

- It is a tropical cyclone formed over the southern Bay of Bengal.
- The cyclone's name 'Mocha' is suggested by Yemen and was named after the Red Sea port city, which is known to have introduced coffee to the world.
- With a recorded wind speed of 277 kmph, Mocha became the strongest cyclone for all seasons in both Arabian Sea and Bay of Bengal, since 1982, in the North Indian Ocean, tying with Cyclone Fani in terms of speed and intensity.
- It has been designated an extremely severe cyclonic storm by the IMD (Indian Meteorological Department) and a 'Super Cyclone' by global weather website Zoom Earth.

Cyclone Biparjoy

Why in News?

Cyclone Biparjoy was an extremely severe cyclonic storm that affected parts of Gujarat and Rajasthan. This caused significant damage to infrastructure, injuries and deaths.



About Cyclone Biparjoy:

- Extremely Severe Cyclonic Storm Biparjoy was a long lived, powerful tropical cyclone that formed over the east-central Arabian Sea. Biparjoy originated from a depression that was first noted by the India Meteorological Department (IMD) on 6 June, before intensifying into a cyclonic storm.
- Biparjoy accelerated northeastward, strengthening to a Category 3-equivalent tropical cyclone and an extremely severe cyclonic storm. Named by Bangladesh, Biparjoy means 'calamity' in Bengali language.

Impact of Ground Water Extraction on Earth's Spin

Why in News?

A recent study published in Geophysical Research Letters has shed light on the significant impact of Groundwater Extraction on Earth's Rotational Axis and its contribution to global sea-level rise.

What are the Key Findings of the Study?

- Groundwater pumping has tilted Earth nearly 80 centimeters east between 1993 and 2010 alone.
- Between 1993 and 2010, people pumped 2,150 gigatons of groundwater, or more than 6 millimeters of sea level increase.
- Excessive groundwater pumping has caused the Earth's pole to drift at a rate of 4.36 centimeters per year between 1993 and 2010, making it the climate-related factor with the greatest impact on polar motion.

Cloud Seeding

Why in News?

Indian Institute of Technology, Kanpur (IITK) has recently launched an test flight aimed at cloud seeding. Cloud seeding is a process in which various chemical agents are added to clouds to increase the chance of precipitation.

- The primary objective of the test flight conducted by IIT Kanpur was to explore cloud seeding as a possible solution to combat dry conditions and air pollution. This technique involves modifying atmospheric conditions to encourage rainfall and improve air quality.

More Rain, less Snowfall due to Rising Temperatures: Report

Why in News?

A new study has found that mountains across the globe, including the Himalayas, are now seeing more rainfall at elevations where it has mostly snowed in the past.

Why Himalayan region is having increased rain and reduced snowfall?

- **Changing Weather Patterns:** Alterations in atmospheric circulation, jet streams, and other weather systems can result in shifts in precipitation patterns.
- **Global Warming and Temperature Rise:** As global temperatures increase, the atmosphere can hold more moisture, leading to increased evaporation and subsequent precipitation.
- **Elevated Freezing Levels:** The freezing level, also known as the zero-degree isotherm, is the altitude at which falling precipitation transitions from snow to rain.
- **Snowfall Reduction:** Warmer temperatures cause more precipitation to fall as rain rather than snow.
- **Feedback Loops:** Less snow cover means there is less reflective surface to bounce sunlight back into space (albedo effect), causing further warming and contributing to the shift from snow to rain.
- **Warming-Induced Atmospheric Changes:** This can lead to a greater intensity of storms, causing heavy rainfall events in areas where snowfall was historically dominant.

3rd Longest Monsoon Break In This Century

Why in News?

The recent monsoon break is third-longest monsoon break in the 21st century after similar events in 2002 and 2009.

About:

- A monsoonal break occurs when the monsoon trough shifts northward, leading to increased rainfall along the Himalayan foothills and parts of eastern India while suppressing rainfall in other regions.
- The core monsoon zone, spanning from Gujarat to West Bengal and Odisha, experiences suppressed rainfall during these breaks, impacting rain-fed agricultural activities.
- A monsoonal break is declared climatologically when the normalized rainfall anomaly index exceeds a -1 threshold over the core monsoon zone for at least three consecutive days.
- The monsoonal break concludes when the normalized rainfall anomaly decreases in magnitude.

Factors Behind the Prolonged Monsoonal Break:

- The developing El Niño phenomenon contributed to the prolonged and intense nature of the monsoonal break.
- The lack of sub-seasonal weather patterns that typically enhance rainfall, as observed in July 2023, further influenced the break's duration and intensity.

Parkachik Glacier

Why in News?

New study by scientists of Wadia Institute of Himalayan Geology has found that three glacial lakes are likely to form around Parkachik Glacier in Ladakh due to rapid ice melt.

