

CLIMATE CHANGE

❖ **Is the world's climate action plan on track?**

❖ **CONTEXT:** Leaders from around 200 countries will gather in the Egyptian city of Sharm El-Sheikh from November 6-18 for the 27th round of the Conference of Parties, or COP27, to deliberate on a global response to the increasing threat of climate change.

- The annual summit comes at a crucial juncture against the backdrop of global inflation, energy, food and supply chain crises, fuelled by an ongoing war in Ukraine and exacerbated by extreme weather events, with data showing that the world is not doing enough. At COP27, negotiations are likely to focus on efforts to decarbonise, finance climate action measures and other issues related to food security, energy and biodiversity.

❖ **What have been the key takeaways from past COPs?**

- The participants at COPs are signatories to the United Nations Framework Convention on Climate Change, or UNFCCC, adopted 30 years ago.
- At present, the UNFCCC has 198 members. The first COP was held in 1995 in Berlin. Since then, a few COPs have stood out with historic agreements.
- For instance, the Kyoto Protocol, adopted at COP3 in 1997, committed industrialised economies to limit and reduce greenhouse gas emissions.
- COP21, another significant conference, ended with the 2015 Paris Agreement in which member countries agreed to keep global warming below 2°C, ideally no more than 1.5°C, compared to pre-industrial levels.
- The previous summit (2021), hosted by Glasgow, ended with the Glasgow Climate Pact that called for the 'phasing down' of unabated coal power.

❖ **What's on the agenda at the upcoming summit?**

- COP27 will seek to strengthen a global response and deliberate if wealthy nations emitting carbon dioxide should compensate for the loss to developing countries with a lower carbon footprint. Broadly, the summit seeks to "accelerate global climate action through emissions reduction, scaled-up adaptation efforts and enhanced flows of appropriate finance" through its four priority areas of mitigation, adaptation, finance and collaboration.
- As per the presidential vision statement, COP27 will be about moving from negotiations and planning to the implementation of promises and pledges made.
- Experts say the conference could emerge as an "in-between COP," since climate change goals have either passed or are not due soon, giving COP27 a platform to push forward issues that developed economies pass over.

❖ **How has the world been doing on climate change since the Glasgow meet?**

- The world has changed since the last COP in Glasgow (2021). Extreme weather events and scientific reports are a stark reminder of the devastating impact of human pressure on the climate and the inefficiency of existing plans. These reports, likely to leave an impact on political agenda and environmental diplomacy, have built momentum for the Egypt summit.
- A recent UN report has warned that "efforts remain insufficient" to limit global temperature rise to 1.5°C, as per the Paris Agreement.
- The UN Climate Change report says the world is failing to act with urgency to curb greenhouse gas emissions despite the planet witnessing climate-enhanced heatwaves, storms and floods after just 1.2°C of warming.
- Even if the countries meet their pledges, we are on track for around 2.5°C of warming, which will be disastrous. The findings are based on an analysis of the latest Nationally Determined Contributions (NDCs), or country-specific action plans to cut emissions and adapt to climate impacts.
- According to the report emissions compared to 2010 levels need to fall 45% by 2030 to meet the Paris deal's goal.

❖ **What did the IPCC report state?**

- Intergovernmental Panel on Climate Change (IPCC) assessment report, 2022 stated that climate change has produced irreversible losses to natural ecosystems and has warned of severe consequences to food supply, human health and biodiversity loss if carbon emissions from human activity are not sharply reduced.

