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Bill Briefing: An Emissions Performance Standard

Summary

- WWF is calling for legislation to give the Secretary of State powers to set an emissions performance standard, and to require the government to legislate for a standard within a year of the passage of the bill.
- An emissions ceiling, set at the right level, would prevent the construction of new unabated coal-fired power stations, would help the UK meet its targets in the Climate Change Act and would be compatible with the EU Emissions Trading Scheme (ETS) and the UK's other energy policies.
- E.ON's proposed Kingsnorth plant is in the vanguard, but six or more new unabated coal stations are being considered that would, in total, emit 50 million tonnes of CO2 every year and have expected lifespans of fifty years or more.
- To approve the building of new unabated coal-fired power stations would severely hamper the UK's ability to meet its reduction targets under the Climate Change Act and greatly damage the Government's international credibility on climate change. The Environment Agency is opposed to new unabated coal stations on these grounds and Lord Turner, Chair of the Committee on Climate Change (CCC), has called for the decarbonisation of the power sector to begin now and to be essentially complete by 2030 in order to ensure that the UK can reduce total emissions by 80% by 2050.
- Requiring new coal plants to be carbon capture and storage (CCS) 'ready' provides no guarantee that the plants will be retrofitted with the technology in the future. In the meantime millions of tonnes of CO2 would be emitted into the atmosphere. Lord Nicholas Stern has shown his support for the argument that any new coal stations should have CCS fitted from the outset.
- It is widely recognised that the ETS is not sufficient on its own to help the UK reduce its emissions rapidly, or to avoid lock-in to high carbon infrastructure. The CCC has acknowledged this and the EU has recently agreed to review the need for an EPS for the whole of the EU.
- Preventing new unabated coal-fired power stations would not risk an 'energy gap'. A new report by Poyry has shown that if the Government meets its energy efficiency and renewable targets the UK will have sufficient baseload capacity. At the same time, the UK's total gas consumption could be reduced by up to 42% by 2020 and its carbon dioxide emissions by up to 34% by 2020.

Background

The recently passed Climate Change Act requires the UK to reduce its carbon emissions by 80% by 2050. This was based on the advice of the Climate Change Committee (CCC) who judged that this was the minimum necessary to avoid dangerous climate change.

It is clear that without further policies the UK will not meet its newly agreed emission reduction targets and this is particularly true of the power sector. On 1 December, the newly established CCC advised the UK Government on what carbon budgets it should set to meet the targets in the Climate Change Act. It made clear that by 2030 the power sector must be almost totally decarbonised and that achieving this was absolutely "key" for the UK to meets its long-term reduction targets.

Furthermore, the Committee recognised that while the carbon markets were important to delivering this decarbonisation they were not sufficient on their own and other policy levers would be required. Indeed, relying solely on the EU Emissions Trading Scheme (ETS) could lead the UK to lock itself into high carbon infrastructure such as new unabated coal-fired power stations:

> *"There is a danger that uncertainties about future carbon prices could result in investments that lock the UK in to carbon intense generating plant. There is therefore a strong case for buttressing the carbon-price lever by establishing a clear and publicly stated expectation that coal-fired power stations will not be allowed to generate unabated beyond 2020"*

In this context, WWF-UK believes that it is not justifiable for the Government to allow the building of any new coal-fired power stations in the UK which do not have CCS installed and operating from the outset. WWF is concerned that the claim that stations are “carbon capture ready” may be being used as a figleaf – there are no guarantees over when, if at all, CCS would be fitted.

Energy companies are currently planning to build at least six new unabated coal stations in the UK[1]. Kingsnorth itself will produce 8 million tonnes of carbon dioxide emissions each year and, in all, they would annually produce 50 million tonnes of carbon dioxide. The new coal stations, if approved, would have an expected lifespan of fifty or more years.

