

CURRENT AFFAIRS

WEEKLY

WEEK: 4
MAY
2021

MAINS

GS- I

**JAGADGURU
BASAVESHWARA**

GS- II

**WOLF WARRIORS IN
THE SUBCONTINENT**

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**MITIGATION
MEASURES OF
CYCLONES AND
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GS- III

**DECLARE
MUCORMYCOSIS AN
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**ETHICS IN
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HISTORY & CULTURE ■ PANEL DISCUSSION ON THE INTERNATIONAL MUSEUM DAY 2021

POLITY & GOVERNANCE ■ CBID PROGRAM ON REHABILITATION OF DIVYANGJAN

ECONOMY ■ CAIRN ENERGY AND AIR INDIA DISPUTE

■ DIGITAL TRANSFORMATION OF TRIBAL SCHOOLS

■ GI CERTIFIED GHOLVAD SAPOTA (CHIKOO) FROM MAHARASHTRA TO UK

■ RAJASTHAN RANKS 2nd IN COUNTRY IN IMPLEMENTING SMART CITY PROJECTS

■ SEBI PROPOSES FRAMEWORK FOR GOLD EXCHANGE

SCIENCE & TECHNOLOGY ■ ISRO TO SHARE PORTABLE MEDICAL OXYGEN CONCENTRATOR TECH

■ MONOCLONAL ANTIBODY THERAPIES

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The current affairs articles are segregated from prelims and mains perspective, such separation is maintained in terms of structure of articles. Mains articles have more focus on analysis and prelims articles have more focus on facts.

However, this doesn't mean that Mains articles don't cover facts and PT articles can't have analysis. You are suggested to read all of them for all stages of examination.

CURRENT AFFAIRS ANALYST

WEEK- 4 (MAY, 2021)

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IAS 2022
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01 JUNE
2021

PATHWAYS
for **UNDER GRADUATES**
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05 JULY
2021

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30 JUNE, 2021

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15 JUNE, 2021

HISTORY
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By: PIYUSH KUMAR



01 JUNE, 2021

GEOGRAPHY
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14 JUNE, 2021

SECTION: A

(MAINS)

CURRENT AFFAIRS

JAGADGURU BASAVESHWARA

CONTEXT

Prime Minister has bowed to Jagadguru Basaveshwara on Basava Jayanthi which was observed this month.

◎ BACKGROUND

- Basaveshwarawas the 12th century philosopher and the statesman of Karnatakaduring the reign of the Kalyani Chalukya/Kalachuri dynasty, who had found the Veera Shaivism.
- This new offshoot from hindusism called Veera Shaivism was spread by his followers known as Sharanas.
- They are known as Veera (meansheroic) Shaivaitesor Lingayats means one who bear Shiv Linga.
- A pendant is constantly worn around the neck by the Shaiviteswhich has encased Linga.
- These Veera Shaivites are also known by the names Shivasharanas and Lingavantas.
- Lingayats consider themselves not a part of Hinduism.

◎ ANALYSIS

Lord Basaveshwara

- Basaveshwara or Basavanna was an Indian poet, philosopher, statesman and Lingayat saint in the Shiva-centric Bhakti movement and a social reformer in the region of Karnataka during the period of 12th century AD.
- He lived during the reign of both the Kalyani Chalukya and Kalachuri dynasty.
- Though he was active during the reign of both the dynasties but he reached his peak of influence during the rule of King Bijjala II in Karnataka who belongs to Kalchuri Dynasty.

Founder of Lingayat cult

- The hagiographic texts state Basava to be the founder of the Lingayats, which is also confirmed from traditional legends.
- However, modern scholarshs who rely on historical evidence like the Kalachuri inscriptions state that Basava was the philosopher-poet who actually revived, refined and energized an already existing tradition.

Basava's Philosophy

- The theology of Basava's Lingayatism was a form of "qualified-nondualism", wherein the individual

soul (Atman) is the body of God, and that there is no difference between Lord Shiva and Atman (self-soul).

- Basava's views finds places in Vedanta school, in a form closer to the 11th century Vishisht-advaitav philosopher Ramanuja who was contemporary to Chola Dynasty

Famous works

- Basavanna used Vachanaas, a form of poetry, to spread social awareness
- Basavanna rejected discrimination based on gender or social distinctions, superstitions and rituals but introduced Ishtalinga necklace, with an image of the Shiva Linga to every person of his sect regardless of his or her birth.
- Basava introduced new public institutions such as the AnubhavaMantapa (or, the "hall of spiritual experience") which welcomed men and women from all socio-economic backgrounds, it is also called first religious parliament of the world.

Who are Veerashaivas?

- Veerashaivas are worshippers of Lord Shiva.
- They precede Basavanna, the founder of Lingayatism. Veerashaivas do not worship any God other than Shiva and can be found spread across India.
- Pashupatha Shaiva, Soma Shaiva, Dakshina Shaiva, Kala Mukha Shaiva, Lakula Shaiva, Yavala Shaiva, Samanya Shaiva, Mishra Shaiva, Shuddha Shaiva, Adi Shaiva, Anu Shaiva, Avantara Shaiva are some of the sects within Shaivism.
- Veerashaiva is one such sect and people from the community are found largely in Karnataka, Andhra Pradesh and Kerala. Those who consume non-vegetarian food call themselves Kshatriya Shaiva while those who are vegetarians call themselves Brahmana Shaiva.
- All sects of the Veerashaiva follow the 'Pancha Peeta', five mutts. Kashi mutt, Rameshwaram Mutt, Ujjaini Mutt, Rambhapura Mutt and Srishaila Mutt are the core holy places for the community.

Who are Lingayats?

- Lingayats are followers of Basavanna and his teachings. Veerashaivas in Karnataka, influenced by the preachings of Basavanna adapted the same into their lives and faith.

- Basavanna's teachings were incorporated to base sects that led to the formation of new sects like Banajiga Lingayat, Panchamasali Lingayat, Ganiga Lingayat, Gowda Lingayat and Veerashaiva Lingayat.
- The Lingayats are strict monotheists. They enjoin the worship of only one God, namely, Linga (Shiva).
- The word 'Linga' does not mean Linga established in temples, but universal consciousness qualified by the universal energy (Shakti).
- Lingayats had been classified as a Hindu subcaste called "VeerashaivaLingayats" and they are considered to be Shaivites.

Lingayats as social reformer

- In several vachanas, the sharanas have rejected the Vedas, shastras, smritis and the Upanishads. They also rejected the system of caste based on the varnashrama, rebuffed faith in karma based on caste, denied the concept of paap and punya which was based on karma, spurned the notion of heaven and hell as based on paap and punya.
- They scorned temple and idol worship. They rejected the phallic linga symbol of Shiva and opted for ishta linga, which represents inner conscience.

They declared that work was worship and tried to break the barriers of caste by inter-caste dining. They fought against discrimination on the basis of gender and birth. They abhorred superstitions.

- They ignored Sanskrit – which was understood by very few – and addressed the people in Kannada. Essentially, Basavanna and all sharanas rejected everything about the Hindu religion and rebelled against it.

◎ CONCLUSION

This is the reason why, for over eight decades, Lingayats have been asking to be considered as a religion separate from Hinduism. While the Indian constitution was being drafted, Lingayat members of the constituent assembly such as S. Nijalingappa (representing Mumbai), H. Siddaveerappa (Mysore) B.N. Manavalli (Ramdurg) and RatnappaKumbar (leader of the Lingayats in Maharashtra) had argued that Lingayats should be listed as a separate religion. Lingayat groups and organisations have been insisting that the census commissioner of India should list Lingayats as a separate religion. Their argument is that if Buddhism, Jainism and Sikhism – which were also born against the tenets of Hinduism – can be considered as separate religions, then why not Lingayats.

WOLF WARRIORS IN THE SUBCONTINENT

CONTEXT

The article talks about the Wolf Warrior diplomacy (Chinese assertive diplomacy) in the Indian Subcontinent.