- As per the report, 3-14% of all species on earth face a very high risk of extinction at even 1.5°C, with devastating losses at higher temperatures in the current situation.
- It adds that limiting warming to around 1.5°C requires global greenhouse gas emissions to peak before 2025 and be reduced by 43% by 2030.
- Coal-fired power plants operating without technology to capture and store carbon would need to be shuttered by 2050, a warning relevant to India which operates roughly 10% of global capacity.
- The World Resources Institute also paints a grim picture in its report. It suggests that the world needs to curb emissions six times faster by 2030 than the current trajectory to meet the 1.5°C target. Of the 40 indicators examined, none is on track to reach the 2030 target. "Unabated coal-based electricity generation, although declining worldwide, continues to expand across some regions, while unabated fossil gas-based electricity, is still rising globally.
- Mitigation measures to keep temperatures below 2°C and the need for climate change adaptation mentioned in these reports are likely to come up for discussion at the COP27. "Raising ambition and urgent implementation is indispensable for addressing the climate crisis. This includes cutting and removing emissions faster and a wider scope of economic sectors, to protect us from more severe adverse climate impacts and devastating loss and damage.

❖ **Where does India stand?**

- India is one of the 197 countries that has promised to limit the increase to no more than 1.5°C by 2030. It is also working on a long-term roadmap to achieve its target of net zero emissions by 2070.
- Prime Minister Narendra Modi had committed at the Glasgow summit that the country would get its non-fossil energy capacity to 500 GW by 2030, meet half of its energy requirement from renewable sources and reduce carbon emissions. India is the third-largest greenhouse gas emitter in the world.
- Though India updated its climate pledges in line with commitments made at the previous summit. The Climate Action Tracker, an independent analysis that tracks government climate action classifies India's action as "highly insufficient."
- According to Climate Action Tracker India's continued support to the coal industry undermines a green recovery. India had previously come under intense criticism over its stand to "phase down" coal power, instead of phasing it out, at COP26. "While stronger on paper, India will already achieve these targets with its current level of climate action and the new targets will not drive further emissions reductions.
- India, expected to play a key role at COP27. India wants the \$100 billion-a-year pledge of climate funds for developing countries, a promise that remains unfulfilled.

PRELIMS

1. IISER report on cyclones in the Indian Ocean

❖ **Context: A new research has noted a decline in the Bay of Bengal.**

- The Arabian Sea has registered an increase in the last two decades, according to researchers from the Indian Institute of Science Education and Research (IISER) in Bhopal.
- They attributed this trend to global warming.
- With the greenhouse gases increasing and the earth warming, not only does temperature and humidity increase but also winds change and become weaker simultaneously.
- One thing in the atmosphere that inhibits the growth of cyclones is called the vertical shear, which refers to how strongly the winds can change from the surface to the top of the atmosphere, for up to 10 kilometres or so.
 - Strong vertical shears suppress cyclones
 - Weak vertical shears increase cyclones.
- While the global trend reflects a decrease in cyclones, there has been an increase in cyclones over certain parts of the world, including the Northern Indian Ocean (Arabian sea).
- The India Meteorological Data (IMD)'s data for the 130-year-long study period found an average of 50.5 tropical cyclones per decade over the region comprising the Bay of Bengal in the East and the Arabian Sea in the West.
- The researchers found that 49.8 per cent of tropical cyclones occurred from October-December in the post-monsoon period, while 28.9 per cent of the cyclones occurred in the pre-monsoon season between April to June during the same 130-year period.

- Overall, 80 per cent of the tropical cyclones occurred in the pre- and post-monsoon months.
- ❖ **Increase in cyclones over the Arabian sea**
- The Arabian Sea side of the north Indian Ocean saw a 52 per cent increase in cyclonic storms from 2001 -2019.
- The frequency increase in very severe cyclonic storms, extremely severe cyclonic storms and super cyclonic storms in the Arabian sea was observed during the post-monsoon months.
- As an exception, 2019 witnessed five tropical storms over the Arabian Sea and three over the Bay of Bengal.
- In comparison to the Bay of Bengal, the proportion of Arabian sea cyclones was initially 1:4, but it has become 2:4 from 2001-2020.
- In contrast, the frequency of Bay of Bengal cyclonic storms has slightly decreased but not to a significant extent.
- The reason is that there is a warming threshold for sea surface temperature (SST) over any ocean. It is generally between 26 degrees Celsius and 30 degrees Celsius, which has already been achieved in the Bay of Bengal. However, sea surface temperature is still gradually increasing over the Arabian sea.

