

Greenpeace Briefing: last updated 16th April 2009

Government coal scenarios

We anticipate Ed Miliband will soon launch a review/consultation into coal and carbon capture and storage (CCS) policy, probably by the end of April. The terms of reference for this review will frame the subsequent review outcomes, which in turn will determine the decision over Kingsnorth and other coal plant proposals.

Professor Jim Hansen¹ says no new coal plant should be permitted that isn't fitted with full scale CCS from day one. Lord Nicholas Stern² agrees. The Royal Society says new coal plants should have full scale CCS covering their emissions by 2020 or be shut down.³ More conservatively, Lord Turner said in his advice to the Prime Minister in December that no coal plant (old or new) should be operating without full scale CCS by the early 2020s, 2025 at the latest. In a sense, Lord Turner's advice constitutes the bare minimum of what experts believe would be necessary to meet the Climate Change Act targets.

Ed Miliband is likely to try and spin both the announcement of the review, and the eventual Kingsnorth decision, as being consistent with the relatively conservative recommendations of their adviser, Lord Turner and his Committee on Climate Change. In other words, it is likely the government will attempt to dress their decision up as "green" in a similar manner to the Heathrow decision when their announcement was dunked in greenwash.

Below we set out the possible scenarios and evaluate whether they amount to an ambiguous fudge, or whether they could still allow Britain to get itself on to a low-carbon pathway. In practice the announcement could be some combination of the possibilities outlined below - for example a mixture of the funding option with a "best available technology" commitment (explained below) - but the disparity between what is needed to meet our long term carbon reduction targets and what each option actually delivers in practice should make it sufficiently plain that a cocktail of half measures will not work.

We hope this briefing will help in assessing Miliband's announcement.

Ed Miliband might:

- 1) Say coal stations can be built but only if they are fitted with full-scale commercial CCS by a certain date, for example, 2025. "Mandatory and full scale CCS within a certain timeframe."

Even for supporters of CCS, in this scenario the danger remains that a new coal plant like Kingsnorth could be built at vast expense and with an expected lifespan of several decades, but that for some reason full scale CCS deployment never materialises due to technological or financial constraints. . This is entirely plausible given that CCS has not been proven at commercial scale anywhere in the world.

Numerous questions arise in this scenario. For example, what guarantees would the Government provide to ensure unabated coal plants that remain beyond the Government's deadline are indeed shut down, and not simply allowed to continue emitting in order to maintain electricity supply?

¹ Director of NASA's Goddard Institute and one of the world's leading climate scientists

² Former World Bank chief economist and climate advisor to Gordon Brown. Author of The Stern Review - the definitive global report on climate change economics

³ <http://www.guardian.co.uk/environment/2008/apr/03/fossilfuels.energy>

Currently utilities have made it clear they will not pay to fit CCS and that the economics of the technology is a determinant factor in whether they would willingly deploy it, and the government has shown no willingness to stand up to them. A regulation with a timeline would allow new unabated coal plants to go ahead and make the UK a hostage to fortune that CCS will work within what the utilities deem acceptable limits. With utilities already lobbying for the weakening of air pollution limits and with a track record of undermining emissions trading caps and renewable energy targets, we can safely assume that a CCS regulation with a timeline would come under attack almost immediately. Based on government's response to utility pressure in other areas, there is no guarantee that a CCS regulation would be enforced.

Greenpeace believes that we cannot and must not risk lock-in to a massive piece of high carbon infrastructure, such as a new coal fired power plant at Kingsnorth, on the basis of an unproven technology. Moreover, climate scientists have also made clear that it is not just the emissions levels in future years that matter, but also the cumulative emissions that occur from now on. Even with an enforceable timeline, a new coal fired power station would emit millions of tons of CO₂ once switched on and this is entirely avoidable damage to the climate at a time when every ton counts.

2) Say coal stations can be built so long as they are fitted with the "best available technology."

