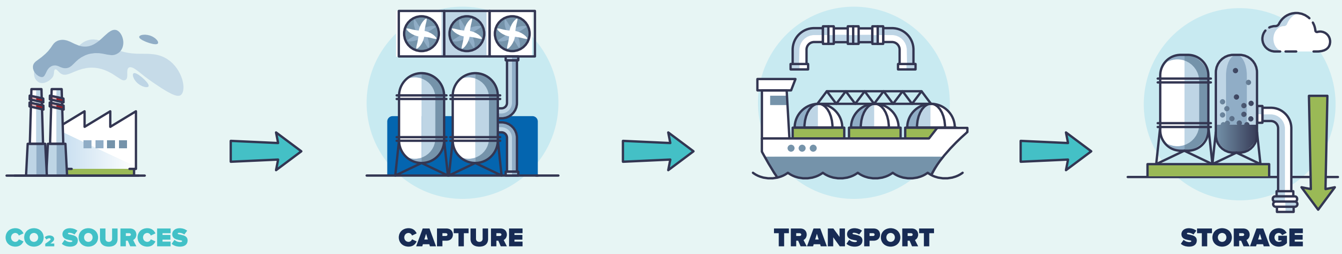
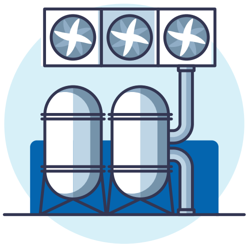
Carbon Capture and Storage (CCS) refers to a suite of technologies that capture and store the greenhouse gas carbon dioxide (CO_2), and store it safely and permanently underground, so that it does not reach the atmosphere and contribute to climate change.

CCS is used to capture CO_2 from emissions produced during industrial processes such as cement or steel production, or from fossil fuel-based power generation. CO_2 can also be removed directly from the air.

CCS INVOLVES THREE KEY STEPS

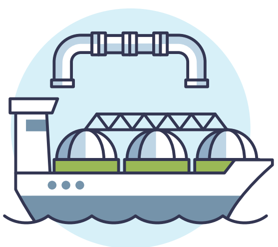




CAPTURE

CO_2 is removed either from an emissions source or directly from the air using a range of methods. During capture, physical or chemical processes are applied to the CO_2 so that it can be transported and stored.

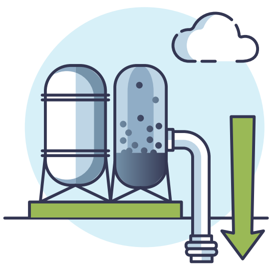
SEE CAPTURE FACTSHEET



TRANSPORT

CO_2 is delivered to a storage site using pipelines, ship, tanker truck or rail. Pipelines are the most common mode of CO_2 transport, as large quantities can be moved over long distances.

SEE TRANSPORT FACTSHEET



STORAGE

CO_2 is injected into carefully selected porous rock storage formations – typically at depths 2-3 kilometres below the earth's surface. The CO_2 is permanently trapped in these storage formations by naturally occurring trapping mechanisms.

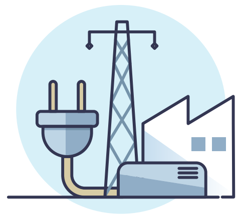
SEE STORAGE FACTSHEET

Carbon Capture and Storage (CCS) is a suite of technologies playing an important role in limiting global warming, by reducing the amount of CO_2 reaching the atmosphere, or removing it directly.

CCS PLAYS A KEY ROLE ON THE PATH TO NET ZERO

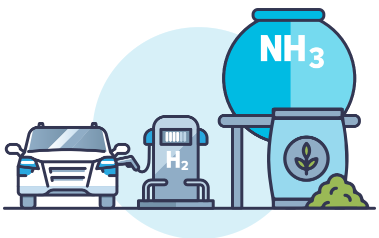
CCS IS ESSENTIAL TO MITIGATE CO_2 EMISSIONS FROM INDUSTRY

Almost 34% of global-energy related CO_2 emissions come from industrial processes such as cement, steel, pulp and paper, chemicals and natural gas processing.



CCS IS A CRITICAL PART OF THE LOW-CARBON ENERGY SECTOR

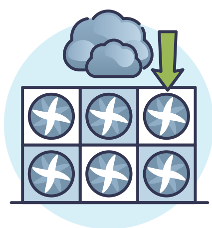
Power plants equipped with CCS can supply flexible low-carbon electricity to complement the variable nature of renewable energy.



CCS IS AN ENABLER FOR LOW-CARBON HYDROGEN PRODUCTION

Low-carbon hydrogen can help decarbonise the transport sector and be used for power generation.

It can also be used to produce other low-carbon products such as ammonia, urea and fertiliser.



CCS CONTRIBUTES TO OTHER TECHNOLOGIES THAT REMOVE CO_2 DIRECT FROM THE AIR

Technology based Carbon Dioxide Removal (CDR) includes:

- » Direct Air Capture with Carbon Storage (DACCS)
- » BioEnergy with CCS (BECCS)
- » Biomass Carbon Removal and Storage (BiCRS)

There is no 'one-size-fits-all' solution to climate change. Rather a combination of solutions is needed - with CCS essential to the mix.

DISCOVER MORE

Visit our website **globalccsinstitute.com**

Read our annual **Global Status Report** for information on CCS progress worldwide.

Read our annual **Technologies Compendium** for the latest in CCS technology advances.