

# A Brief History of CCS and Current Status

This information sheet aims to provide a brief history of the development of CO<sub>2</sub> capture and storage (CCS), and describes the different types of project. The important thing to take from this information sheet, is that although CCS is technically a relatively new technology, what CCS does is use existing, well proven technologies in new and innovative ways; the various parts of the process have been used extensively in other processes for decades in industry.

## The Beginning...

The basic idea of CCS – capturing CO<sub>2</sub> and preventing it from being released into the atmosphere was first suggested in 1977; using existing technology in new ways.

CO<sub>2</sub> capture technology has been used since the 1920s for separating CO<sub>2</sub> sometimes found in natural gas reservoirs from the saleable methane gas.

In the early 1970s, some CO<sub>2</sub> captured in this way from the a gas processing facility in Texas (USA), was piped to a nearby oil field and injected to boost oil recovery. This process, known as Enhanced Oil Recovery (EOR) has proven very successful and millions of tonnes of CO<sub>2</sub> – both from natural accumulations of CO<sub>2</sub> in underground rocks and captured from industrial facilities – are now piped to and injected into oil fields in the USA and elsewhere every year.

## Different options – different projects

### Gas Processing

Gas processing facilities, which extract natural gas from underground fields, often have to clean the CO<sub>2</sub> from the natural gas in order to be able to sell it. These facilities therefore have to capture the CO<sub>2</sub> before they have a useable commodity.

### Power Plants

Power plants that burn fossil fuels don't have to capture the CO<sub>2</sub> in order to produce electricity and the capture process will actually cost slightly more overall. So capturing CO<sub>2</sub> from power plants is purely done for emissions reduction reasons.

### EOR

EOR projects have a use for the CO<sub>2</sub> captured in the earlier processes; this gives the CO<sub>2</sub> a value in monetary terms. The CO<sub>2</sub> is often extracted from the oil field along with the oil, but as it was expensive to purchase, this will be separated and can be used again to produce yet more oil. Eventually, when all the oil has been produced, the CO<sub>2</sub> can be left (stored) in the depleted oil field – permanently preventing that CO<sub>2</sub> from being released into the atmosphere and contributing to the greenhouse effect and global warming.

## Where is CCS in its development?

With so much going on, and at a fast pace, it is very difficult to get a clear picture of how many projects are ongoing around the world. As of the end of 2012, there were 5 large scale CCS projects in operation around the world, with 3 operational full chain (with capture and storage) pilot projects also ongoing. However there are 23 large-scale projects being developed that have secured funding and if these continue to progress to large-scale operational projects, the future development could rapidly increase in pace.

The Global CCS Institute has a good handle on developments and their website [www.globalccsinstitute.com/projects/](http://www.globalccsinstitute.com/projects/) browse gives a current picture for those interested.

## Summary

It is clear that for CCS to make the maximum contribution to emissions reductions, the pace of development and deployment needs to increase substantially to get projects up and running in time to meet global targets. CCS has the potential to make a big difference to greenhouse gas emissions, but action is needed swiftly to allow the impact to take effect before temperatures rise, and the cost of battling climate change goes up.