



# CCS

## A GUIDE FOR INSURERS

Carbon capture and storage (CCS) is an integrated suite of technologies which prevent large quantities of carbon dioxide from being released into the atmosphere.



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## WHAT IS CCS?

Carbon dioxide (CO<sub>2</sub>) is captured – typically from power plants or CO<sub>2</sub> intensive industries (iron, steel, cement, refineries and others) – transported and stored, preventing it from being released into the atmosphere. Given the scale of these operations, CCS can achieve large emission reductions and is considered a key option within the portfolio of approaches needed to cost-effectively tackle climate change whilst meeting our growing demand for energy.

### CCS involves three main stages:

- **Capture:** The separation and capture of CO<sub>2</sub> produced at large industrial process facilities such as power plants and CO<sub>2</sub> intensive industries such as steel and cement production plants.
- **Transport:** CO<sub>2</sub> is compressed and transported via pipelines or ship. This requires networks similar to those that exist today for transporting natural gas. Thousands of kilometres of CO<sub>2</sub> pipeline are already in operation around the world, enabling proven and safe transport at long distance.
- **Storage:** CO<sub>2</sub> is safely and permanently stored in carefully chosen sites – either in depleted oil and gas fields or in deep saline formations. The North Sea, for example, provides a large number of significant CO<sub>2</sub> storage sites for Europe and is optimally located for Europe's major industrial and emission intensive clusters. CO<sub>2</sub> storage uses the same processes that have trapped naturally accumulated stores of oil and gas underground for millions of years.

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## WHAT DOES CCS OFFER THE INSURANCE INDUSTRY?

### Climate change mitigation potential

Insurers have a key interest in understanding and responding to the risks and opportunities posed by climate change. The cost of weather-related disasters in the last five years is almost half a trillion dollars (\$490 billion) – three times more than for the 1970s. Furthermore, according to the World Bank, weather related losses and damage have risen from an annual level of about \$50bn in the 1980s to close to \$200bn in the present day.

Climate change presents a significant challenge to insurers and their customers. In order to avoid the most damaging effects of climate change, it is imperative that CO<sub>2</sub> emissions are brought down quickly and affordably.

The Intergovernmental Panel on Climate Change (IPCC) identifies CCS as an essential low carbon technology needed to cost effectively decarbonise industry. In their Fifth Assessment Synthesis Report, the IPCC estimates that without CCS the total cost of limiting CO<sub>2</sub> emissions could increase by 138%. By comparison, removing nuclear from the mix increases costs by only 7% and limited wind and solar by 6%. Given the projected scale of CCS operations – the IEA estimates that by 2050, 120 Giga tonnes of CO<sub>2</sub> will need to be stored – CCS can achieve deep emissions reductions and is therefore considered a key option in tackling climate change:

- **Bringing down emissions from power plants:** CCS reduces the overall carbon emissions from power plants by up to c. 90%. Given that 42% of all CO<sub>2</sub> produced worldwide is from power generation, CCS is set to play a vital role in climate change efforts whilst keeping the lights on. The International Energy Agency estimates that to achieve a 50% cut in global CO<sub>2</sub> emissions by 2050, CCS will need to contribute nearly 20% of CO<sub>2</sub> reductions.
- **Bringing down industrial emissions:** CCS is also vital in bringing down emissions which result from industrial processes. Approximately, 40% of the world's CO<sub>2</sub> emissions come from such industrial activity. In some cases, CCS is the only viable technology for reducing CO<sub>2</sub> from vital energy intensive industries such as iron, steel, chemicals, cement and refineries sectors – as the CO<sub>2</sub> is process as well as fuel-generated, and is therefore not only crucial in a climate context, but also in terms of ensuring the future competitiveness of these industries in a carbon-constrained economy.
- **Meeting carbon budgets:** In a carbon-constrained world, individual countries and regions will have major decisions to make on how they adhere to carbon budgets. CCS can offer deep emissions cuts in power, industrial, heat and transport sectors, and is therefore the only option for enabling fossil fuels to be utilised in a manner compatible with climate objectives – helping to support the transition to a zero-carbon economy. In the future, it is highly likely that countries with access to CCS will be at a significant competitive advantage as they will be able to continue to utilise fossil fuels at scale and retain energy intensive industries.

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## INNOVATIVE PRODUCTS

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Existing insurance products are capable of being modified to deal specifically with CCS and insurers are increasingly moving in to this space. Insurance policies such as 'Construction All Risks (CAR)' – which covers risks for physical damage to construction works – and 'Control of Well (CoW)' – which covers risks to CO<sub>2</sub> injection wells in Enhanced Oil Recovery (EOR) projects – have already been identified as potentially suitable for CCS projects.

If CCS is to develop to the scale advised by the IPCC, significant new demand will flow from these multi billion pound projects for insurance to cover risks that the oil and gas and insurance industries are already familiar with. CCS is experiencing its most active construction period to date, with 22 projects currently operating or in construction worldwide – a 50% increase since 2011. The International Energy Agency (IEA) has previously estimated that to meet required emissions reductions to 2050, investment of USD 2.5-3 trillion in CCS will be needed. This represents a significant market opportunity for the insurance industry.

## INVESTMENT POTENTIAL

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Through its Electricity Market Reform (EMR) regime, the UK Government has developed the world's first policy framework to support investment in a wide range of low carbon electricity generating technologies, including renewables, nuclear and fossil fuels with CCS. For CCS, this means that generators will receive a fixed 'Strike Price' for the low carbon electricity they produce via a Feed-in Tariff with Contract for Difference (CfD) over a period of potentially up to 25 years.

CfDs have proven to be bankable for the first round of renewable technologies awarded contracts in late 2014 and it is widely-expected that they will be viewed favourably by investment markets for CCS.

As an essential climate change mitigation technology, and with a Government-backed investment instrument in place, CCS provides an exciting opportunity for investors.

The Carbon Capture and Storage Association (CCSA) exists to represent the interests of its members in promoting the business of CCS. We work government and industry in the UK and internationally, to develop a supportive policy and regulatory framework to support the wide scale deployment of CCS.

**For further information, please contact us on**  
**Email: [info@ccsassociation.org](mailto:info@ccsassociation.org) or Tel: +44 (0) 20 3031 8750**

The logo for the Carbon Capture and Storage Association (CCSA) is located in the bottom right corner. It consists of the letters 'CCSA' in a white, sans-serif font, with a small superscript 'a' to the right. The text is set against a dark blue circular background that has a subtle glow effect.