2. Mauna Loa volcano

- ❖ **Context: The Scientist and researchers have alarmed the residents of Hawaii Island as the world's largest active volcano 'Mauna Loa' indicates to get erupted.**

- According to recent observations, it has been noted that the number of Hawaii Island summit earthquakes jumped from 10 to 20 per day to 40 to 50 per day.
- Scientists believe more earthquakes are occurring because more magma is flowing into Mauna Loa's summit reservoir system from the hot spot under the earth's surface that feeds molten rock to Hawaii's volcanoes.
- This stance can give rise to the volcanic eruption of Mauna Loa.

- ❖ **The Mauna Loa volcano:**

- It is the World's largest active Volcano on the Island of Hawaii in the U.S. state of Hawaii, in the Pacific Ocean.
- The volcano makes up 51% of the Hawaii Island landmass.
- It is an active shield volcano with relatively gentle slopes, with a volume estimated at 18,000 cubic miles (75,000 km³).
- Lava eruptions from Mauna Loa are silica-poor and very fluid, and they tend to be non-explosive.
- It last erupted in 1984 which led to destruction on the Island.

3. Emissions Gap Report 2022

- ❖ **Context: Current pledges by countries for reducing greenhouse gas emissions would still leave the world warmer by 2.4-2.6 degrees celsius by the end of the century, according to the Emissions Gap Report 2022.**

- The report was released by the United Nations Environment Programme (UNEP).
- The report found that the updated pledges by countries, also known as nationally determined contributions (NDC) under the Paris Agreement, only reduce the projected greenhouse emissions by 1 per cent by 2030.
- It is roughly equivalent to 0.5 gigatonnes of CO₂.
- This is when a 45 per cent reduction is required for the world to limit global warming to 1.5°C above pre-industrial levels.
 - The pre-industrial period is generally considered to be between 1850 and 1900.
- This lack of ambition in reducing greenhouse gas emissions means that both the temperature targets under the Paris Agreement — 2°C and the ambitious 1.5°C — will likely be exceeded by 2100.
- The planet will be warmer by 2.6°C by the end of the century even if all the current unconditional NDCs (where countries do not need financial and technical support from other countries), are taken into account.
- If the current conditional NDCs, which need external support, are considered, there is a chance of limiting the warming to 2.4°C.
- Under the best-case scenario in which all the unconditional NDCs and other additional net zero commitments by countries are fulfilled, there is a chance of limiting the warming to 1.8°C, still above 0.3°C above the ambitious Paris target.
- However, the 1.8°C scenario is currently outside the realm of possibility because of the lack of cohesion between current emissions, short-term NDC targets and long-term net-zero targets.

4. Kalanamak rice

❖ **Context: Kalanamak, a traditional variety of paddy is all set to get a new look and name.**

