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How will carbon capture and storage work?

David Adam
Thursday June 16, 2005
[The Guardian](#)

Crudely, the carbon dioxide spewed from power stations will be, well, captured and stored. But there the problems begin. The government may have pledged £25m to help the climate change busting technology along earlier this week, but significant obstacles remain with two parts of the plan: capture and storage.

Capture first. "It's always going to cost money to capture something. It isn't a free exercise," points out Harry Audus, a chemical engineer who now heads the International Energy Agency's greenhouse gas programme in Cheltenham. Carbon dioxide, unfortunately, is just one ingredient in the cocktail of waste gases that emerges from the business end of a power station. For the technology, also known as carbon sequestration, to work, it must be separated.

This can be done: amine scrubbers that chemically isolate the carbon dioxide are fitted to several power stations in the US. But in that case local industries are willing to pay for the pure gas.

"The older power stations aren't that efficient and if you stick another process on the back end you make them even less efficient, which isn't the thing to do really," Audus says. Pumps for the scrubber chemicals and compressors for the carbon dioxide all drain power from a station's already relatively meagre output.

Other ideas aim to clean up fossil fuel before it is burned. George Bush favours turning coal into hydrogen gas (called gasification) and the Swedish power company Vattenfall is building an "oxyfuel" plant near Berlin that will tear air apart so it can use just oxygen to ignite coal. Both processes are in their infancy but both produce carbon dioxide in a more readily captured form.

Storage is less technically demanding; the Norwegian company Statoil has been pumping CO₂ into a sandstone layer under the North Sea for years. The issues here are long-term safety and short-term legality.

Various treaties probably prohibit CO₂ being dumped under the North Sea unless it is used to squeeze oil out in the other direction. A fluctuating oil price has helped make energy companies who own the necessary infrastructure reluctant to get involved.

Nothing seems to have leaked from the 6m tonnes of CO₂ pumped underground by Statoil so far, but geologists continue to monitor



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