About Parkachik Glacier:

- Parkachik Glacier is one of the largest glacier in the Suru River valley, which is a part of the Southern Zaskar Ranges, western Himalaya.
- There are two main reasons for the rapid melting of the glacier.
 1. The first is global warming and increasing temperatures in the region.
 2. The second is that it is at a lower altitude than other glaciers in the Zaskar region.

Act & Regulation

Amendment in Wild Life Protection Act

Why in News?

Biologists and ecologists have raised concerns about the Wildlife Protection (Amendment) Act, 2022 making it difficult to carry out ecological and genetic research on a large number of species by restricting or making it difficult to collect specimens.

Key Features of Act Include:

- The amendment bill sought to rationalise the schedules, and has created only two main levels of protection for animals -- Schedule I specifying the animal species with the highest level of protection, and Schedule II specifying the animal species with a relatively lower degree of protection.
- Schedule III in the amendment act is for plant species and Schedule IV is for species protected under Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Central Empowered Committee

Why in News?

The recent changes in the functioning of the Central Empowered Committee (CEC), a body set up by the Supreme Court to oversee cases related to environmental conservation, have raised concerns among environmentalists and stakeholders.

Key Highlights of the changes made in the functioning of the CEC:

- **Changes in Reporting Structure:** The Central Empowered Committee (CEC), which was originally set up to report directly to the Supreme Court, will now report to the Ministry of Environment, Forest and Climate Change. This shift in reporting structure means that the Ministry will have more control over the CEC's functioning.
- **Nomination of Members:** The Ministry of Environment will now nominate members to the CEC, and the Supreme Court will not be involved in the selection process. This change gives the Ministry greater authority in choosing CEC members.
- **Funding:** The Ministry, rather than the Supreme Court, will fund the CEC. This alteration could potentially impact the independence of the CEC in carrying out its functions.
- **NGO Representation:** The previous provision

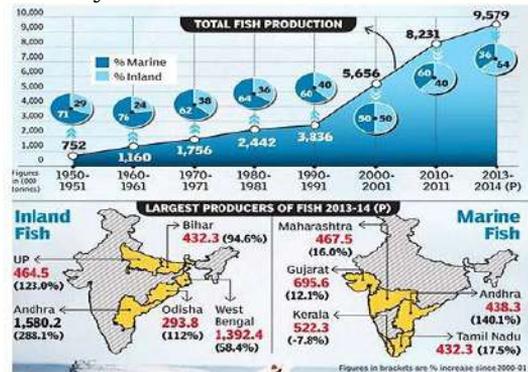
of having two non-governmental organizations (NGOs) as members of the CEC has been removed. Instead, individuals considered "experts" can now be included as members. This change may impact the diversity of perspectives within the committee.

- **Final Decision:** The Ministry's decisions regarding the recommendations of the CEC will be final. If the Ministry disagrees with a CEC recommendation, it must provide written reasons for its decision.

Coastal Aquaculture Authority (Amendment) Act, 2023

Why in News?

Coastal Aquaculture Authority (Amendment) Bill, 2023 clear by both Houses of Parliament of India



Key Points of the Bill:

- The Amendment act provides that the registration granted under Coastal Aquaculture Authority Act shall prevail and be treated as valid permission under CRZ Notification with the express intention of enabling lakhs of small marginal aquaculture farmers to avoid the possible need for obtaining CRZ clearances from multiple agencies.
- The Act removed imprisonment for a period of up to 3 years and impose only a penalty in line with principle of decriminalizing civil transgressions.
- Amendment Act provides for broad basing "coastal aquaculture" to comprehensively cover all activities of coastal aquaculture under purview of this Act.
- Amendment Act ensure that no coastal aquaculture activity is left out of ambit of Act and operate in an environmentally compliant manner.
- Newer forms of environment friendly coastal aquaculture such as cage culture, seaweed culture, etc can be taken up in coastal areas and mostly within CRZ.

- Act promote ease of doing business in coastal aquaculture by fine tuning some of operational procedures of Coastal Aquaculture Authority.
- Many of administrative matters have been suitably resolved under Amended Act for administrative efficiency and accountability.

Forest Conservation (Amendment) Act, 2023

Why in News?

The Forest (Conservation) Amendment Bill, 2023, passed in Parliament on August 2 this year, will come into effect on December 1, according to a notification issued by the Ministry of Environment, Forest and Climate Change (MoEF&CC).

- The amendment has provisions to use forest land for non-forest purposes, including for linear infrastructure projects such as railway tracks, roads and for carrying out strategic constructions along the country's borders without prior permission.