The term "best available technology" effectively constitutes moving targets on practices, as continually evolving techniques change what is currently conceived as "reasonably achievable" and "best available." Ed Miliband may argue that a different stage of CCS constitutes the "best available technology" (BAT) at any one time and that this technology would have to be fitted as and when the technology develops.

It's not clear who the regulatory body would be, who would decide what is defined as BAT, and how much legal teeth that regulator would have. Theoretically Kingsnorth or any other coal plant - old or new - could be operating exactly as today with as much pollution as today. Were this to happen, it would guarantee Britain would fail to make the necessary cuts in emissions.

Crucially, there is no guarantee whether CCS will work, at what pace it could be deployed, or at what cost. And as with anything that does not regulate action from day one it suffers from the weakness that by 2020 if the technology does work the future minister will have to threaten to shut down power plants for this measure to have the impact needed. That's politically unlikely at best. This outcome would fail to meet the Turner tests as it doesn't rule out coal plans operating without full scale CCS by the early 2020s, leaves open the possibility of indefinite emissions from the most intensive fuel available and it commits us to huge emissions for more than a decade in any case. It's nowhere near what the scientists say we need.

3) Announce increased funding (additional to the CCS competition already announced) to research and develop CCS with no conditions of regulation for coal stations.

The government is already committed through its "CCS competition" to funding one so-called "post combustion" CCS demonstration project. This is the type of technology where you capture emissions after the coal has been burned, as opposed to before as with "pre-combustion CCS." The Department of Energy and Climate Change (DECC) has shortlisted E.ON's Kingsnorth, Scottish Power's Longannet and a Dong/RWE project. They have said they will announce the winner of the funds in 2010. The plan is that the winner would demonstrate just 50MW of post-combustion CCS by 2014, scaled up to 300MW by 2020. That's just one sixth of the emissions of a plant like Kingsnorth to be captured as part of an expensive and temporary experiment that itself might not work, and even if it does might not prove to be easily replicable.

Separate to the competition, rumours have abounded that they will soon announce public support for a second demonstration project, possibly of the pre-combustion variety, which if it were the case could be at Hatfield in Yorkshire.

Funding demonstrations in no way guarantees that CCS will ever be fitted to any of the new coal power plants that have been proposed. Only regulation will do that. In the car industry they have known how to make more efficient combustion engines, hybrid engines and electric vehicles for years. Governments have funded research into the same technologies. Yet little progress has been made in deploying these technologies into cars on the road. Only mandatory regulation (finally being implemented now) has delivered that. In the power sector the air pollution problems caused by sulphur emissions continued for decades after a technical fix was available (flue-gas desulphurisation or FGD - a bolt on end of pipe approach very similar to CCS). Only mandatory regulation that forced power plants without the technology to close down finally led to widespread deployment of the technology.

The Government and utilities have deliberately sought to conflate the arguments over how and who should fund demonstration of CCS as a possible carbon abatement technology with their desire to build new, cheap coal fired capacity in the UK, despite it's key role in causing climate change.

There is nothing to stop them demonstrating post-combustion CCS on an existing coal plant and in a more suitable location than at Kingsnorth to avoid the need for a new coal fired power station to conduct the experiment on. Some claim this would lead to older plants staying open longer, but it need not be so. Coal fired power plants about to be decommissioned could instead be partially decommissioned - and the CCS demonstration carried out on one boiler (they usually have four), while the other three close down. This would result in no stranded assets and no high carbon lock-in.

Obviously, without regulation requiring full scale CCS is applied from day one, increasing funding for CCS research does nothing to ensure that Turner's requirements are met and that no coal plant is still operating with high emissions by the early 2020s. This outcome would fall well short as it does nothing in itself to reduce the threat to the climate.

4) Say a new coal station must not emit more than a certain amount of CO₂ over its lifetime. He might call this a "lifetime emissions performance standard."

This approach aims to limit the emissions of a plant over its lifetime of decades. The rationale for adopting this approach would be to allow years of unabated emissions on the basis that hopefully CCS will be fitted within a decade or so, thus bringing down the average emissions of the plant over its operational period.