◎ BACKGROUND

- China's diplomacy under the COVID-19 pandemic is highlighting a change in tone from what Henry Kissinger described as "subtle and indirect" and Beijing's long diplomacy style which was long guided by Deng Xiaoping's maxim of Tao Guang Yang Hui of 'hide and bide'
- COVID-19 has exposed China's departure from both these approaches, as China's new posturing is defined as "**Wolf Warrior diplomacy**"- an assertive approach named after a popular Chinese nationalistic film where Chinese special-operations fighters defeat western led mercenaries.
- The Chinese envoy to Bangladesh warned that Bangladesh will risk "significant damage" to its bilateral relationship with Beijing if it warms up to the Quad, or the quadrilateral framework.

Wolf Warrior Diplomacy of China

- The wolf warrior diplomacy is confrontational and combative, with its proponents loudly denouncing any criticism of China on social media and in interviews. Recent warning to Dhaka is one of such examples. In this case, it is the Chinese diplomats that have become the fighters, when the world is sounding China.
- The speculations and criticism over Beijing's lack of transparency in dealing with the Corona virus as well as reluctance in raising early alarms over the epidemic has led to a global call for 'make China pay' against the virus outbreak.
- Against this, the response to the 'blame game' against China, has sparked a significant change both in behaviour and rhetoric of China's diplomats as noted in their "increasingly more strident and combative" display of attitude.
- The frontrunners being Chinese Foreign Ministry Spokespersons Zhao Lijian and Hua Chunying who are vociferous in the hit back against any form of criticism against Beijing- defending the Chinese thesis that the 'virus is recorded in China but has not originated in China'.
- China always used tough language when it came to issues of its sovereignty and territorial integrity, and pushed back vigorously against any perceived attempts at interfering in its internal affairs.
- The new "wolf warrior diplomacy" confronts head-on any criticism of China in the public sphere. They

lecture host governments and don't always show up when "summoned" by foreign offices.

Chinese assertion in Indian backyard

- China's increasing presence and involvement in the Indian Ocean is certainly a strategic and security problem for India.
- China's overall naval capabilities have exceeded India's. China is continuously developing its naval capabilities and forging partnerships with strategically located states in the Indian Ocean.
- For example, in 2017, China established its first offshore military base in Djibouti that would provide it with a considerable capacity to monitor the Indian Navy's movements in the Indian Ocean.
- In addition, the developments of the China-Pakistan Economic Corridor along with Gwadar Port will also provide China with an enhanced military presence in the Indian Ocean region.
- With the assertive and ambitious Belt and Road Initiative and Maritime Silk Road, China has consolidated its influence over the Indian neighbours as almost all the neighbour sans Bhutan have shown the keen interests in joining.
- Recently, Sri Lankan parliament passes controversial Bill on China-backed Colombo Port City. Hambantota Port is already under China's control.
- The current pandemic situation has only aggravated the situation as China is ramping up its relief efforts in these countries.

- Initiated in 2007, the Quadrilateral Security Dialogue is an informal grouping of India, the US, Australia and Japan formed under the Indo-Pacific framework aimed at restraining China's rise.
- China has been vehemently opposing its formation with a Chinese foreign ministry spokesman emphasising in March that exchanges and cooperation between countries should help expand mutual understanding and trust, instead of targeting or harming the interests of third parties.

- The four Quad member countries have resolved to uphold a rules-based international order in the Indo-Pacific amid growing Chinese assertiveness in the strategically vital region.
- The first ever summit of the Quad leaders was hosted by US President Joe Biden on March 12 this year which was attended by Prime Minister Narendra Modi, Australian Prime Minister Scott Morrison and Japanese Prime Minister Yoshihide Suga.

Bangladesh keen to join Indo-Pacific for economic reasons: recent trends

- Bangladesh has already shown interest in joining the Indo-Pacific initiative but that is aimed only at strengthening its economic ties with countries in this vast region and also for enhanced connectivity.
- Dhaka views Indo-Pacific purely from an economic perspective and is also contemplating coming out with a strategy for the region.
- India and Bangladesh had jointly inaugurated the 'Maitri Setu' (Friendship Bridge) in March, weeks before Prime Minister Modi's visit to Dhaka, in an effort to enhance infrastructure connectivity with the neighbouring country, as New Delhi plans to take Dhaka into its strategic embrace under the umbrella of Indo-Pacific cooperation.
- India has also joined hands with Japan in developing connectivity with Bangladesh.

- It seems that Bangladesh will eventually come up with its own Indo-Pacific policy as it seeks closer ties with the Southeast Asian region.

◎ WAY FORWARD

- Despite the Quad has not invited Dhaka to join the party, the Chinese ambassador was simply laying down a red line for Bangladesh through warning. Beijing is conscious about the Bangladesh's impressive economic performance, its strategic location and India's growing diplomatic investment in developing a strategic partnership with Dhaka and Washington & Tokyo are keen to expand cooperation with Dhaka. Therefore, it was a pre-emptive strike which is a very much part of Beijing's strategic culture.
- Our neighbours have long seen China as a convenient, off-the-shelf free of cost solution to balancing India. But now, Beijing has become more assertive in South Asia, the costs of relying on China are likely to become more apparent. The interventions by China will only be intensified in future and each of our neighbours will soon discover the joys of dealing with the new hegemon on the South Asian horizon.
- Thus, the recent warning of the Chinese envoy in Dhaka against joining the Quad point to the new kind of challenges that the Subcontinent including Beijing's both friends and foes will face from the assertive superpower at its doorstep.

MITIGATION MEASURES OF CYCLONES AND RELATED HAZARDS

CONTEXT

Another cyclone is expected to hit the eastern coast of India after Cyclone Tauktae ravaged through the western coast of India.

◎ BACKGROUND

The India Meteorological Department (IMD) has informed that a low-pressure area is very likely to form over north Andaman Sea and adjoining east central Bay of Bengal. It is likely to intensify into a cyclonic storm. The weather department has said that the storm is very likely to move north-westwards and reach north Bay of Bengal near Odisha-West Bengal Coast around. The department has named it as Cyclone Yaas.

◎ ANALYSIS

What are cyclones?

A cyclone is a huge strong wind system which blows around the centre of intense low-pressure area. Cyclones are the local name of the Indian Ocean and the South Pacific Ocean, but in the Northwest Pacific Ocean they are known as typhoons, and in the Northeast Pacific Ocean and North Atlantic, they are known as hurricanes. Since the cyclones form in the tropical region, they are also known as

tropical storms, tropical revolving storms or tropical cyclones. In the northern hemisphere, cyclone winds blow anti clockwise and they reverse in the southern hemisphere. (*Figure: 1*)

Hazards associated with Cyclones

There are three hazards associated with a cyclone, which cause destruction

- **Storm surge:** A storm surge is an abnormal rise of sea level near the coast caused by a severe tropical cyclone; as a result, seawater inundates low lying areas of coastal regions drowning human beings and livestock, eroding agricultural land, beaches and embankments, destroying vegetation and reducing soil fertility.
- **Strong wind:** The most destructive force of a cyclone comes from fierce winds. These winds are strong enough to easily topple fences, sheds, trees, power poles and communication systems, while hurling helpless people through the air. Many people are killed when the cyclone winds cause buildings and houses to collapse and completely blow away resulting in loss of life and property.