- Grown in 11 districts of the Terai region of northeastern Uttar Pradesh and in Nepal, the traditional variety has been prone to 'lodging', a reason for its low yield. (Lodging is a condition in which the top of the plant becomes heavy because of grain formation, the stem becomes weak, and the plant falls on the ground.)
- The Indian Agriculture Research Institute (IARI) has successfully developed two dwarf varieties of Kalanamak rice.
- They have been named Pusa Narendra Kalanamak 1638 and Pusa Narendra Kalanamak 1652.
- The yield of the new varieties is double that of the traditional variety.
- The traditional Kalanamak rice is protected under the Geographical Indication (GI) tag system.
 - It's recorded in the GI application that Lord Buddha gifted Kalanamak paddy to the people of Sravasti so that they remembered him by its fragrance.
- It is also known as Buddha Rice. It is one of the finest and short grain rice with an unusual black husk. Kalanamak is a scented rice of Nepal and India. Its name means black husk (kala = black; the suffix 'namak' means salt). This variety has been in cultivation since the Buddhist period (600 BC).
- It is popular in Himalayan Tarai of Nepal i.e., Kapilvastu, and eastern Uttar Pradesh, where it is known as the scented black pearl.
- Acreage under this variety has declined sharply, pushing it towards extinction because of: Panicle blast epidemics in 1998 and 1999, tall stature of the crop causing lodging, long time harvest (6 to 7 months), poor quality seeds.
- Kalanamak rice was granted the Geographical Indication (GI) Tag in 2012.
 - Kalanamak Rice is approved for 11 districts of UP.
- Kalanamak rice is a non-basmati rice.
- **Health benefits:**
 - Kalanamak rice is rich in micronutrients such as Iron and Zinc.
 - Regular intake of Kalanamak rice is said to prevent Alzheimer's disease.
 - It has 11% protein, almost double that of common rice varieties.
 - It has low Glycemic Index (49% to 52%) making it relatively sugar Free and suitable for diabetics.

ANSWER WRITING

Q. Analyse the salience of 'sect' in Indian society vis-a-vis caste, region and religion.

- Sects and Cults are a smaller group of faith that follows either a traditional religion or has its fundamentals in a different religion.
- Sects are subgroups from a single faith or religion, such as Christianity, Hinduism, Islam, Buddhism, and others.
- Sects can also refer to religious groups that have separated themselves from an established religion and now follow their own rules.
- On the other hand, a cult is a social group that follows unusual religious, philosophical, spiritual beliefs to attain a common interest or goal in life.
- ❖ **Salience of 'sect' vis-a-vis Caste:**
 - Sects encourages its members to work for a common vision of brotherhood, equality and goals. Sects frequently form when society is undergoing rapid transformation.
 - Owing to the rising socio-economic status of the sub-caste in India, they are asserting their dominance in political and socio sectors. E.g. Gujjjar, Jats, Patidhar etc.
 - Even though the position of sub-sectors have improved, yet the practice of homogeneity, culture are still prevailing which cannot be said to be modernizing.
- ❖ **Salience of 'sect' vis-a-vis Region:**
 - Sects also emerges from geographic aspects e.g. hill tribes like gaddis are nomadic in their practice, also, the shiekh are Muslim Community found in the north Indian states. There are four main sections in Shaikh e.g. siddiqi, farooq, usmani, abbasi.
 - Various sects emerged in Maharashtra due to experience of inequality in the observance of religion on the part of various sections of the society, invasion of Muslims and the political predominance acquired by the Muslim rulers over Hindu society.
- ❖ **Salience of 'sect' vis-a-vis Religion:**

- Hinduism is divided into four major denominations: Vaishnavism, Shaivism, Smartism and Shaktism. The denominations differ primarily in the god worshipped as the Supreme One and in the traditions that accompany worship of that god.
- Muslims are divided into several sects based on their understanding of Islamic law (fiqh) and Islamic history. On the basis of sect, Muslims are divided into two parts- Sunni and Shia.
- Buddhism was divided into two sects namely Mahayana and Hinayana.
- Christians are divided into two sects - the Catholics and the Protestants. The former may be considered as the traditionalists and the latter the reformists. The two are divided mainly on the question of the authority of the Church.
- Indian society is the result of a journey from the Indus civilization to today's globalized world.
- In this journey, it has gone through many transformations under the influence of the outside world and reform movements within society. However, what is unique and appreciable is the fact that it has managed to adopt and accept various features while preserving its past.