To consent to these power stations would severely hinder the UK in meeting its carbon reduction targets under the Climate Change Act. Indeed, the 2020 target would become much harder unless other sectors were set more demanding reductions. This would be illogical as the power sector is the easiest and most technologically suitable sector for reducing emissions. The Royal Society wrote to the former Secretary of State for DBERR, John Hutton MP, in April to make this point[2]:

> *“If fossil fuels, particularly coal, are allowed to dominate this new generation, then it will make meeting our domestic and international climate change targets much harder. Indeed, this would mean we would need to significantly cut emissions in other sectors to stand any chance of meeting the proposed interim target, set out in the Climate Change Bill, of a 26-32% reduction in emissions below 1990 levels by 2020.”*

Lord Stern, the author of the Government’s review of the economics of climate change, has signalled his opposition to unabated coal. Commenting on plans for new coal-fired power stations on 6 October, Lord Stern said[3]:

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1 At Kingsnorth, Longannet, Cockenzie, Tilbury, Filder’s Ferry, Ferrybridge and Blyth

2 Letter to Rt Hon John Hutton MP, Secretary of State for DBERR, from Lord Rees of Ludlow, President of the Royal Society, 1 April 2008

3 Lord Stern interviewed by the Today Programme, 6 October 2008

"I think they should be planned to involve carbon capture and storage from the beginning … I would … see them as part of a big investment in clean coal to make sure that it works well."

The Environment Agency, in its response to the Government's consultation on CCS on 24 September, added its voice to the debate by explicitly calling for no new unabated coal-fired power stations to be consented to without CCS operating from the outset. It went further by saying that these stations should extend the CCS technology to the whole of the plant within a given timeframe or shut down if it could not. The Agency also rejected the idea of building 'CCS ready' coal plants as 'insufficient' for challenge in tackling climate change.

Lord Smith, Chair of the Environment Agency, said[4]:

"Building a new generation of coal fired power stations without capturing the carbon emissions would lock the UK into using high carbon technology for decades to come – this is not an environmentally sustainable way of generating power given the challenges we face with climate change.

"Although carbon capture and storage technology has been demonstrated on a small scale, there is now an urgent need for it to be demonstrated on a commercial scale. Any new coal power station to be built should have a consent that requires that it helps demonstrate the technology. Such a consent should be strictly time limited and only renewed if carbon capture and storage is fully deployed."

Other countries on new coal

Other developed countries have recognised that to pursue new unabated coal stations is incompatible with efforts to tackle climate change. In 2006 the Californian Government took steps to limit the liability of its ratepayers to future high carbon prices and carbon reduction targets by passing an emissions ceiling standard for new power generation[5]. This sets a limit on the amount of CO2 per kWh that a new power station can generate and was designed in order to prevent new unabated coal stations from being approved. This so called 'Californian standard' is now being copied by other US states.

Other countries are also addressing the issue. Canada in March 2008 announced that it would not allow new coal stations to be built after 2012 without CCS. Denmark has a moratorium on new coal stations and New Zealand a moratorium on new fossil fuel plants. The CCS Directive agreed as part of the EU energy package in December includes a requirement (Article 35) to review by mid 2012 whether an emissions performance standard is required for the whole of the EU. This is a clear recognition that further measures are needed on top of the ETS. The European Parliament had wanted an EPS to take effect from 2015 and to be set at 500 g C02 per Kwh which would have effectively rule out unabated coal.

UK Government position

While the UK Government is now considering the Kingsnorth application its current strategy for reconciling the UK's climate goals with new coal generation has followed two strands – i) public funding for a CCS demonstration programme and ii) a possible requirement on new fossil fuel power stations to be 'CCS ready'.

4 Environment Agency press release, 24 September 2008

5 *"The Emissions Performance Standard is a vital step towards achieving the emissions reductions goals of AB 32 and protecting our ratepayers against the risk of high carbon prices in the not-too-distant future,"* said PUC Commissioner Dian M. Grueneich. *"At the same time, this decision leaves the door open to new, advanced technologies and carbon sequestration projects that will allow the energy industry to develop clean and sustainable sources of power."* - PUC Sets GHG emissions performance standard to help mitigate climate change, 25 January 2007, http://docs.cpuc.ca.gov/Published/NEWS_RELEASE/63997.htm

The Government is publicly funding a CCS demonstration project in the UK to ascertain the commercial feasibility of the technology[6]. The competition was launched in November 2007 and the project is expected to be operational by 2014. WWF welcomes the Government's support for a demonstration project but believes it is too little too late. The project will only support a post-combustion plant (pre-combustion technologies will receive no support) and the Government will potentially be approving new 'CCS ready' coal fired power stations years before it can draw conclusions from its public trial.

