

1. Carbon Sequestration

Why in News?

- Recently, study conducted in Maharashtra and Odisha, soil carbon sequestration may help fight climate change. It is aligned with Sustainable Development Goal 13 (SDG 13: Climate Action) which is on taking urgent action to combat climate change and its impacts.

Highlights

- It is the long-term storage of carbon in plants, soils, geologic formations, and the ocean.
- It occurs both naturally and as a result of anthropogenic activities and typically refers to the storage of carbon.
- Terrestrial carbon sequestration is the process through which CO₂ from the atmosphere is absorbed by trees and plants through photosynthesis and stored as carbon in soils and biomass (tree trunks, branches, foliage, and roots)
- CO₂ can be stored, including oil reservoirs, gas reservoirs, unmineable coal seams, saline formations and shale formations with high organic content.
- Oceans absorb, release and store large amounts of CO₂ from the atmosphere. This can be done in two ways- enhancing productivity of ocean biological systems through Iron fertilization, and injecting CO₂ into the deep ocean.
- The dumping of iron stimulates phytoplankton production, which in turn leads to enhanced photosynthesis from these microorganisms, helping in CO₂ absorption.
- It is the process by which nature has achieved a balance of carbon dioxide in our atmosphere suitable for sustaining life. Animals expel carbon dioxide, as do plants during the night.
- Nature provided trees, the oceans, earth and the animals themselves as carbon sinks, or sponges. All organic life on this planet is carbon based and when plants and animals die, much of the carbon goes back into the ground where it has little impact on contributing to global warming.
- Artificial carbon sequestration refers to a number of processes whereby carbon emissions are captured at the point of production (e.g., Factory Chimneys) and then buried.
- One proposed method is ocean sequestration whereby carbon dioxide is injected deep into the ocean, forming lakes of CO₂. In theory, the CO₂ will stay down deep due to the pressure and temperature of the surrounding water, gradually dissolving into that water over time.

- Another example is geological sequestration where the carbon dioxide is pumped into underground chambers such as old oil reservoirs, aquifers and coal seams that are unable to be mined.

2. Earthquake

Why in News?

- Powerful tremors were recently felt in India after an earthquake of magnitude 6.6 struck Nepal, which killed a few people and destroyed multiple houses.

Highlights:

- According to the United States Geological Survey (USGS) the tremors are attributed to the continental collisions of India and Eurasia Plates, which is the dominating force for the Seismicity in the Himalayas.
- These plates are converging at a relative rate of 40-50 millimeters per year.
- Northward under thrusting of India beneath Eurasia generates numerous earthquakes and consequently makes this area one of the most seismically hazardous regions on Earth.
- The Himalayas and their vicinity have witnessed some of the most lethal earthquakes such as one of magnitude 8.1 Bihar in 1934, the 1905 magnitude 7.5 quake in Kangra and the 2005 magnitude 7.6 quake in Kashmir.
- An earthquake in simple words is the shaking of the earth. It is a natural event. It is caused due to release of energy, which generates waves that travel in all directions.
- The vibrations called seismic waves are generated from earthquakes that travel through the Earth and are recorded on instruments called seismographs.
- The location below the earth's surface where the earthquake starts is called the hypocenter, and the location directly above it on the surface of the earth is called the epicenter.
- **Types of Earthquake:** Fault Zones, Tectonic Earthquakes, Volcanic Earthquake, Human Induced Earthquakes.
- The earthquake events are scaled either according to the magnitude or intensity of the shock. The magnitude scale is known as the Richter scale. The magnitude relates to the energy released during the quake. The magnitude is expressed in absolute numbers, 0-10.
- The intensity scale is named after Mercalli, an Italian seismologist. The intensity scale takes into account the visible damage caused by the event. The range of intensity scale is from 1-12.

3. Sovereign Green Bonds Framework of India

Why in News?