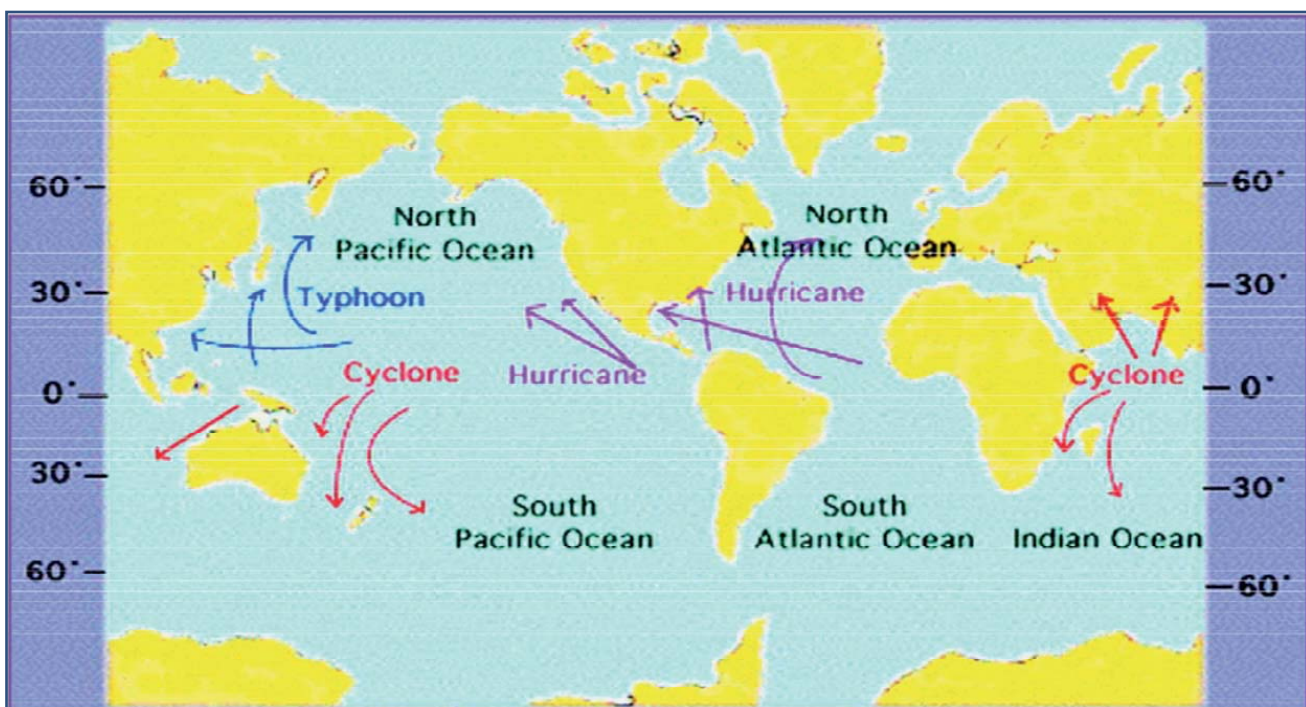


Figure: 1

- **Flood:** Heavy and prolonged rains due to cyclones may cause floods and submergence of low-lying areas causing loss of life and property. Floods and coastal inundation due to storm surges pollute drinking water sources causing outbreak of epidemics. Long after a cyclone has passed, road and rail transport can still be blocked by floodwaters. Water often becomes contaminated from dead animals or rotten food, and people are threatened with diseases like diarrhoea and other infections.

Most destructive cyclone in the past

- **1942 Bengal Cyclone:** hit near the India/Bangladesh border, resulting in around 40,000 fatalities.
- **1971 Orissa Cyclone:** killed around 10,000 people in Cuttack, Orissa, India.
- **1977 Andhra Pradesh Cyclone:** killed 10,000 people in Andhra Pradesh, India.

District identified as Vulnerable to tropical cyclone in India (Figure: 2)

Mitigation measures for cyclone

Mitigation means measures taken prior to the impact of a disaster to minimize its effects. Mitigation measures for cyclone include both structural and non-structural measures.

◦ Hazard mapping

- A hazard map will illustrate the areas vulnerable to the cyclone, and associated storm surge and flood in any given time. It will be useful to estimate the severity of the cyclone and potential damage intensities in the region. The map is prepared with data inputs of past climatological records, history of wind speed, frequency of flooding etc.

◦ Land use planning

- Land use planning should be systematically considered for cyclones so that least critical

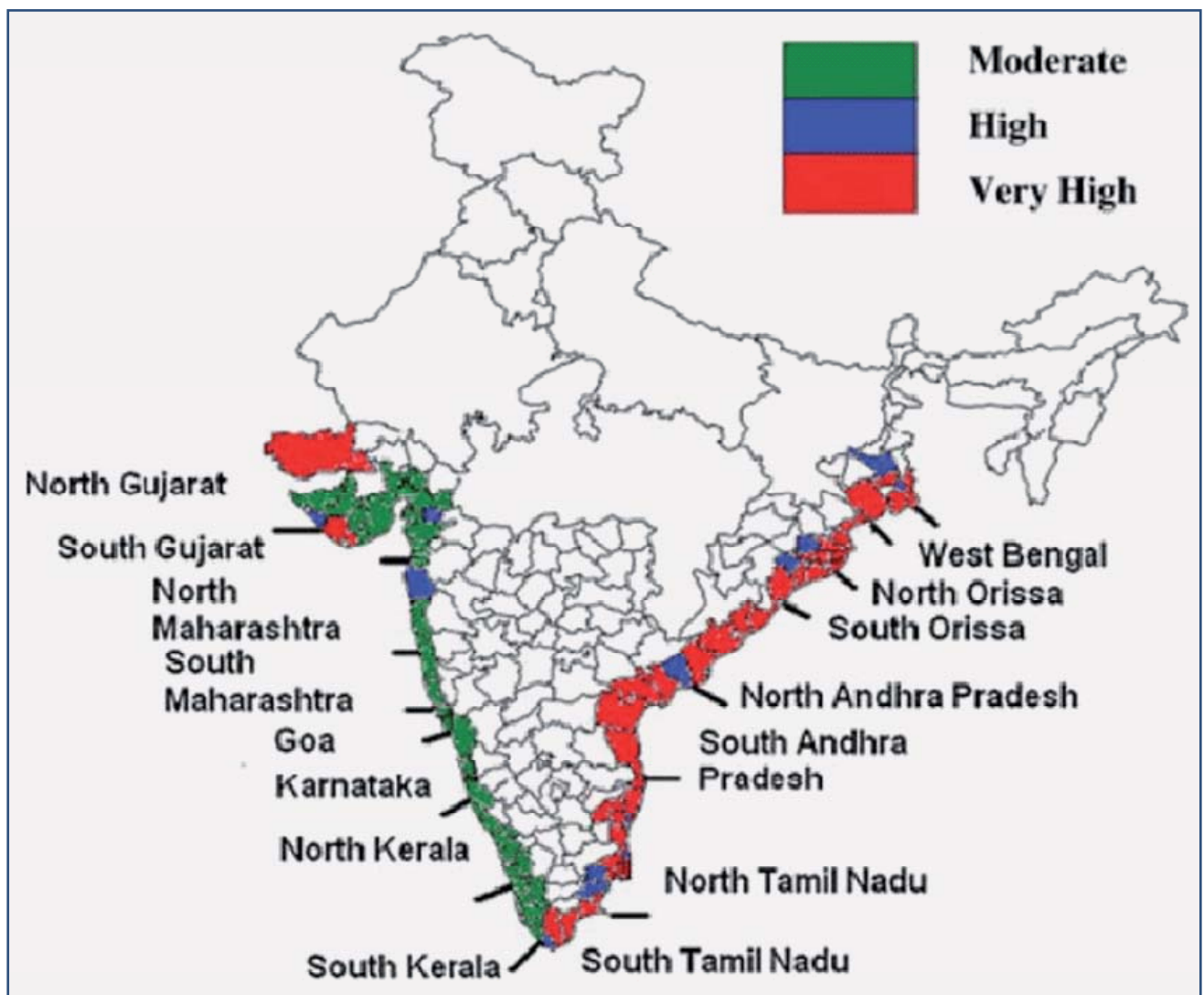


Figure: 2

activities are placed in vulnerable areas. Location of settlements in the flood plains is of utmost risk. Siting of key facilities must be marked in the land use. Policies should be in place to regulate land use and enforcement of building codes. Vulnerable areas should be kept for parks, grazing grounds or flood diversion instead of human settlements.

◉ **Engineered structures**

- ▶ Structures need to be built to withstand wind forces. Good site selection is also important. The public infrastructures including buildings for electricity services, communication facilities, hospitals, schools, rural healthcare centres and community centres should be engineered structures.