The Government's consultation on what 'CCS readiness' might mean closed on 22 September 2008 and a response is expected soon. WWF believes that requiring a new coal station to be 'CCS ready' is insufficient as there is no credible guarantee that CCS will ever be fitted – leaving a clear danger that the UK would then be locked in to highly polluting sunk investments for many decades. Firstly, there is a significant risk that the technology proves to be not technically or economically viable. Secondly, the concept of "CCS readiness" offers no assurance to policy makers or regulators that every step in the complex CCS chain can be delivered.

Advantages of an emissions standard for the UK

If the Government is serious about meeting its carbon reduction targets under the Climate Change Act then it must not give consent to new unabated coal stations. Policy-wise this can be achieved in a variety of ways but WWF believes the emissions standard developed in California is the most promising for the environment, for the market and for investors. The emissions standard has many advantages – namely that it works with market dynamics and allows the market to decide which technology is best. It is compatible with the emissions trading scheme, energy efficiency and renewable targets and will encourage innovation in CCS.

The Californian Global Warming Emissions Standard for Electricity Generation Act 2006 sets a limit on the amount of CO_2 per unit of energy generated (g CO_2/Kwh) that new and replacement power stations can emit. It is set at the equivalent to the output of a modern combined cycle natural gas generator. Old gas plants and new unabated coal stations consequently fail to meet this limit, but plants with a credible CCS installation comply. Renewables and gas plants with CHP all meet the standard.

Introducing an emissions ceiling for new power generation would, if set at the right level, ensure that the UK met its climate change targets (by preventing the construction of new unabated coal-fired power stations) in a market-friendly way. It would be compatible with the EU Emissions Trading Scheme (ETS), fit alongside EU and UK targets on renewable energy and energy efficiency and would leave the market to decide what energy sources to pursue in a clear regulatory framework.

WWF would like to see the level set at 350 g/Kwh. A greenhouse gas performance standard of this type would allow new coal stations which had CCS operating from the outset – along with other low-carbon technologies such as renewable energy and highly efficient combined heat and power fired by gas or sustainable biomass. It would, therefore, provide a strong signal to investors and power plant developers that CCS technology would have a clear potential role when fully developed and demonstrated. An emissions ceiling approach would avoiding the huge risks of high-carbon lock-in that are associated with an approach based on "carbon capture readiness" – and insulate taxpayers against the financial risk that CCS retrofits to new

6 As DBERR states it is the integrated and commercial application of the technology which remains to be proven: "The processes involved in CCS are not novel but have yet to be demonstrated together at commercial scale on power generation." DBERR website, CCS Demonstration Programme, http://www.berr.gov.uk/energy/sources/sustainable/carbon-abatement-tech/ccs-demo/page40961.html

"capture ready" stations might end up being paid for from the public purse. However the bill deliberately does not specify an emissions ceiling as it is our belief that this should be based on the latest information available and on the recommendation of the Climate Change Committee.

Government's argument's against an emissions standard

The Government's arguments against an emissions performance standard have focussed on:

1. It is not a cost-effective way to decide energy policy. The EU Emissions Trading Scheme (ETS) was the most appropriate mechanism for deciding which power stations should go ahead;
2. Coal stations could be retrofitted with CCS once the technology was ready. The Government is considering whether to require new fossil fuel stations to be 'CCS ready';
3. It would restrain the UK's ability to meet the approaching 'energy gap'; and
4. Energy security

WWF's counter-arguments are as follow:

1. ETS - It is becoming clear that the carbon price under the ETS will not in the short to medium term be high enough to drive all the investment required to reduce the UK's emissions in time. In addition, decisions made now before the carbon price has matured could 'lock' the UK into long-lived, high-carbon infrastructure for decades. New unabated coal stations are a prime example of this scenario.

