consultancy engineering business environment

Carbon Capture and Storage

An ACE position paper

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Carbon Capture and Storage

This document summarises the views of ACE on carbon capture and storage, including its likely role in the UK's future energy mix.

Summary

ACE recognises the potential of carbon capture and storage to contribute to the UK's goals of climate change, energy generation, supply security and job creation. The Government should continue to support development of this technology, and should ensure that there are optimal conditions to encourage investment in carbon capture projects.

Action should be taken on specific issues for CCS to become a mainstream technology:

- The government must commit to supporting the development of this technology. Much investment and testing is required in order to bring the technology to market on the scales needed.
- The planning system must facilities the deployment of test facilities to aid the development of this technology.
- Given the significant costs involved and the likely limits on public sector funding, the private sector may need to be given greater incentives to invest in CCS. These could include tax breaks for investors in CCS projects, or government-underwritten low-cost loans that could be financed by the publicly owned banks.
- There must be an ongoing dialogue between government, the scientific community, power generators and engineers to ensure Britain pursues CCS as part of the future energy mix.
- Education and skills policy must be reviewed to ensure an adequate domestic supply of technologists and engineers to support the development of CCS.

About ACE

ACE is the business association representing the UK's consultancy and engineering industries. ACE members work in every aspect of the built and natural environment, collectively employing more than 100,000 people.

For more information about ACE and its views on energy issues, please contact:

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Background

Carbon capture and storage (CCS) is a means by which the carbon dioxide emitted through burning fossil fuels is removed from the effluent gas of a power station. The gas is then stored in geological formations over the long term.

Combined with existing technologies, such as coal gasification and combined cycle gas turbines, CCS has the potential to mitigate against a significant proportion of carbon dioxide emissions from the burning of fossil fuels.

Carbon capture techniques involving sequestration into plants – particularly algae – is also being developed.

CCS in the UK

The UK Government has expressed support for developing CCS, particularly through the CCS Competition which has been the catalyst for promoting demonstration projects. Additionally, legislation has been enacted to require all future coal-fired power stations to have provision for the installation of CCS technology.

In May 2009, Scottish Power began operating a test carbon capture unit capable of processing 1,000 m^3 of exhaust gas per hour at a power station in Fife. It is thought that a full scale carbon capture plant could become operational by 2014.

UK engineering consultancies are actively involved in developing carbon capture solutions for domestic and international markets. ACE members view the energy sector as a key area for growth over the coming years, and CCS will likely be a source of opportunities.

Potential benefits

- According to the Intergovernmental Panel on Climate Change (IPCC), CCS-equipped power stations could emit up to 90 per cent less carbon dioxide than the equivalent output without CCS.
- There is an existing infrastructure of well-developed fossil fuel-based technology, which could allow rapid deployment of reliable generating capacity.
- The UK has existing coal reserves that could be brought into use through CCS-equipped generation. This would contribute to security of supply, as well as creating more jobs in the mining and processing of coal.
- The widespread deployment of CCS in itself would foster an entire sub-industry to support the development and maintenance of the CCS sector. This would create many opportunities for new and existing UK businesses, and could create up to 50,000 jobs.
- Overall, the value to the UK economy of CCS - directly and indirectly - could be as high as £3 billion by 2030.

Potential drawbacks

- CCS is, as yet, a relatively unproven technology. Significant work is still needed to turn CCS into a commercially viable, trusted solution.

- Suitable locations for carbon dioxide storage may be limited, and transportation of carbon dioxide over long distances would be difficult.
- The cost of retrofitting CCS technology to some existing power stations may be uneconomical. There may be a need for a new generation of power stations, which would add extra pressure to limited budgets.
- Given the constraints on public investment that are likely to be in place for the foreseeable future, the pace of development may be diminished.

ACE position

Carbon capture and storage undoubtedly has the potential to help deliver large volumes of clean electricity that is needed to power a new generation of clean transport.

ACE is pleased that the Government has demonstrated support in principle for CCS as a response to the challenge of climate change.

ACE also recognises the potentially significant contribution to the UK economy that the widespread deployment of CCS would make.

However, several things must happen for CCS to become a mainstream technology:

- Government must commit to supporting the development of this technology. Much investment and testing is required in order to bring the technology to market on the scales needed;
- The planning system must facilities the deployment of test facilities to aid the development of this technology;
- Given the significant costs involved and the likely limits on public sector funding, the private sector may need to be given greater incentives to invest in CCS. These could include tax breaks for investors in CCS projects, or Government-underwritten low-cost loans that could be financed by the publicly owned banks;
- There must be an ongoing dialogue between Government, the scientific community, power generators and engineers to ensure Britain pursues CCS as part of the future energy mix; and
- Education and skills policy must be reviewed to ensure an adequate domestic supply of technologists and engineers to support the development of CCS.

Further reading

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