Carbon capture and storage

Fossil fuels are burned in power plants to generate electricity, and in other industrial processes. This produces carbon dioxide (CO_2) a greenhouse gas which warms the atmosphere and contributes to anthropogenic climate change.

Carbon capture and storage (CCS) is a technology that removes carbon dioxide, CO_2, from the atmosphere and stores it deep underground in rock formations. Implementing CCS rapidly and widely will help to reduce our increasing atmospheric CO_2 concentrations and help to mitigate dangerous levels of climate change. Geoscientists are needed to develop and implement CCS technology, and will therefore be crucial in meeting the UN Sustainable Development Goals.

The Geological Society supports the UN Sustainable Development Goals

1. Instead of releasing these CO_2 emissions into the atmosphere, CCS technology can capture a large proportion of CO_2 produced in electricity generation and industrial processes.

2. CO_2 is turned into liquid and transported through pipelines.

3. CO_2 is pumped underground to a depth of several kilometres and safely stored in selected geological rock formations - usually a depleted oil field or a saline aquifer (rock able to store water). This rock formation must lie beneath an impermeable seal, known as a cap rock, so that the CO_2 can't seep out. Over time the stored CO_2 forms chemical compounds with the surrounding minerals or brine.

4. Sensors are used to monitor the CO_2 to ensure that it is stored permanently.

CO_2 can be captured offshore and injected beneath the seabed in suitable rocks

Cap rock

Storage rock

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