



Carbon Capture and Storage

Posted by [Euan Mearns](#) on November 24, 2009 - 10:55am in [The Oil Drum: Europe](#)

Topic: [Economics/Finance](#)

Tags: [carbon capture storage](#), [ccs](#) [[list all tags](#)]

The Press and Journal (regional newspaper covering north Scotland and Aberdeen) had a headline story on carbon capture and storage (CCS) last week that inspired me to send a letter to the editor that was published today.

Striving to enhance oil recovery factors and prolong the life of the North Sea has significant merit. Using electricity to simply bury CO₂ does not.

Full letter plus some additional information below the fold:

Sir, I would like to comment on your headline article of 19 November on carbon capture and storage (CCS) which did not make clear whether the scheme planned for Longannet is a pure CCS scheme or will also involve attempts to use the sequestered carbon dioxide (CO₂) to enhance oil recovery from the North Sea. Let me explain.

In its purest form, CCS involves the capture of CO₂ from the exhaust gas of a power station, transporting this via pipeline to the burial site where it is compressed and pumped underground. All this uses energy. In fact best estimates suggest about 20% of the electricity produced by the power station would be used for CCS, leaving the question what will the homes that would otherwise use that electricity do for heat and light? To frame this a different way, the average energy efficiency of UK coal fired plant is 37%. Adding on CCS will reduce the energy efficiency to 30% - at a time when improving energy efficiency is a top priority for all.

A modified version of CCS is to pump the CO₂ into old oil fields where it can, given favourable conditions, mobilise residual oil that would otherwise be left in the ground. Producing this oil provides a revenue stream to pay for the whole process, but upon its combustion the oil adds a quantity of CO₂ to the atmosphere that is about equal to the quantity that was initially buried, i.e. it is carbon neutral.

Striving to enhance oil recovery factors and prolong the life of the North Sea has significant merit. Using electricity to simply bury CO₂ does not. It is important that the public, politicians and reporters have a clear understanding of the contrasting objectives of these two very different CCS strategies.

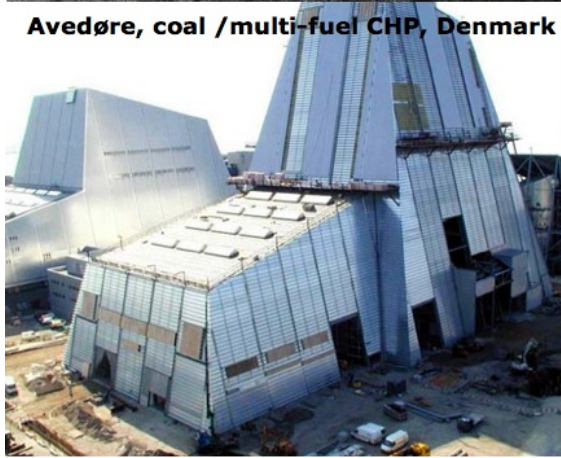
Dr Euan Mearns
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And some additional background:

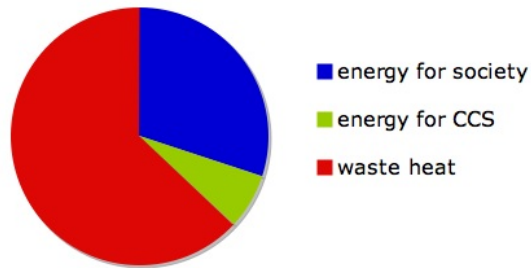


Longannet coal-fired power, Scotland

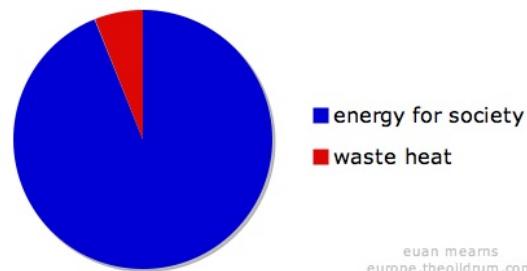
Avedøre, coal /multi-fuel CHP, Denmark



Coal power with CCS



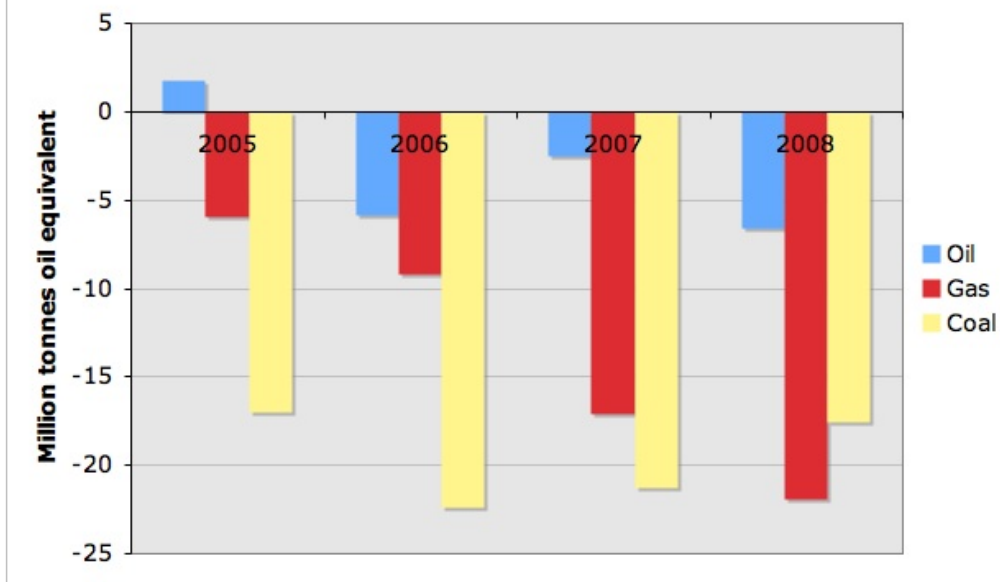
Combined heat power district heating



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An alternative to CCS is to burn less coal. Combined heat and power (CHP) generation involves capturing the waste heat from power stations and pumping this hot water to neighbouring houses in district heating systems. Danish CHP plant is over 90% energy efficient.

UK fossil fuel imports



UK energy imports are spiraling out of control, contributing to the destruction of our trade balance, spiraling foreign debt and the decline of the £. Pursuing pure CCS, without enhanced oil recovery (EOR), will make this dreadful situation worse. It is really time to question what has warped the thinking of UK energy strategy when confronted with such simple facts?

The UK government needs to make clear whether or not they will now abandon commitment to pure CCS in favor of the somewhat more rational CO₂ EOR option.

At every turn, every strategy that is implemented must be aimed at improving (not destroying) energy efficiency.



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