Q. What do you know about the carbon capture and storage (CCS) and Carbon-di-oxide removal (CDR) technologies? Identify the limitations of CCS & CDR Technologies. (250 w)

→ Carbon Capture and Storage [CCS] is the capture of Carbon-di-oxide (CO_2) from the point source before it is released into the atmosphere.

→ Advantages - Mineralization - is used to form stable carbonates which can be used as construction material.

- Synthetic ~~Fibres~~ Fuels - The captured CO_2 combined with hydrogen to produce fuel.
- Greenhouses and Indoor Agriculture.
- Dry Ice production - Used for shipping and Transportation.

→ Limitations - High Cost and Expense.

- Geological Storage Suitability.
  - Fear of leakage. Hence appropriate Landscape is needed.
- Expand & Extent lifespan of Fossil fuel Companies - by hindering transition to Clean Energy.

→ Carbon-di-Oxide Removal Technology (CDR) is about capturing CO_2 from atmosphere and store it in both natural (Afforestation) and Technological (Machines mimic trees) means.

→ Advantages - Durable & Efficient Storage facility.
- Wider Scope of applicability.
- Viable & Cost Effective.

→ Limitations - Unavailability of Land.
- Adversly affects the land rights of Indigenous Communities
- Indirectly motivates emission.
- Competes with other form of land use (ex:- Food Security).

CONCLUSION :-

→ Counterbalancing the emission is not a sustainable option for 'Net-zero Targets'. The World should Promote Green-Oriented Development with Emission reduction before 2070.