◉ **Retrofitting Non-engineered Structures**

- ▶ A large portion of Indian people lives in self-designed non-engineered buildings. The knowledge on how to strengthen non-engineered buildings should be shared with the community. Local engineers and artisans can take part in the construction and retrofitting of the buildings in their locality and demonstrate disaster resistant construction methods to the people.

◉ **Cyclone Shelters**

- ▶ Cyclone Shelters are necessary for areas vulnerable to recurrent cyclones

◉ **Flood management**

- ▶ Flooding will result from a cyclonic storm. Storm surges will flood the coastal areas. Heavy rains will bring in flash floods. Embankments along the rivers, sea walls along the coasts may keep water away from the flood plains. Water flow can be regulated through construction of reservoirs, check dams and alternate drainage channels/routes.

◉ **Improving vegetation cover**

- ▶ Improvement of the vegetation will increase water infiltration capacity of the soil. The roots of the plants and trees will keep the soil intact and prevent erosion and slow runoff to prevent

or reduce flooding. The trees planted in rows will act as a wind breaker. Coastal shelterbelt plantations can be developed to break severe wind speeds as it minimizes devastating effects.

◉ **Mangrove plantation**

- ▶ Mangroves protect the coastal area from storm surge and wind which accompanied with cyclones. The tangle of branches slows the flow of water. Community should also participate in the mangrove plantation which could be organized by the local authorities, NGOs or the community itself. Mangroves also help in erosion-control and coastal conservation

◉ **Saline embankments**

- ▶ Another activity that can be taken up as part of the community-based mitigation are construction of saline embankments to protect habitation, agriculture crop and important installations along the coast from sea water inundation due to storm surge.

◉ **Raised embankment or levees**

- ▶ Raised embankments above high flood or storm surge level need to be identified or constructed within an easily accessible place which can serve as an assembly point for various activities in normal weather and as good shelter in stormy weather and high violent floods

◎ **CONCLUSION**

The Disaster Management Act, 2005 (DM Act, 2005) lays down institutional and coordination mechanism for effective Disaster Management (DM) at the national, state, district and local levels.

NDMA has prepared these Guidelines for the Management of Cyclones (hereinafter referred to as the Guidelines) to assist ministries and departments of GoI and state governments to prepare their DM plans. Once all the activities, as laid down in the guidelines of National Cyclone Risk Mitigation Project are implemented, we will be much better prepared to face the hazards of cyclones.

DECLARE MUCORMYCOSIS AN EPIDEMIC, CENTRE TELLS STATES

CONTEXT

- Mucormycosis or, “black fungus”, is being detected relatively frequently among Covid-19 patients in various states. The disease often manifests in the skin and also affects the lungs and the brain.
- The rising trend of the infection has compelled the Government to ask the states to make it notifiable under Epidemic Diseases Act 1897 and making it mandatory for states to report both suspected and confirmed cases to the Integrated Disease Surveillance Programme (IDSP).

◎ BACKGROUND

- A notifiable disease is any disease that is required by law to be reported to government authorities which allows the authorities to monitor the disease, and provides early warning of possible outbreaks. The World Health Organization's International Health Regulations, 1969 require disease reporting to the WHO in order to help with its global surveillance and advisory role.
- Making a disease legally notifiable by doctors and health professionals allows for intervention to control the spread of highly infectious diseases. Registered medical practitioners need to notify such diseases in a proper form within three days, or notify verbally via phone within 24 hours depending on the urgency of the situation.
- This means every government hospital, private hospital, laboratories, and clinics will have to report cases of the disease to the government.
- The process helps the government keep track and formulate a plan for elimination and control. In less infectious conditions, it improves information about the burden and distribution of disease.
- The Centre has notified several diseases such as cholera, diphtheria, encephalitis, leprosy, meningitis, pertussis (whooping cough), plague, tuberculosis, AIDS, hepatitis, measles, yellow fever, malaria, dengue, etc.
- The onus of notifying any disease and the implementation lies with the state government.
- Any failure to report a notifiable disease is a criminal offence and the state government can take necessary actions against defaulters.

What is Mucormycosis?

- Mucormycosis (previously called zygomycosis) is a serious but rare fungal infection caused by a group of molds called mucormycetes.
- These fungi live throughout the environment, particularly in soil and in decaying organic matter, such as leaves, compost piles, or rotten wood.
- People get mucormycosis by coming in contact with the fungal spores in the environment. For

example, the lung or sinus forms of the infection can occur after someone breathes in spores. Mucormycosis can also develop on the skin after the fungus enters the skin through a cut, scrape, burn, or other type of skin trauma.

- It mainly affects people with low immunity due to other diseases such as people who have health problems or take medicines that lower the body's ability to fight germs and sickness including those with cancer, diabetes, organ transplant, and hospitalized or recovering Covid-19 patients.
- Mucormycosis can't spread between people or between people and animals.

Types of fungi that cause mucormycosis

- Several different types of fungi can cause mucormycosis. These fungi are called mucormycetes and belong to the scientific order Mucorales. The most common types that cause mucormycosis are Rhizopus species and Mucor species.
- Other examples include Rhizomucor species, Syncephalastrum species, Cunninghamella bertholletiae, Apophysomyces, Lichtheimia (formerly Absidia), Saksenaia, and Rhizomucor.

Types of mucormycosis

- Rhinocerebral (sinus and brain) mucormycosis is an infection in the sinuses that can spread to the brain. This form of mucormycosis is most common in people with uncontrolled diabetes and in people who have had a kidney transplant.
- Pulmonary (lung) mucormycosis is the most common type of mucormycosis in people with cancer and in people who have had an organ transplant or a stem cell transplant.
- Gastrointestinal mucormycosis is more common among young children than adults, especially premature and low birth weight infants less than 1 month of age, who have had antibiotics, surgery, or medications that lower the body's ability to fight germs and sickness.
- Cutaneous (skin) mucormycosis occurs after the fungi enter the body through a break in the skin (for example, after surgery, a burn, or other type of skin trauma). This is the most common form of

mucormycosis among people who do not have weakened immune systems.

- Disseminated mucormycosis occurs when the infection spreads through the bloodstream to affect another part of the body. The infection most commonly affects the brain, but also can affect other organs such as the spleen, heart, and skin.

Symptoms of Mucormycosis

- The symptoms of mucormycosis depend on where in the body the fungus is growing.
- Symptoms of rhinocerebral (sinus and brain) mucormycosis include:
 - One-sided facial swelling
 - Headache
 - Nasal or sinus congestion
 - Black lesions on nasal bridge or upper inside of mouth that quickly become more severe
 - Fever
- Symptoms of pulmonary (lung) mucormycosis include:
 - Fever
 - Cough
 - Chest pain
 - Shortness of breath
- Cutaneous (skin) mucormycosis can look like blisters or ulcers, and the infected area may turn black. Other symptoms include pain, warmth, excessive redness, or swelling around a wound.
- Symptoms of gastrointestinal mucormycosis include:
 - Abdominal pain
 - Nausea and vomiting
 - Gastrointestinal bleeding
- Patients with disseminated infection in the brain can develop mental status changes or coma.

How is mucormycosis diagnosed?

- A sample of fluid from the respiratory system (lungs or sinuses) is collected.
- A tissue biopsy may be performed under a microscope or in a fungal culture.

- CT scan of lungs, sinuses, or other parts of body, depending on the location of the suspected infection may also be performed.

Treatment for Mucormycosis

- Mucormycosis is a serious infection and needs to be treated with prescription antifungal medicine, usually amphotericin B, posaconazole, or isavuconazole.
- These medicines are given through a vein (amphotericin B, posaconazole, isavuconazole) or by mouth (posaconazole, isavuconazole).
- Other medicines, including fluconazole, voriconazole, and echinocandins, do not work against fungi that cause mucormycosis. Often, mucormycosis requires surgery to cut away the infected tissue.