Key Points of the Act:

- Only those lands that were notified as "forests" under the Indian Forest Act, 1927, or Forest Conservation Act, 1980, or any other relevant law or were recorded as "forests" in official records will be acknowledged as 'forests'.
- Infrastructure projects, such as roads and highways, could be constructed on forest land within 100 km of the country's border.
- State government should get the Centre's approval before allotting forest land to private or public institutions.
- De-reserved forest land that was not notified as "forest" before 1980, and forest land converted before December 12, 1996, have been exempted from the Conservation Act.
- Check-posts, fences, and bridges would be permitted on forest land.
- Zoological parks, jungle safari, and eco-tourism facilities could be established within the forests.

Potato Variety FL-2027

Why in News?

The Delhi High Court upheld an order by the Protection of Plant Varieties and Farmers' Rights Authority (PPVFRA), revoking the registration of patent for a potato variety (FL-2027) which is used to making lays chips.

About potato plant variety FL-2027:

- FL 2027 (commercial name FC-5) is a potato variety with high dry matter and low sugar

content better suited for making chips.

- It was developed in 1996 by a US breeder employed in PepsiCo Inc.
- This processing-grade variety is used in manufacturing potato chips sold under its Lay's brand.

What are the rights of PepsiCo over FL 2027 in India?

- PepsiCo India Holdings (PIH), the subsidiary of PepsiCo Inc., was granted a certificate of registration for FL 2027 on February 1, 2016.
- The validity period was 6 years from the date of registration and extendable up to 15 years.
- During the validity period nobody else could commercially produce, sell, market, distribute, import or export it without the breeder's authorisation.

Biological Diversity (Amendment) Bill

Why in News?

The Biological Diversity (Amendment) Bill, 2021 was recently passed in the Lok Sabha.

Key Provisions of Amendment:

- The Bill amends the Biological Diversity Act, 2002 to simplify compliance requirements for domestic companies.
- Users of codified traditional knowledge and AYUSH practitioners will be exempted from sharing benefits with local communities.
- The Bill removes research and bio-survey activities from the purview of benefit-sharing requirements.
- Benefit sharing will be based on terms agreed between the user and the local management committee represented by the National Authority.
- The Bill decriminalizes all offenses under the Act.
- **Access to biological resources:** The Bill modifies the classification of entities and activities requiring intimation while introducing exemptions to certain cases.
- **IPR:** The Bill suggests that approval will be required before the actual grant of the IPR, not during the application process.
- **Exemption to AYUSH practitioners:** It seeks to exempt registered AYUSH medical practitioners and people accessing codified traditional knowledge, among others, from giving prior intimation to State biodiversity boards for accessing biological resources for certain purposes.
- **Benefit sharing:** The Bill removes the applicability of benefit-sharing requirements from research, bio-survey, and bio-utilization.

- **Penalties:** The Bill decriminalizes the offenses in the Act and introduces fines ranging from one lakh to fifty lakh rupees instead.

Water (Prevention and Control of Pollution) Act, 1974

Why in News?

The Union Ministry of Environment, Forest and Climate Change (MoEF&CC) proposed amendments to several environmental laws in July 2022, including the Water (Prevention and Control of Pollution) Act, 1974. The Act provides for the maintenance and restoration of the quality of all types of surface and ground water.

Key Points of the Act:

- It provides for the establishment of Central and State Boards for pollution control.
- The Central and State Pollution Control Boards have been given wide powers to advise, coordinate and provide technical assistance for the prevention and control of water pollution.
- The Act provides for funds, budget, accounts and audit of the Central and State Pollution Control Boards.
- The Act prohibits the discharge of any poisonous, harmful or polluting substance into a water stream. However, dumping any material into a stream for the purpose of land reclamation is not considered an offence.
- The Act provides for severe and deterrent penalties for violation of the Act which include fine and imprisonment.

Air (Prevention and Control of Pollution) Act, 1981

Why in News?

Congress leader Jairam Ramesh raised concerns over the rise in air pollution in the country and called for a total revamp of the Air Pollution Act and air quality standards to make them stringent and effective.

About the Act:

- The Air (Prevention and Control of Pollution) Act was enacted by the Parliament in 1981 with the aim of preventing, controlling and abating air pollution.
- The Act provides for the establishment of a Central Pollution Control Board (CPCB) at the apex level and State Pollution Control Boards at the state level to advise the Government on any matters relating to the improvement and prevention, control and abatement of air quality.

air pollution.

- CPCB also sets standards for air quality and provides technical assistance and guidance to State Pollution Control Boards.

Environment (Protection) Act, 1986

Key Points of the Act:

- The Central Government also has the power to direct closure or stoppage of any activity or cut the electricity, water, or any supply to it as per Section 5 of the Act.
- Breaching any of the main provisions of the Environment Protection Act can result in punishment under Section 15. Through rules and notifications, the legislation has been brought to life.
- The Central Government or any other person duly authorized is authorized to collect the samples of air, water, soil, or other substances as proof of the offences under the Environment (Protection) Act, 1986.
- The Environment (Protection) Act of 1986 relaxed the "Locus Standi" clause, allowing even a common citizen to approach the court. It can be done, if he has given a sixty-day notice of the alleged offense and his intention to file a complaint with the Central Government or another competent authority.
- The Act prohibits the Civil Courts from hearing any suit or proceeding arising out of a Central Government or other legislative authority's direction, action, or order issued under the Act.

