

Future of low carbon energy

Fact Sheet

Lesson2: Carbon Capture and Storage

In April 2009 the UK government announced that no new coal-fired power stations would be built unless they had technology to capture and store carbon emissions. Carbon Capture and Storage (CCS) comprises a range of technologies that have the potential to trap 90% of carbon dioxide emitted from power stations and industrial sites. Carbon dioxide is collected, transported and buried in suitable geological formations, deep underground aquifers or disused oil fields which prevents its escape into the atmosphere and therefore could slow the acceleration of climate change. CCS is being hailed as a technical breakthrough which could provide a rapid and practical solution to cut carbon emissions, particularly in countries like the US, UK and China, which still plan on burning coal in the future.

Argument for CCS

- Has the potential to reduce one-third of the total carbon emissions
- Would allow for coal to be continued to be burnt, therefore supporting industry
- 'Buys' time allowing alternative energy sources to be developed further (Fossil fuels account for 87% for world energy consumption)
- Low carbon economies are at the forefront of the political agenda. CCS will enable governments to reach their targets.
- Has the potential to significantly reduce environmental and carbon footprints

Arguments against

- Is not sustainable as gas and oil will run out and therefore does not provide energy security
- Major investment is needed in CCS infrastructure (pipelines, injection wells, monitoring wells) to enable the waste to be transported and stored
- Consequences of long term underground storage are unknown
- Increases fuel needs of individual power plants which could increase the cost of energy

It is likely that this topic will lead to some debate. The key here is that on the one hand, CCS could provide 'cleaner' coal and therefore reduce carbon emissions but on the other hand this is an unsustainable energy source and therefore does not provide the UK with energy security. Higher level students may explore cost benefit analysis and try to make a judgement about whether the costs justify, or outweigh the potential outcome.

For more information on CCS, please read the resources **highlighted on the lesson plan.**