Carbon Sequestration: Notes for IAS Exam

Carbon capture and sequestration is the process of capturing waste carbon dioxide (CO_2) from large point sources, such as fossil fuel power plants, transporting it to a storage site, and depositing it where it will not enter the atmosphere, normally an underground geological formation.

This article will give details about this concept which will be of immense use for candidates appearing for the IAS Exam.

How is Carbon Sequestration done?

Carbon dioxide is naturally captured from the atmosphere through biological, chemical, and physical processes. These changes can be accelerated through changes in land use and agricultural practices, such as converting crop and livestock grazing land into land for non-crop fast growing plants. Artificial processes have been devised to produce similar effects, including large-scale, artificial capture and sequestration of industrially produced carbon dioxide using subsurface saline aquifers, reservoirs, ocean water, aging oil fields, or other carbon sinks, bio-energy direct air capture when combined with storage.

What are the advantages and disadvantages of Carbon Sequestration?

Advantages

Planting trees and managing their development is a proven way to reduce the number of harmful particulates in the air. Carbon sequestered is carbon not emitted into the atmosphere. Less carbon in the atmosphere will reduce the greenhouse gas effect and lessen the impacts of climate change.

Disadvantages

- Carbon dioxide may be stored deep underground. At depth, hydrostatic pressure acts to keep it in a liquid state. Reservoir design faults, rock fissures and tectonic processes may act to release the gas stored into the ocean or atmosphere.
- The use of the technology would add an additional 1–5 cents of cost per kilowatt hour, according to an estimate made by the panels about climate change. The financial costs of modern coal technology would nearly double if use of CCS technology were to be required by regulation. The cost of CCS technology differs with the different types of capture technologies being used and with the different sites that it is implemented in, but the costs tend to increase with CCS capture implementation. One study conducted

predicted that with new technologies these costs could be lowered but would remain slightly higher than prices without CCS technologies.