Carbon Sinks - The Good & The Bad

What is the issue?

1. After years of focusing on clean fuels for reducing emissions, the climate conversation is beginning to focus on carbon sinks - or ways to absorb and sequester carbon emissions from the atmosphere.
2. As with any emission conversation, bad ideas are being advocated as strongly as the good ones.

What are carbon sinks?

- Carbon sinks can be both natural and artificial, though artificial carbon sinks are relatively few compared to natural ones.
- Natural carbon sinks are forests and oceans, which together are estimated to remove as much as 56% of the carbon emitted by humans.
- Of this, land forests account for roughly 30%, while the oceans absorb about 26%.
- Artificial or man-made carbon sinks refer to a number of processes by which carbon is captured at the point of emission itself and then stored or buried underground.
- While the technologies for man-made or artificial carbon sinks have been around for a long time, they are only now being considered seriously.
- Even so, they are unlikely to play as big a role as the natural sinks in the near future.

What are the global carbon dioxide emission levels?

> *Research by the Global Carbon Project estimates that carbon dioxide emissions in 2022 will be around 40.6 billion tonnes - just a tad lower than the 40.9 billion tonnes recorded in 2019, which was the highest ever.*

- Despite aggressive adoption of renewable energy sources, the global carbon dioxide emissions are still too high.
- As with all climate measurements, these are estimates and not precise numbers.
- Researchers feel that the capacity of forests and oceans to absorb higher quantities of carbon dioxide is slowly reducing because of climate change.
- But, there is also another view gaining popularity - that oceans not only absorb more CO2 from the atmosphere than originally estimated, but also that they can be made to take up even more of the gas.

What is the advantage of natural carbon sinks?

- The great advantage of natural carbon sinks is not only that they are already present and absorbing a lot of emissions, but also that they follow a natural carbon cycle that

was designed by nature itself.
- Natural forests have been shown to capture twice the amount of carbon dioxide they emit.
- Older forests seem to have more carbon storage capacity than new ones.
- Either way, this provides a strong case for increasing forest cover across the world and stopping cutting down trees.

What are some suggestions on improving the ocean health?

- The ocean planktons and other ocean flora play a critical role in taking in carbon dioxide and turning it into food for marine animals.
- There is therefore a renewed interest among ocean and environmental scientists on whether there are ways to increase the ocean flora, which have over the years suffered because of multiple reasons.
- India has recently joined the Mangrove Alliance for Climate, which will follow a two-pronged strategy.
    1. It will try to ensure there is no deforestation of existing mangroves.
    2. It will work on ways to increase the mangroves wherever possible.
- Mangroves aren't the only way of increasing the ocean's capacity to absorb more carbon dioxide.
- **Other ways to increase carbon sink -** Increasing the planktons, sea marshes, seagrass meadows as well as flora found on seabeds are all good ways of increasing the ocean's capacity to absorb carbon dioxide.
- Steps can be taken to increase these naturally over time.
- But the climate change emergency is making researchers and policymakers to suggest more radical steps to get oceans to absorb more carbon dioxide.
- These include pumping relatively pure liquid carbon dioxide using pipes to the seabeds where it can be either absorbed by the flora or stored in the seabeds in a process called geological sequestration.

What are the impacts of these radical steps?

- In some cases, it is known that this can potentially trigger earthquakes.
- It can alter the ocean chemistry and temperature.
- It can cause huge harm to the existing marine life and biodiversity that is already under pressure because of development and over exploitation.
- Over the past half-century, steps from laying undersea cables to seabed mining, as well as overfishing, have reduced the population of many types of fish.
- New developments such as offshore wind and solar farms are further threatening ocean life.
- Plastic and other pollution has already damaged the oceans.
- The oceans are so vast that the damage is often missed, but now some of these are being studied properly.

What is the importance of Pteropod population?

- Studies have shown that the Pteropod or the sea butterfly population is adversely affected because of higher carbon dioxide and changes in the pH level of oceans.

- The size of the Pteropod population is important because it is food for many marine animals, including whales.
- Similarly, changes in ocean chemistry and temperature can alter the behaviour of marine fish and trigger off a chain of events that could have long-term ramifications.
- It is important to save the earth from climate damage. But it is equally important to remember that steps being taken to reduce emissions should not be at the cost of doing more damage.

Reference

1. Business Standard | Carbon sinks: The good and the bad

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