

Here are some common questions and answers about Carbon sequestration:

Q1: What is carbon sequestration?

A1: Carbon sequestration is the process of capturing and storing atmospheric carbon dioxide (CO₂). It is a method used to reduce the amount of CO₂ in the atmosphere with the goal of mitigating climate change. Carbon can be sequestered naturally by forests, soil, and oceans, or artificially through technologies such as carbon capture and storage (CCS).

Q2: Why is carbon sequestration important?

A2: Carbon sequestration is important because it helps reduce the concentration of CO₂ in the atmosphere, thereby mitigating the greenhouse effect and combating global warming. It also plays a crucial role in achieving net-zero emissions and stabilising the climate.

Q3: What are the main types of carbon sequestration?

A3: The main types of carbon sequestration are:

- **Terrestrial Sequestration:** Involves the absorption and storage of CO₂ by plants and soils.
- **Ocean Sequestration:** Involves the absorption and storage of CO₂ by marine ecosystems.
- **Geological Sequestration:** Involves capturing CO₂ and storing it underground in rock formations.
- **Technological Sequestration:** Involves using technologies like carbon capture and storage (CCS) to capture CO₂ from industrial processes and store it underground.

Q4: How does terrestrial carbon sequestration work?

A4: Terrestrial carbon sequestration works through the natural processes of photosynthesis and soil organic matter accumulation. Plants absorb CO₂ from the atmosphere during photosynthesis and convert it into biomass. This carbon is stored in plant tissues and soils. Practices such as reforestation, afforestation, and sustainable agriculture can enhance terrestrial carbon sequestration.

Q5: What role do oceans play in carbon sequestration?

A5: Oceans play a significant role in carbon sequestration by absorbing CO₂ from the atmosphere. Phytoplankton in the ocean's surface waters use CO₂ for photosynthesis, and some of this carbon is transferred to deeper waters and sediments through biological processes. The ocean also dissolves CO₂ directly into seawater, where it can be stored for long periods.

Q6: What is carbon capture and storage (CCS)?

A6: Carbon capture and storage (CCS) is a technological method of capturing CO₂ emissions from industrial processes or power plants before they are released into the atmosphere. The captured CO₂ is then transported and stored underground in geological formations, such as depleted oil and gas fields or deep saline aquifers.

Q7: What are the challenges associated with carbon sequestration?

A7: Challenges include:

- **Cost:** High costs associated with the technology and infrastructure for CCS.
- **Storage Security:** Ensuring long-term storage without leakage.
- **Monitoring and Verification:** Accurate measurement and monitoring of sequestered carbon.
- **Environmental Impact:** Potential risks to ecosystems from large-scale sequestration projects.
- **Public Acceptance:** Gaining public support for sequestration projects.

Q8: How can agricultural practices enhance carbon sequestration?

A8: Agricultural practices can enhance carbon sequestration through:

- **Cover Cropping:** Growing cover crops to protect and enrich the soil.
- **No-Till Farming:** Reducing soil disturbance to maintain soil organic matter.
- **Agroforestry:** Integrating trees and shrubs into agricultural systems.
- **Soil Amendments:** Using biochar, compost, and other organic amendments to increase soil carbon storage.

Q9: What are some examples of successful carbon sequestration projects?

A9: Examples include:

- **The Boundary Dam CCS Project (Canada):** Captures and stores CO₂ from a coal-fired power plant.
- **The Sleipner CO₂ Storage Project (Norway):** Stores CO₂ from natural gas processing in a saline aquifer.
- **The Billion Tree Campaign (Global):** Aims to plant and restore billions of trees worldwide to enhance terrestrial carbon sequestration.
- **Soil Carbon Sequestration Projects (Various Locations):** Implementing sustainable agricultural practices to increase soil carbon storage.

Q10: How do policies and regulations support carbon sequestration?

A10: Policies and regulations support carbon sequestration by:

- **Providing Incentives:** Financial incentives for sequestration projects and practices.
- **Setting Emission Targets:** Establishing targets for CO₂ reduction that include sequestration strategies.
- **Funding Research:** Supporting research and development of new sequestration technologies.
- **Regulating Emissions:** Implementing regulations that require or encourage CO₂ capture and storage.
- **Promoting Land Use Practices:** Encouraging sustainable land use practices that enhance natural carbon sequestration.