Carbon Capture and Storage

Seven Key Facts

February 2018

Key fact one: CCS is a global priority for cutting greenhouse gas emissions from industry

Governments around the world agree there is no single answer to reducing carbon dioxide (CO_2; a greenhouse gas) emissions, and that a range of responses are necessary. These include; being more energy efficient at home and at work; more sequestration of carbon in vegetation and soils; greater use of renewable energy; fuel switching from coal to gas and biomass and Carbon Capture and Storage (CCS).

The International Energy Agency (IEA) has highlighted CCS as one of six crucial technologies for battling climate change, accounting for nearly 14% of reductions.

> "CCS is an important part of the lowest-cost greenhouse-gas mitigation portfolio. Without CCS, overall costs to halve emissions by 2050 rise by 70%.[1]
>
> *– International Energy Agency*

Key fact two: CCS is a key part of Australia's and NSW's emissions reduction efforts

According to national and international research, fossil fuels are likely to continue to be used for decades. This is not only due to fossil fuels are a source of electricity generation but includes key manufacturing processes such as iron, steel, cement and fertiliser manufacture, which have little scope for replacement by renewables. As such, approximately 1/7th or 14% of global emissions mitigation effort will need to be met through capturing and storing emissions deep underground[2]. If we continue to use fossil fuels, we need to deploy CCS technologies to reduce their impact.

[1] https://www.iea.org/publications/freepublications/publication/CCS_roadmap_foldout.pdf
[2] https://www.iea.org/publications/freepublications/publication/20YearsofCarbonCaptureandStorage_WEB.pdf

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Key fact three: CCS technologies are proven and reliable

Each year throughout the world, millions of tonnes of CO_2 are captured from natural gas, fertiliser and synthetic gas production operations and injected deep underground. Globally there are 55 large-scale integrated CCS projects under development or in operation. The USA has been successfully using CCS for enhanced oil recovery since the 1970s. The CCS project at Boundary Dam Power Station in Canada has captured one million tonnes of CO_2 since it opened in 2014.

Key fact four: CCS is an economical way of reducing carbon dioxide emissions

CCS is currently in the same cost range as many alternative CO_2 reduction options. However, as CCS can be added on or 'retrofitted' to existing industrial processes it can be very cost effective. The International Energy Agency (IEA) has estimated that the task of achieving the necessary deep cuts in emissions could cost as much as 70% more if CCS was NOT deployed as part of a portfolio response[3]. So what is NSW doing? NSW has developed a range of strategies for low emissions coal technologies, including further research supported by Coal Innovation NSW Fund.

Key fact five: Geological storage of carbon dioxide really works

A strong body of research backed by more than 50 years of industry experience has shown that CO_2 can be stored safely and securely deep underground. For well-selected, designed and managed geological storage sites, experts estimate that 99% or more of the injected CO_2 will be retained for 1000 years. If leakage did occur, the CO_2 would only move into the rock strata above the storage area and not reach the surface.

[3] https://www.iea.org/publications/freepublications/publication/CCS_roadmap_foldout.pdf

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Key fact six: CCS has broad potential in many industries

CCS technology will work on large emission sources at industrial facilities. Industries where CCS is applicable include coal-fired and gas-fired power plants; oil and gas operations; fertiliser and chemical industries; and cement and steel manufacturing.

Key fact seven: The greatest risk with CCS is not deploying it in time

Perhaps the biggest risk associated with CCS is not deploying it in time to achieve the necessary deep cuts in greenhouse gas emissions. A large percentage of today's coal-fired power stations will still be emitting CO_2 to the atmosphere in 20, 30, and even 40 years' time.

Where can I find out more?

- View Frequently Asked Questions about CCS
- Visit the Resources and Geoscience website – Coal Innovation NSW
- Contact the Coal Innovation NSW team:

  Email: ccs.info@industry.nsw.gov.au

  Phone: (02) 9934 0800