MCQs

1. Which of the following can help in promoting sustainable development?

1. Use of Non-conventional Sources of Energy
2. Use of Compressed Natural Gas (CNG)
3. Biocomposting
4. Solar Power through Photovoltaic Cells
5. LPG, Gobar Gas in Rural Areas
6. Mini-hydel Plants

Choose the correct answer using the codes given below

- a) 1,2,4, and 5 only
- b) 2,3,4 and 5 only
- c) 3,5 and 6 only
- d) 1,2,3,4,5 and 6**

2. Arrange the following greenhouse gases in descending order of their global warming potential:

1. Methane
2. Carbon Dioxide
3. Sulphur Hexachloride
4. Nitrous Oxide
5. HFCs

Select the correct answer using the code given below:

- a) 2-5-4-3-1
- b) 4-5-3-2-1
- c) 3-5-4-1-2**
- d) 5-3-1-4-2

3. Which of the following can be used to reduce greenhouse gas emissions?

1. Pasture Rotation System
2. RGI or Reggie Programs
3. Positive Ice Albedo Feedback
4. Use of Biophilic Design

Select the correct answer using the code given below.

- a) 1, 2 and 3 only
- b) 3 and 4 only
- c) 1, 2 and 4 only**
- d) 1, 2, 3 and 4

4. Which of the following statements best describes the location of the Mauna Loa volcano recently seen in news?

- a) An Island Arc Chain extending from Japan into the South China Sea.
- b) A subduction zone extending from New Zealand north-northeast to Fiji.
- c) A Mid Oceanic Ridge System, which is a part of the Mid Atlantic Ridge.
- d) Created as the Pacific tectonic plate moved over the Hawaii hotspot in the Earth's underlying mantle.**

5. Emissions Gap Report 2022 has been released by which of the following?

- a) UNEP**

- b) UNDP
c) UNFCCC
d) UNCCD
6. "Climate Action Tracker" which monitors the emission reduction pledges of different countries is a :
- a) **Database created by coalition of research organisations**
b) Wing of "International Panel of Climate Change"
c) Committee under "United Nations Framework Convention on Climate Change"
d) Agency promoted and financed by United Nations Environment Programme and World Bank
7. Consider the followings
Assertion (A): The eastern coast of India is affected by tropical cyclones more than the western coast of India.
Reason(R): More cyclones are formed in the Bay of Bengal than the Arabian Sea because Bay Of Bengal is relatively warmer than the Arabian sea and the average Sea Surface Temperature is higher and Arabian sea has a higher salinity than the Bay Of Bengal.
- Choose the correct answer using the codes given below
- a) **Both A and R are true and R is the correct explanation of A**
b) Both A and R are true but R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true
8. Consider the following statements about Electoral Bond Scheme
1. The aim of this scheme is to bring about transparency in the funding process of political parties.
 2. Only the political parties recognized by the Election Commission which secured not less than one per cent of the votes polled in the last general election to the House of People or the Legislative Assembly of the State shall be eligible to receive the Electoral Bonds.
 3. Electoral Bonds shall be valid for fifteen calendar days from the date of issue.
 4. The Electoral Bond deposited by an eligible political party in its account shall be credited on the same day.
- Which of the above statement/s are correct?
- a) 1,2 and 3 only
b) 2,3 and 4 only
c) 1,3 and 4 only
d) **1,2,3 and 4**
9. Miya museum often mentioned in news recently is situated in which state?
- a) West Bengal
b) **Assam**
c) Jharkhand
d) Uttar Pradesh
10. Dolphins have started coming back to the Ganga with improvement in the quality of the river water, the Uttar Pradesh government said recently. With reference to Gangetic dolphins, consider the following statements.
1. It's the only species of freshwater dolphin in the world.
 2. It is classified under Schedule 1, Wildlife (Protection) Act, 1972.
 3. Vikramshila Gangetic Dolphin Sanctuary (VGDS) in Bihar's Bhagalpur district is India's only sanctuary for Gangetic Dolphins.
- Which of the above-given statements is/are correct?
- a) 1 and 2 only
b) 1 and 3 only
c) **2 and 3 only**
d) 1, 2 and 3