CONCLUSION

- Many hospitals in the countries are now reporting a significant increase in cases of 'Covid-19-associated mucormycosis (CAM)' due to severe diabetes and the indiscriminate use of steroids in the treatment for Covid-19 as it suppresses the immune system. This is why steroids should not be used unless absolutely necessary.
- The rare, non-contagious disease can be debilitating or fatal if not treated quickly. If its progression is not checked early, 50-80% of patients could die.
- Declaring Mucormycosis as a notifiable disease would help the governments to formulate a plan for elimination & control and providing the antifungal medicines in the hospital and retail markets. This is why, many states have already made CAM as the notifiable disease and others are following this.
- There are a few simple steps we can follow to lower our risk of contracting mucormycosis such as to educate society about the disease; periodically sample the air in hospitals, especially in the critical care wards, to check for the presence of spores; to ensure that the humidifiers used during oxygen therapy are sterile; to advise recovering patients to remain indoors until they regain their natural strength and immunity; etc.

ETHICS IN CYBER SECURITY

CONTEXT

Linux Foundation, which is the core of the open-source community, took the unprecedented step of banning the entire University of Minnesota from contributing to the Linux kernel

◎ BACKGROUND

- Linux is a widely used operating system found in everything from servers to cell phones
- In February 2021, a team from UMN published a research article outlining how they systematically and stealthily introduced vulnerabilities into open-source software.
- They did this through comments that appeared beneficial but, in actuality, introduced critical vulnerabilities. Though stating it targeted open source as a whole, much of the researcher's attention was aimed at the Linux Kernel.
- The Kernel is the foundation of the operating system and manages the interactions between hardware and applications.
- The open-source community is built upon the principles of trust, cooperation and transparency.

◎ ANALYSIS

What is Cybersecurity?

- Cybersecurity is the practice of protecting systems, networks, and programs from digital attacks. These cyberattacks are usually aimed at accessing, changing, or destroying sensitive information; extorting money from users; or interrupting normal business processes.
- Implementing effective cybersecurity measures is particularly challenging today because there are more devices than people, and attackers are becoming more innovative.

Ethical issues and challenges for Cybersecurity

- There is a widening gap between demand and supply of qualified cyber security professionals. This quite often leads to the rushed recruitment and onboarding of new cyber security staff, and potentially, a lack of guidance provided to the new recruit on ethical decision-making and expectations.
- Organisations need to consider whether they have appropriate controls and processes in place to safeguard the integrity and privacy of their customers and their data. A key question to ask would be: what would the result to the customer be if this information was compromised?

- If a company's data is compromised, it may face lawsuits, reputational damage, and questions about its ethical standards. Delaying a public announcement can compound these consequences, at the cost of saving the image of organisation.
- Another consideration is the customer's right to their information. This is particularly important when considering how long user data should be stored.
 - Should it be deleted immediately after its use?
 - If it is kept, how will it be secured?
 - An even thornier question is what happens to the data when the user dies?
 - Should their family be able to gain access to it?

Why upholding highest standards of ethics is important in the field of cybersecurity?

- Two case studies are presented that reflects the opposite ends of the spectrum of ethical decision-making in response to cyber security incidents and the effects the wrong decision can have on an organisation.
- Yahoo was in the middle of being acquired by Verizon in 2017 when it disclosed it had discovered three data breaches in 2013 and 2014 that affected over one (1) billion users. Unfortunately, these data breaches were not disclosed until late 2016 after the original Verizon acquisition deal had been agreed to, but not yet paid for. The original deal between Verizon and Yahoo was worth USD 4.8 billion, and after the data breaches were disclosed, Yahoo's worth was slashed by an incredible USD 352 million. The Security and Exchange Commission (SEC) also investigated Yahoo for waiting too long to notify victims of the data breach, and whether Yahoo violated SEC securities legislation by not providing documents to the SEC related to the data breaches. Yahoo continues to be liable for half (50 percent) of any debts incurred from third-party litigation and regulatory fines.
- The Yahoo breaches and their lack of ethical behaviour concerning the notification of victims and regulatory bodies is an apt example of the damage that can occur when behaviours are not governed by ethical principles.

- On the other end of the spectrum of ethical decision-making sits the Australian Red Cross. The Red Cross suffered a data breach of over 550,000 blood donor's details, including name, address, date of birth, gender, and information regarding sexual history. The data was inadvertently published by a third-party contractor to an online public-facing application form.
- The Red Cross immediately disclosed the data breach to affected donors and to the Australian Government CERT (Computer Emergency Response Team). Not only did the Red Cross avoid any fines for the data breach, but they also received an extraordinary commendation for their response efforts by the Commissioner of the Office of Australian Information Commission, Timothy Pilgrim. The assurance that the Red Cross provided donors served to increase their reputation for transparency and trust within the Australian community.

◎ CONCLUSION

- The new world of information society with global networks and cyberspace will inevitably generate a wide variety of social, political, and ethical problems. Many problems related to human relationships and the community become apparent, when most human activities are carried on in cyberspace.
- Some basic ethical issues on the use of IT on global networks consist of personal privacy, data access rights, and harmful actions on the Internet. These basic issues have been solved partially using technological approaches, such as encryption technique, SSL, digital IDs and computer firewalls.
- Besides these protection technologies, legal laws are also needed in cyberspace to address hundreds of countries, which are incorporated into one global network. Guidelines and strategies should be implemented so that global information can be exploited in a socially and ethically sensitive way for our future benefit and applications.



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**13
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WARMING OF ARABIAN SEA

◎ CONTEXT:

Historically, waters off the western coast have experienced fewer storms than the Bay of Bengal, and typically weaker. This the third year in a row that cyclones in the Arabian Sea have menaced the west coast and frequency and of Cyclone is increasing in the Sea.

Why there is rise in frequency of cyclones in Arabian Sea?

- The recent frequency of cyclones was a clear sign of temperatures rising in the Arabian Sea.
- These low-pressure systems are formed when warm, moist air rises up from the sea surface.
- The rapid warming of the Arabian Sea is leading to not just more cyclones but also more extreme rain events.
- Due to these warm ocean conditions it is seen that the cyclone intensifies from a weak cyclone to an extremely severe cyclone rapidly.
- Currently, the sea water up to depths of 50 metres has been very warm that supplies the ample energy to enable the intensification of Cyclone Tauktae.
- The more heat released through condensation of water vapour results in the steeper drop in pressure that undergoes multiple stages of intensification to form cyclones.

Most recent cyclone in Arabian Sea- Tauktae

- Cyclone Tauktae (pronounced Tau-Te) is classified as a very severe cyclonic storm.
- Its speed is expected to increase to 150-160 km per hour, gusting up to 175 km per hour.
- Tauktae's name originates from a Burmese word which translates to gecko, a "highly vocal lizard".
- The cyclone was named by Myanmar.
- Tauktae is the fourth cyclone in consecutive years in the Arabian Sea, others being the Cyclone Mekanu in 2018, which struck Oman, Cyclone Vayu in 2019 struck Gujarat and Cyclone Nisarga in 2020 that struck Maharashtra.
- Tauktae has been intensifying very rapidly from a depression formed in the southeast Arabian Sea.

Categories of Cyclones

The severity of a tropical cyclone is described in terms of categories ranging from 1 (weakest) to 5 (strongest) related to the maximum mean wind speed as shown in this table.

Category	Maximum Mean Wind (km/h)	Typical Strongest Gust (km/h)	Typical Effects
Cyclonic Storm	63 - 88	< 125	Damaging winds. Negligible house damage. Damage to some crops, trees and caravans. Craft may drag moorings.