Ozone-Depleting Substances (Regulation And Control) Rules, 2000

About the Rules:

- Ozone Depleting Substances (Regulation and Control) Rules, 2000, came into effect in July 2000.
- These rules regulate the production, trade, import, and export of ODSs as well as the production of products containing ODS.
- These regulations forbid the use of CFCs in the production of various goods after January 1, 2003 (with the exception of metered dose inhalers and other medical applications).

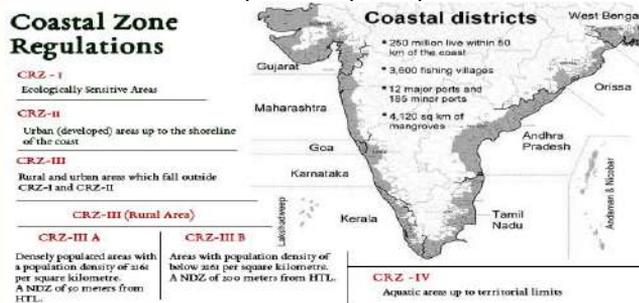
Ozone Depleting Substances (Regulation and Control) Amendment Rules, 2019:

- Under the Environment (Protection) Act of 1986, the Ozone Depleting Substances (Regulation and Control) Amendment Rules, 2019, have been published.

- According to the Ozone Depleting Substances (Regulation and Control) Amendment Rules, 2019, the issuance of import licenses for HCFC-141b is prohibited beginning on January 1, 2020.
- Hydrochlorofluorocarbons (HCFCs) are chemical compounds commonly used in the foam, refrigeration, and air conditioning sectors that destroy the protective ozone layer and contribute to climate change. It is essential to reduce and phase out the use of HCFCs in industry practices.

Coastal Regulation Zone Notification-2019

- The Coastal regulation zone notification 2019 was issued to replace the 2011 notification and develop the coastal region of the country in sustainable manner on scientific principles keeping view current global problem of climate change and sea level rise.
- One of the important development was the division of CRZ-III areas(rural areas) into two categories namely CRZ-IIIA and CRZ-IIIB of which the former denotes an area with population density more than 2161 persons per square km while the later denotes rural areas with population density less than 2161 persons per square km.



- CRZ-IIIA areas have no development zone (NDZ) of 50 metres from the high tide line (HTL) as compared to the 200 metres as stipulated in the notification of 2011. The CRZ-IIIB areas however will have a no development zone of 200 metres from the HTL. The population density of respective areas will be measured on the basis of Census 2011.
- The Ministry of Environment forest and climate change is oversee the matter of CRZ clearance only for CRZ-I; i.e the ecologically vulnerable areas and CRZ IV (area between low tide line and 12 nautical miles seaward) areas while for the other two categories namely CRZ-III and CRZ-II (urban areas), the power of clearance has been designated at state level.

- The notification also proposes a no development zone of 20 metres for all islands. The ecologically vulnerable areas identified on the basis of Environment Protection Act, 1986 are to be managed in partnership with coastal communities and fisherfolks. For the purpose of pollution abatement in coastal areas, the development of treatment facilities is proposed under the regulation in CRZ-IB areas.

The Energy Conservation Act, 2001

- The Act empowers the Central Government and, in certain cases, State Governments to:
- Determine energy utilization standards for notified hardware and apparatuses.
- Set up and recommend energy utilization standards and measures for designated consumers.
- Endorse energy preservation building standards for proficient utilization of energy.
- Prepare and actualize plans for effective utilization of energy and its preservation if the recommended energy utilization standards and measures are not satisfied.
- Get an energy audit of the building conducted by a licensed energy auditor in this predetermined way and time periods.

Authotity of State Governments:

- Alter the energy conservation building codes arranged by the Central Government to suit territorial and neighbourhood climatic conditions.
- Direct every proprietor or occupier of a new commercial building or building complex, to comply with the provisions of energy conservation building codes.
- Direct, whenever necessary, about efficient utilization of energy and its conservation, any assigned purchaser to get energy audit conducted by a licensed energy auditor in such way and at such time spans as might be determined.

Amendment bill 2022:

- The Bill amends the Energy Conservation Act, 2001 to empower the central government to specify a carbon credit trading scheme.
- Designated consumers may be required to meet a proportion of their energy needs from non-fossil sources.
- The Energy Conservation Code for buildings will also apply to office and residential buildings with a connected load of 100 kilowatt or above.
- Energy consumption standards may be specified for vehicles and ships.

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