- The Union Minister for Finance & Corporate Affairs has recently approved the final Sovereign Green Bonds Framework of India.
- Sovereign Green Bonds will be issued for mobilising resources for green projects.

Highlights:

- The Framework comes close on the footsteps of India's commitments under "Panchamrit" as elucidated by the Prime Minister at Conference of Parties (COP) 26 at Glasgow in November 2021.
- It will further strengthen India's commitment towards its Nationally Determined Contribution (NDCs) targets, adopted under the Paris Agreement.
- Green Finance Working Committee (GFWC) was constituted to validate key decisions on issuance of Sovereign Green Bonds.
- The framework has been rated 'Medium Green', with a "Good" governance score by a Norway-based independent second opinion provider CICERO.
- The 'Medium Green' rating is assigned 'to projects and solutions that represent significant steps towards the long-term vision, but are not quite there yet.
- All fossil fuel-related projects have been kept out of the framework, along with biomass-based renewable energy projects that rely on feedstock from 'protected areas'.
- Green bonds are issued by companies, countries and multilateral organisations to exclusively fund projects that have positive environmental or climate benefits and provide investors with fixed income payments.
- The projects can include renewable energy, clean transportation and green buildings, among others.
- Proceeds from these bonds are earmarked for green projects. This is unlike standard bonds, the proceeds of which can be utilized for various purposes at the discretion of the issuer.
- By the end of 2020, 24 national governments had issued Sovereign Green, Social and Sustainability bonds totalling a cumulative USD 111 billion dollars, according to the London-based Climate Bonds Initiative.
- Sovereign green issuance sends a powerful signal of intent around climate action and sustainable development to governments and regulators.

- With the International Energy Agency's (IEA) World Energy Outlook 2021, estimating that 70% of the additional USD 4 trillion spending to reach net-zero is required in emerging/developing economies, sovereign issuance can help kickstart these large inflows of capital.
- Development of a sovereign green benchmark could eventually lead to the creation of a vibrant ecosystem of raising green bonds from international investors.

4. Greenwashing

Why in News?

- The United Nations Secretary General has recently warned private corporations to desist the practice of Greenwashing and mend their ways within a year.
- The general has also directed to set up an expert group solely to look into the practice.

Highlights:

- The term greenwashing was first used in 1986 by Jay Westerveld, an American environmentalist and researcher.
- Greenwashing is the practice in which firms and governments mark all kinds of activities as climate-friendly, as something that would lead to emissions reduction, or avoidance of emissions.
- Many of these claims are unverifiable, misleading, or dubious.
- While it helps in boosting the image of the entity, they do nothing in the fight against climate change.
- Several multinational corporations, including oil giants like Shell and BP, and Coca Cola have faced accusations of greenwashing.
- Greenwashing is prevalent across a whole range of environmental activities.
- Developed countries are often accused of greenwashing their normal business investments in developing countries by highlighting climate co-benefits of the financial flows, sometimes with very little justification.
- Greenwashing presents a false picture of the progress being made on the climate change front, pushing the world towards disaster, while at the same time, rewarding entities for irresponsible behaviour.
- The processes and products that can potentially cut emissions are so many that it is practically impossible to monitor and verify all.

- The processes, methodologies and institutions to measure, report, create standards, verify claims and grant certifications are still being set up.
- Large number of organisations have sprung up claiming expertise in these areas and offering their services for a fee. Many of these organisations lack integrity and robustness, but their services are still availed by corporations because it makes them look good.
- A carbon credit (also known as carbon offset) is a credit for greenhouse emissions reduced or removed from the atmosphere by an emission reduction project, which can be used by governments, industry, or private individuals to compensate for the emissions they generate elsewhere.
- Those that cannot easily reduce emissions can still operate, at a higher financial cost.
- Carbon credits are based on the "cap-and-trade" model that was used to reduce sulfur pollution in the 1990s.
- One carbon credit is equal to one metric ton of carbon dioxide, or in some markets, carbon dioxide equivalent gases (CO₂-eq).