Severe Cyclonic Storm	89 - 117	125 - 164	Destructive winds. Minor house damage. Significant damage to signs, trees and caravans. Heavy damage to some crops. Risk of power failure. Small craft may break moorings.
Very Severe Cyclonic Storm	118 - 159	165 - 224	Very destructive winds. Some roof and structural damage. Some caravans destroyed. Power failures likely. (e.g. Clare, Olwyn)
Extremely Severe Cyclone	160 - 199	225 - 279	Significant roofing loss and structural damage. Many caravans destroyed and blown away. Dangerous airborne debris. Widespread power failures. (e.g. Tracy, Debbie, Lam)
Super Cyclone	> 200	> 279	Extremely dangerous with widespread destruction. (e.g. Vance, Marcia, Yasi)

Previous cyclones in Arabian Sea

- Cyclone Mekanu in 2018, which struck Oman
- Cyclone Vayu in 2019 struck Gujarat
- Cyclone Nisarga in 2020 that struck Maharashtra

Reason for more Cyclones formation over the Bay of Bengal

- The Bay witnesses cyclones both pre-monsoon and post-monsoon due to number of reasons;
- Higher sea surface temperature
- weak vertical mixing in BOB
- huge perennial fresh water influx from Himalayan Rivers
- basin rainfall and sluggish wind

PANEL DISCUSSION ON THE INTERNATIONAL MUSEUM DAY 2021

© **CONTEXT:** Culture Ministry organises panel discussions on the occasion of International Museum Day 2021.

What is about the International Museum Day?

- **Declaration:** 18th May was declared as the International Museum Day by the International Council of Museums (ICOM).
- **Objective:** The objective of International Museum Day is to raise awareness about museums and their importance as cultural exchange and enrichment of cultures and development of mutual understanding, cooperation and peace among peoples.
- **Theme 2021:** The theme for International Museum Day 2021 is 'The Future of Museums: Recover and Reimagine'.

International Council of Museums (ICOM)

- It was Created in 1946 and headquartered in Paris, France.
- It is a non-governmental organisation which maintains formal relations with UNESCO and have a consultative status with the United Nations Economic and Social Council.
- It is objected with the conservation, continuation and communication to society of the world's natural and cultural heritage.
- ICOM also partners with entities such as the World Intellectual Property Organization, Interpol, and the World Customs Organization in order to carry out its international public service missions, which include fighting illicit traffic in cultural goods and promoting risk management and emergency preparedness to protect world cultural heritage in the event of natural or man-made disasters.

CBID PROGRAM ON REHABILITATION OF DIVYANGJAN

◎ **CONTEXT:** Union Ministry of Social Justice & Empowerment launched a 6- month Community Based Inclusive Development (CBID) Program on rehabilitation of Divyangjan.

- ◎ **ABOUT:** **CBID Program**
- This CBID Program has been co-designed by Rehabilitation Council of India and University of Melbourne.
 - It is started as a joint initiative under the Memorandum of Understanding signed between the Government of Australia and the Government of India on 22nd November, 2018 for cooperation in disability sector.
 - This program will be first of its kind that will create trained manpower in identifying risk cases, apprising the parents/guardians about the nearest early intervention centres, and guiding them for availing Government benefits for Divyangjan.
 - **Aim:** It aims to create a pool of grass-root rehabilitation workers at community level who can work alongside ASHA and Anganwadi workers (Divyang Mitras) to handle cross disability issues and facilitate inclusion of persons with disabilities in the society.
 - **Prospects:** This would enable to develop trained manpower for rehabilitation and development of Divyangjan.
 - It will ensure their empowerment and inclusiveness in the society.

What is about the Rehabilitation Council of India (RCI)?

- It was set up as a registered society in 1986.
- **Statutory:** In 1992 the RCI Act was enacted by Parliament and it became a Statutory Body in 1993.

- **Mandate:** It is mandated to regulate and monitor services given to persons with disability, to standardise syllabi and to maintain a Central Rehabilitation Register of all qualified professionals and personnel working in the field of Rehabilitation and Special Education.

Some other initiative for the inclusion of Divyangjan

- The Rights of Persons with Disabilities (RPwD) Act, 2016 was enacted with the purpose of inclusive of persons with disabilities.
- The MoU signed with the Government of Australia for cooperation in disability sector.
- 24 X 7 Mental Health Rehabilitation Helpline - 'KIRAN'
- Accessible India Campaign (Sugamya Bharat Abhiyan) as a nation-wide Campaign for achieving universal accessibility for Persons with Disabilities (PwDs)
- National Action Plan for Skill Development of Persons with Disabilities Under Scheme for Implementation of Persons with Disabilities Act (SIPDA)
- NGO Darpan Portal of NITI Aayog

CAIRN ENERGY AND AIR INDIA DISPUTE

◎ CONTEXT:

Cairn Energy is suing Air India, the wholly owned and extensively controlled by the Indian government, in New York to seize its assets to enforce the \$1.2 billion arbitration award it won against the Indian government in a retrospective tax dispute.

◎ ABOUT:

Cairn Energy-Air India dispute

- A three-member international arbitral tribunal had ruled that the Indian government was "in breach of the guarantee of fair and equitable treatment" which was against the India-UK bilateral treaty and that the breach caused a loss to the British energy company.
- It awarded Cairn \$1.2 billion in compensation that India was liable to pay.
- To enforce this award, Cairn moved a court in the South District of New York against Air India.
 - Because it has located substantial assets that it can recover the compensation from in that jurisdiction.
- Since the arbitration award was delivered in Hague, India has moved an appeal in Netherlands.

What is the retrospective tax demand of Cairn?

- The arbitration was initiated by Cairn, similar to the Vodafone for a breach relating to India's 2012 retrospective amendments to tax laws.

Retrospective tax

- It means creating an additional charge or levy of tax by way of an amendment from specified date in the past.

- In 2006, Cairn Energy made a bid to consolidate its Indian assets under a holding company named Cairn India Limited.
- As part of that internal rearrangement, Cairn UK transferred shares of Cairn India Holdings to Cairn India, essentially transferring shares in non-Indian companies to an Indian holding company. It was being taxed retrospectively.
 - This retrospective taxation, Cairn argued, was in breach of the UK-India Bilateral Investment Treaty which had a standard clause that obligated India to treat investment from UK in a "fair and equitable manner".
- Subsequently, Cairn India then divested roughly 30 per cent of its shares through an Initial Public Offering.
 - Between 2009 and 2011, mining conglomerate Vedanta Plc acquired most of Cairn Energy but Cairn UK was not allowed to transfer its 9.8 per cent stake in Cairn India to Vedanta.
 - Tax authorities in India said in the 2006 transactions, the share transfers attracted capital gains tax of over Rs 6,000 crore by Cairn UK.

The retrospective tax situation in India

- Supreme Court Ruling in 2012: In India's tax dispute with Vodafone Plc revolves around its purchase of Hutch Essar in 2007 for \$11 billion. The Supreme Court ruled in January that year that Vodafone's transaction was not taxable here.
- Amendment in Income Tax Act: In 2012, following the Supreme Court ruled that a similar series of transactions which involves Vodafone did not attract capital gains as the transaction did not amount to transfer of a capital asset within the meaning of Section 2(14) of the Income Tax Act.
- Then the government amended the law retrospectively.
- In the Budget 2012-13, it was proposed to amend the Income Tax Act, 1961 with retrospective effect. The proposal was to allow the country to retrospectively tax cross-border transactions in which the underlying assets are located in India.
- Following are the sections which were amended:
 - **Section 2(14)** - This provision defines a "capital asset"
 - **Section 2(47)** - This provision defines a "transfer"
 - **Section 9** - This provision defines when income is deemed to accrue or arise in India.
- The 2012 amendment clarified that "an asset or a capital asset being any share or interest in a company or entity registered or incorporated outside India shall be deemed to be and shall always be deemed to have been situated in India, if the share or interest derives, directly or indirectly, its value substantially from the assets located in India".

DIGITAL TRANSFORMATION OF TRIBAL SCHOOLS

◎ CONTEXT:

A Memorandum of Understanding (MOU) is signed between the Ministry of Tribal Affairs (MTA) and Microsoft to support the digital transformation of schools.

Key highlights of the MOU

- **Target:** The initiative will be implemented in schools under the Ministry such as Eklavya Model Residential Schools (EMRS) and Ashram Schools.

- **AI skills:** Microsoft will provide AI curriculum to tribal students in both English and Hindi at all EMRS schools under the Ministry to skill educators and students for next-generation technologies including Artificial Intelligence.
 - These schools will be equipped with the technology, training and tools that is required to transform them into Microsoft Showcase School.