This isn't a scientific approach based on what we need to do to stop climate change, it is an approach in which the utilities dictate the pace and ambition of our response to the climate crisis. It is an approach that puts an awful lot of faith in the technical and economic viability of CCS before the technology has even been proven or demonstrated on anything like a commercial scale.

It's not clear how this would be regulated and Miliband would effectively be passing the buck to future governments and hoping for the best. It fails the Turner tests because there's no guarantee coal plants would be capturing all of their emissions by the early 2020s.

It is important not to confuse this with scenario 8 with all this talk of "emissions performance standards." (See below)

- 5) **Say each utility company must reduce its overall carbon footprint to a certain level. He might call this a “portfolio standard” or refer to a company’s “carbon intensity.”**

This approach sets standards for companies so that if a utility has a lot of coal, it could bring down its average carbon footprint or “carbon intensity”/“portfolio standard” by investing in renewables, efficiency or nuclear.

Clearly this could still see emissions rocketing through coal investment and does nothing to ensure that Turner’s tests are met. For example, a utility could commit to reducing its average emissions across its portfolio but still see emissions rise overall, if energy demands continue to follow their current upward trajectory.

Be careful not to confuse this with scenario 4 or scenario 8.

- 6) **Introduce a floor price for carbon on the Emissions Trading Scheme. (ETS)**

Unless the floor price for carbon on the ETS were to be set so high as to rule out dirty coal stations like that proposed for Kingsnorth, this won’t work to ensure that Britain takes a low-carbon pathway.

Different commercial estimates from CCS developers and utilities like Shell and BP suggest varying estimates of what level the carbon price would need to be set to ensure CCS coal was more cost-effective than unabated coal. The utility Vattenfall believes that you need an ETS carbon price signal of between 100 and 200 euros before CCS becomes cost effective. The investment bank, Climate Change Capital, believe the price would need to be between 100 and 155 euros,⁴ and Shell says between 50 and 100 euros.⁵ Deutsche Bank says 62 euros.⁶ In contrast, the Financial Times reported on 29th July 2008, that the price of carbon in 2012 is selling in the forward market at 30 euros.⁷ This is nowhere near high enough to affect investment decisions sufficiently to drive the transition to a low-carbon economy.

According to these numbers, if Miliband sets a floor price of less than 200 euros, then he’s taking a gamble. If it’s less than 50 euros, then nobody thinks it will be an effective deterrent to unabated coal.

- 7) **Approve coal stations as long as they are “carbon capture ready.”**

The preferred option of John Hutton when he was energy secretary, this is what the coal industry and it’s bed fellows in DECC wants to see.

Under pressure from the wide coalition of groups that make up the UK coal campaign Ed Miliband and Mike O’Brien are on the record as recently ruling this scenario out so we’d be surprised to see it back in the mix as an option.

“CCS-ready” simply means approving conventional coal plants on the basis that maybe, one day hypothetically in the future they can be fitted with CCS if it works and is proven to be cost-effective. This would likely see us locked-in to a high carbon energy system for decades to come and would be disastrous.

⁴ <http://ccs-association.com/docs/2008/23%20April%202008/2%20Tony%20White%20-%20Climate%20Change%20Capital%20%20%2023%20April%202008.ppt>

⁵ http://business.timesonline.co.uk/tol/business/industry_sectors/natural_resources/article3371862.ece

⁶ ‘It takes CO2 to contango’ report, June 2008

⁷ <http://www.ft.com/cms/s/0/be496fb6-5cfa-11dd-8d38-000077b07658.html>

- 8) Introduce new “green standards” or “emissions performance standards” for power stations that work by setting a cap upon the amount of emissions permitted for every kilowatt hour of electricity generated. The cap can be set to rule out the dirtiest stations now and lowered in 2020 to reflect the science and the available technologies.

This approach was pioneered by Governor Schwarzenegger in California and has since been copied in four other US states – effectively ruling out dirty coal in those places. Standards like these provide clarity and certainty to all stakeholders and reflect the fact that clean and reliable alternative technologies exist for meeting our energy security needs.

