

Q.

What do you know about the Carbon Capture and storage (CCS) and Carbon-dioxide removal (CDR) technology? Identify the limitation of CCS and CDR technologies (250 words)?

Carbon Capture and storage is a technique of capturing the carbon dioxide which are being released by industries or any sector that carbon dioxide (CO_2) is then stored in deep oceans. So that pollution and air pollution can be controlled and managed.

Whereas, Carbon dioxide Removal Technology is using Technology, practices and approaches to remove CO_2 from our atmosphere through human artificial actions.

Some of the techniques are:

- 1) Afforestation $\rightarrow$ Planting trees on the degraded Agriculture land. And also acc. to IPCC (Intergovernmental panel of Climate Change), Afforestation is the cheapest through.
- 2) Biochar $\rightarrow$ Biochar is the substance produced by burning organic waste from agricultural lands and forests in an controlled manner called "Pyrolysis".
- 3) Bioenergy Carbon Capture and Storage (BECCS) $\rightarrow$ Biochar is used to produced energy while preventing the release of CO_2 in atmosphere.

4) Direct Carbon Capture and storage DCCS :-
Direct capturing of CO_2 from air and then storing it. This captured CO_2 is then permanently stored in deep Geological formations.

Limitation of CSS and CDR technology :-

- ① It is an expensive techniques. Hence required alot of Capital for its installation.
- ② It requires a proper governance and provision as there are some negative side as well.
- ③ It is a type of deliberate and human intentional Action. Hence playing with nature is a challenge.
- ④ ~~④ It requires a proper governance and provision as there are some negative side as well.~~
- ⑤ Proper and continue Research and Development is required in this techniques.

Way forward :-

- 1) Bring a proper comprehensive framework for these techniques.
- 2) Skilled Man, proper training should be given to human Capital involved in this techniques.
- 3) Upgradation in Technology & funding at very high level is also an essential part.
- 4) Research & Development with expertise, with involvement of all stakeholders, public, private, NGOs, International is must.