Eklavya Model Residential Schools (EMRS)

- EMRS started in the year 1997-98.
- It was started to impart quality education to ST children in remote areas.
- It will enable them to avail of opportunities in high and professional educational courses and get employment in various sectors.
- By the year 2022, every block with more than 50% ST population and at least 20,000 tribal persons, will have an EMRS.
- Eklavya schools will be on par with Navodaya Vidyalaya.
- They will have special facilities to preserve local art and culture besides providing training in sports and for skill development.

Ashram Schools

- Ministry of Tribal Affairs (MoTA) running a scheme "Establishment of Ashram Schools in Tribal Sub-Plan Areas" under which funds are provided to State Governments for construction of Ashram schools
- The scheme is in operation since 1990-91.
- The scheme is funded on 50:50 basis by the Central and State government, 100% funding will be provided to UTs.
- Scheduled Tribe (ST) students pursuing primary, middle, secondary and senior secondary education are eligible for the scheme.

- **Significance:** This program will provide readiness, preparedness to students at various international forums.
 - Students would get the required skill through digital transformation and this would support that AI and coding being a part of the curriculum.
 - This initiative will be helpful to the tribal students for maintaining continuity in their education in the lockdown period.
 - Students will also be trained and exposed to gamified environments on Minecraft to help build design thinking skills.
 - To enable inclusion and access, Microsoft will make AI curriculum available to the schools and students in both English and Hindi.
- **Teachers training:** 5000 teachers nominated by the ministry across these schools would also be provided with professional training.
 - The program will also offer opportunities for teachers to earn professional e-badges and e-certificates from the Microsoft Education Centre
- **Support:** Ministry will mentor on projects that involve AI applications for the societal good and the UN's Sustainable Development Goals (SDGs) also.

GI CERTIFIED GHOLVAD SAPOTA (CHIKOO) FROM MAHARASHTRA TO UK

◎ **CONTEXT:** With the purpose of boosting exports of Geographical Indication (GI) certified products, a consignment of Dahanu Gholvad Sapota from Palghar district of Maharashtra was sent to United Kingdom.

◎ **ABOUT:** **GI Dahanu Gholvad Sapota**

- GI certification of Gholvad Sapota is held by Maharashtra.
 - It is a variety of locally known as Chiku.
 - The fruit is known for its sweet and unique taste.
 - The unique taste is derived from calcium rich soil.
- GI products with its uniqueness, intrinsic value and practically no competition from outsiders, offers good potential for export.
- APEDA has been thrust on promotion of exports of GI products.

What is about the Geographical Indication?

- A geographical indication is a sign that is used on products having a specific geographical origin and possess qualities or a reputation that are due to that origin.
- Geographical Indication is granted to agricultural, natural, manufactured, handicraft which originates from a definite geographical territory.
- India, as a member of the WTO, enacted the Geographical Indications of Goods (Registration & Protection) Act, 1999 that came into force with effect from 15th September 2003.
 - Under the Paris Convention for the Protection of Industrial Property, the geographical indications are covered as an element of IPRs.
 - They are also covered under the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement.
- **Issuing Authority:** The tag is issued by the Controller General of Patents, Designs and Trade Marks (Geographical Indication Registry).
 - The Geographical Indication Registry works under the Department of Industry Promotion and Internal Trade (DIPP), Ministry of Commerce and Industry.
- **Time duration:** A GI is registered for an initial period of ten years, which may be renewed from time to time.
- Karnataka is leading in filing of Geographical Indications registered followed by Tamil Nadu and Kerala.
- Darjeeling tea became the first GI tagged product in India, in 2004–2005.

Some of the recent GI products of India (2021)

Kandhamal Haladi	Odisha
Rasagola	Odisha
Kodaikanal Malai Poondru	Tamil Nadu
Pawndum	Mizoram

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Hmaram	Mizoram
Palani Panchamirtham	Tamil Nadu
Tawlhlohpuan	Mizoram
Mizo Puanchei	Mizoram
Gulbarga Tur Dal	Karnataka
Tirur Betel Leaf (Tirur Vettala)	Kerala
Khola Chilli	Goa
Idu Mishmi Textiles	Arunachal Pradesh
Dindigul Locks	Tamil Nadu
Kandangi Saree	Tamil Nadu
Srivilliputtur Palkova	Tamil Nadu
Kaji Nemu	Assam

RAJASTHAN RANKS 2nd IN COUNTRY IN IMPLEMENTING SMART CITY PROJECTS

◎ **CONTEXT:** Rajasthan has stood second among the 36 states and Union territories in the country in implementation of the Smart City projects with four of its cities making the mark in the mission.

◎ **ABOUT:** **Smart City ranking**

- The ranking is released by the Union ministry of housing and urban affairs.
- Four Rajasthan cities, Udaipur, Kota, Ajmer and Jaipur have secured the 8th, 11th, 29th and 36th rank among the 100 smart cities of the country.
- Bangluru is ranked first in the ranking.
- A new method of ranking was adopted for the assessment Work .
 - Work completed, tendering process and fund utilisation are among the new parameters.
- The ranking takes into account various factors such as
 - the smart city plan implementation
 - the ongoing work and tendering process
 - the utilisation of funds
 - provision of the utility certificates to the Centre from time to time

Smart Cities Mission

- **Launched:** The Government of India has launched the Smart Cities Mission on 25 June 2015.

- **Objective:** The objective is to promote sustainable and inclusive cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions.
- **Focus:** The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a lighthouse to other aspiring cities.
- **Implementation:** The implementation of the Smart Cities Mission is done by a Special Purpose Vehicle (SPV) to be set up at city level in the form of a limited company under the Companies Act, 2013.
- **Distribution:** It will be promoted by the State/UT and the Urban Local Body (ULB) jointly both having 50:50 equity shareholding.

Other Similar initiative for the development

Members of Parliament Local Area Development Scheme (MPLADS)

- The Members of Parliament Local Area Development Division is entrusted with the responsibility of implementation of the scheme.
- Under the scheme, each MP has the choice to suggest to the District Collector for works to the tune of Rs.5 Crores per annum to be taken up in his/her constituency.
 - ▶ The Rajya Sabha Members of Parliament can recommend works in one or more districts in the State from where he/she has been elected.
 - ▶ The Nominated Members of the Lok Sabha and Rajya Sabha may select any one or more Districts from any one State in the Country for implementation of their choice of work under the scheme.

SEBI PROPOSES FRAMEWORK FOR GOLD EXCHANGE

◎ CONTEXT:

Sebi has proposed a framework for setting up a gold exchange where the yellow metal will be traded in the form of electronic gold receipts.

About SEBI's proposal

- Market regulator Sebi has proposed framework for setting up a gold exchange.
 - It will help in having a transparent domestic spot price discovery mechanism.
- **Denomination:** The proposed denominations of Electronic Gold Receipts (EGRs) are 1 kilogram, 100 grams, 50 grams and subject to conditions, those can also be even for 5 and 10 grams
- **Gold ecosystem:** The proposed gold exchange is extremely necessary to create a vibrant gold ecosystem in India which is commensurate with its large share of global gold consumption.
- **Regulation:** In the Budget for 2021-22, it was said that Sebi will be the regulator for gold exchange and Warehousing Development and Regulatory Authority (WDRA) will be strengthened to set up the commodity market ecosystem.
- **Instrument:** The regulator has suggested that the instrument to be traded on the bourse can be termed as an 'Electronic Gold Receipt' (EGR).

SEBI

- The Securities and Exchange Board of India was established on April 12, 1992.
- It was set up in accordance with the provisions of the Securities and Exchange Board of India Act, 1992.
- It aims to protect the interests of investors in securities and to promote the development of, and to regulate the securities market and for matters connected therewith or incidental thereto.