This approach has been proposed by the Conservatives in the UK but they’ve set the standard they’d introduce so high (500 gCo₂/kWh) that they could allow coal stations to be built with small experimental scale CCS demonstrations latched on the side.

Greenpeace, WWF, FoE and the RSPB support the principle but think we need the standards set at between 300 and 350g/Co₂/kWh.

Conclusion

Without technology forcing regulation that rules out unabated coal plants immediately, it is difficult to see how Lord Turner’s longer term goal is achievable. Previous experience with pollution control technology shows that voluntarism doesn’t work and targets soften in the face of the threat of stranded assets. The main tests for Miliband to pass if he is to have a policy that works can be summarised with these questions:

- Does it set an emissions limit that is effective from day one – effectively ruling out the current proposal at Kingsnorth?
- Does it set the limit on emissions low enough to be meaningful both in terms of the climate science and the signal to the market?
- Does it show clearly, now, how the UK gets from our current position to, at the very least, Lord Turner’s longer term requirement that by the early 2020’s there will be no unabated coal plants – new or old – on the system, and that by 2030 the electricity system will be completely decarbonised?

If the answer to all of these is yes then we may finally have a policy approach that makes sense and that would make Miliband a genuine world leader on climate and energy policy.

What have key figures said about CCS?

* Energy Minister, Mike O’Brien, said, *“CCS is as yet unproven as a commercial deployment. I hope that will alter in the future but it is surely a huge risk strategy to base your whole energy strategy on CCS.”* (18th November 2008, Speech to Chatham House)

* Energy Minister, Mike O’Brien, admitted in a robust exchange with the SNP, that CCS is *“a bet”* and accused the First Minister of *‘gambling everything on the successful commercial application of carbon capture technology to provide a future for the coal industry.’* (10th February 2009, Article in The Scotsman)

* The government’s own Energy White Paper on nuclear power stated, *“By 2050 it is possible that most new coal-fired power stations will be able to deploy CCS technology...However, CCS is as yet unproven technology and we have to acknowledge there is some risk that safe and reliable CCS for power generation might not be proven or deployable at scale and at reasonable costs. This could happen if the projected costs turn out to be too high or if it*

proves to be difficult to develop safe ways to transport and store CO2. " (Paragraph 2.80 on page 71 of the White Paper, 2007)

* Chancellor Alistair Darling, when he was Business Minister, told Parliament that CCS is *"still in the foothills"* and *"may never work."*

He said: *"Yes, carbon capture and storage, if it can be developed, would help. But at this stage we cannot be certain of that. There is no commercial scale operation of CCS on power generation anywhere in the world."* (23rd May 2007, Launch of Energy White Paper)

* Sir David King, the government's former chief science adviser:

"This is still unproven technology and I think until it's proven, it's dangerous to assume that we can continue to use coal." (August 2008)

* John Robertson, Labour MP who sits on the DECC Committee, said, *"To say we're going to return to the days of Old King Coal may make for good headlines, but with climate change and the policies we will need to tackle this it just isn't credible. My constituents are facing higher food and fuel bills and fluctuations in the price of oil and global events have underscored the need to reduce our dependence on fossil fuels."* (9th February 2009, Energy Conference in Scotland)

* The CEO of the coal utility RWE npower, Andy Duff, admitted:

"At this time there are still many financial, legal, regulatory, and technical hurdles to clear on CO2 transportation and storage technology." (Modern Power System journal, June 2007)

* E.ON themselves are privately sceptical! In an email they sent to officials at the Department of Business, the company says that CCS technology at Kingsnorth *"obviously... has no current reference for viability at any scale."* (January 16th 2008)

* Standard & Poor's credit analyst David Lundberg:

"Given its high costs, it (CCS) will not be economically justified in the near term, when CO2 reduction requirements are likely to be small, and other approaches to CO2 reduction will be less expensive." (Global Power Report, June 7th 2007)