- **Stages:** The entire transaction mechanism can be divided into three tranches.
 - In the first tranche, physical gold would be converted to EGR. In this regard, a common interface between the vault managers, depositories, stock exchanges and clearing corporations has been suggested.
 - The EGR will be listed for trading and the bourse will receive information pertaining to the EGR on a daily basis from the depository concerned in the second tranche. Clearing corporation will settle the trades, as per the consultation paper.
 - In the third tranche, the EGR will be again converted into physical gold and the beneficial owner will have to surrender the EGR to obtain the physical gold.
- **Vault management:** The regulator has come out with draft regulations for the vault managers, including for registration, net worth criteria and security deposit, infrastructure requirements, standard operating procedure, issuance of EGR and action against vault managers.
- Sebi has suggested requirement of maintenance of records, specified code of conduct and guidelines on segregation of gold exchange and non-gold exchange businesses.

Significance of the proposal

- The proposed gold exchange would lead to
 - efficient and transparent domestic spot price discovery.
 - assurance in the quality of gold
 - promotion of India good delivery standard with active retail participation
 - greater integration with financial markets
 - augment gold recycling in the country
 - single good delivery standard
 - reduced market fragmentation
 - improved liquidity
 - single reference price

Warehousing Development and Regulatory Authority (WDRA)

- The mission of Warehousing Development and Regulatory Authority (WDRA) is to regulate and ensure implementation of the provisions of the Warehousing (Development and Regulation) Act, 2007.
- It acts for the development and regulation of warehouses, Regulations of Negotiability of Warehouse Receipts and promote orderly growth of the warehousing business.

ISRO TO SHARE PORTABLE MEDICAL OXYGEN CONCENTRATOR TECH

◎ **CONTEXT:** The Indian space agency has announced to transfer the technology to make portable medical oxygen concentrators, Shwaas.

◎ **ABOUT:** **Concentrator, Shwaas**

- It is developed by ISRO's rocket centre Vikram Sarabhai Space Centre (VSSC).
- It can deliver an enriched level (over 95 per cent) of oxygen than in air to support patients with respiratory illness or who are on oxygen therapy.
- The device enhances the oxygen gas content by selectively separating the nitrogen gas from ambient air through Pressure Swing Adsorption (PSA).
 - Pressure swing adsorption (PSA) is a technology used to separate some gas species from a mixture of gases under pressure.
 - It separates them according to the species' molecular characteristics and affinity for an adsorbent material.
- Shwaas is capable of supplying enriched oxygen continuously at 10 litres per minute (LPM) adequate for two patients at a time.
- It is a 600 W device and operates at a voltage of 220 V/50 Hz.
- It has a controllable oxygen flow of 0.5-10 LPM.
- It has two oxygen outlets for oxygen concentration of 82 per cent and 95 per cent normal at a pressure of 50-80 kPa.
- Shwaas has audible alarm for low purity, low & high levels of pressure and flow rate of oxygen.
- The device has a LCD display showing oxygen concentration, flow rate, and pressure.

MONOCLONAL ANTIBODY THERAPIES

◎ **CONTEXT:** India is facing shortages of the two monoclonal antibody therapies the Itolizumab and Tocilizumab.

◎ **ABOUT:** **Monoclonal antibodies**

- The immune system is able to create antibodies which are tiny Y-shaped proteins in our blood.
 - They recognise microbial enemies and bind to them and signals the immune system to launch an attack on the pathogen.
- Monoclonal antibodies are artificially created antibodies which aim to aid the body's natural immune system.
 - They target a specific antigen which is a protein from the pathogen that induces immune response.

What is monoclonal antibodies therapy?

- In 1900s, the Nobel-prize winning German immunologist Paul Ehrlich proposed the idea of a 'Zauberkegel' (magic bullet). It is a compound which selectively targets the pathogen.

- Muromonab-CD3 was the world's first monoclonal antibody to be approved for clinical use in humans.
 - Muromonab-CD3 is an immunosuppressant drug that is given to reduce acute rejection in patients with organ transplants.
- Monoclonal antibodies are created in the lab by exposing white blood cells to a particular antigen.
- In the case of Covid-19, monoclonal antibodies are produced by using the spike protein of the SARS-CoV-2 virus that facilitates the entry of the virus into the host cell.
- To increase the quantity of antibodies produced, a single white blood cell is cloned, which in turn is used to create identical copies of the antibodies.

About these two therapies

• Itolizumab therapy

- It was developed by Bengaluru-based biopharma company Biocon.
- The Drugs Controller General of India had authorised it for "restricted emergency use" in the country in June 2020.
- Itolizumab targets CD6, a protein found in the outer membrane of a T-cell.
 - T-cell is a type of white blood cell that plays a central role in the body's immune response.
- Itolizumab, by binding to CD6, tones down T-cell activation and causes reduction in synthesis of pro-inflammatory cytokines.

Tocilizumab

- This monoclonal antibody has got approved from the FDA to treat rheumatologic disorders.
- This antibody also inhibits IL-6 activity, and was proposed as a potential therapy for severe Covid.
- The drug is currently approved for off-label use in India, which means it can be used after informed consent of patients.

Other monoclonal antibody therapies developed worldwide

Bamlanivimab and etesevimab

- The US FDA authorised the emergency use of the combination bamlanivimab and etesevimab.
- Both the antibodies target the spike protein of the SARS-CoV-2 virus.

Casirivimab and imdevimab

- US-based biotechnology company Regeneron Pharmaceuticals developed a drug REGN-COV2.
- The drug REGN-COV2 is a cocktail of two antibodies, casirivimab and imdevimab.
- The drug is meant for use in mild-to-moderate Covid-19 patients who are not on oxygen support, but who may be at risk of severe disease.



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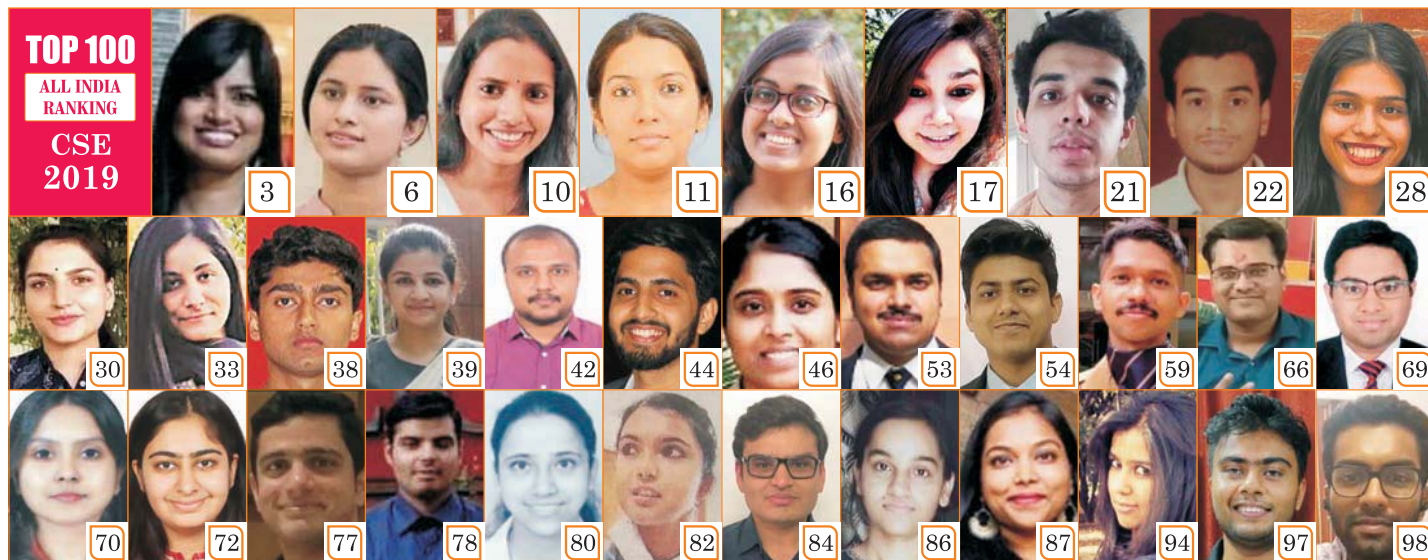
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