Lord Stern, when discussing policy responses to climate change, noted in his report to the Government that:

> *"Carbon pricing alone will not be sufficient to reduce emissions on the scale and pace required.[7]"*
>
> *"In this transitional period, while the credibility of policy is still being established and the international framework is taking shape, it is critical that governments consider how to avoid the risks of locking into a high-carbon infrastructure, including considering whether any additional measures may be justified to reduce the risks.[8]"*

Indeed, Malcolm Wicks MP, the former Energy Minister, conceded that the ETS is not the whole answer:

> *"I agree with Nick Stern's analysis…I certainly concede that, as far as we can tell at the moment and for the foreseeable future, it is not the whole answer, just part of it[9]…I have always been happy to concede that, in the foreseeable future the ETS is unlikely to be the whole answer as it will depend on the price of carbon.[10]"*

The Royal Society, in its letter on new coal stations, to John Hutton MP, the former Secretary of State for DBERR, stated that it did not believe the current ETS framework would incentivise CCS[11]:

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7 Stern Review, Part IV: Policy response for Mitigation, Chapter 16 – Accelerating Technological Innovation, 30 October 2006

8 Stern Review, Executive Summary, 30 October 2006

9 M Wicks MP, former Energy Minister, Hansard, Energy Bill Committee, 26 February 2008, Col: 216

10 M Wicks MP, former Energy Minister, Hansard, Energy Bill Committee, 26 February 2008, Col: 217

11 Letter to Rt Hon John Hutton MP, former Secretary of State for DBERR, from Lord Rees of Ludlow, President of the Royal Society, 1 April 2008

"At present the mechanisms and policies in place, including the EU Emissions Trading Scheme, do not appear robust enough to provide sufficient support for industry to risk investing in CCS, particularly when the costs of this new technology are uncertain."

WWF agrees and believes that the ETS alone will not guarantee innovation in CCS or that power stations will install it in the future. Without additional policy support, new coal-fired 'CCS ready' power stations may be built in the UK but the technology will not be developed in time. During this uncertain period before any retrofit, millions of tonnes of carbon dioxide will then have been emitted into the atmosphere.

An emissions standard, therefore, is necessary for the UK to meet its carbon reduction targets as the ETS is insufficient on its own. A standard need not undermine the role for emissions trading. A useful analogy is policy on energy efficient products, where it is accepted practice to regulate out the least efficient products while offering market incentives to reward the best performers. Indeed, the EU intends to review the option of an EPS for the whole of the EU and the European Parliament had wanted a standard to be introduced from 2015.

2. Retrofits and "CCS readiness" - While the UK Government envisages energy companies retrofitting their new power stations with CCS there are no credible guarantees that this would actually happen and there is the potential danger that tax payers could be liable to fund this. In the meantime the new coal stations would continue to emit carbon dioxide into the atmosphere.

As mentioned, the Government is currently considering whether to require new fossil fuel power stations to be 'CCS ready'[12]. The Government recently consulted on what measures should be required if it were to require new fossil fuel plants to be 'CCS ready' and how stringent they should be. The consultation closed on 22 September and a decision is expected soon.

Taking a 'retrofit when ready' approach has numerous dangers for the climate and the taxpayer. There is a real possibility that the technology may not work on a commercial scale or only does so at a cost that is prohibitive. In this case, a decision would have to be made on whether to close the station decades earlier than planned in order to meet the UK's climate targets. The Royal Society has suggested such an approach - that after 2020 stations would have to close if they did not install the technology[13]:

"I therefore suggest that the Government only gives consent to any new coal fired power station, such as Kingsnorth, on condition that the operating permits are withdrawn if the plant fails to capture 90% of its carbon dioxide emissions by 2020".

Whether an investor would commit to financing a project under these conditions is doubtful. It is also doubtful whether a future government would be prepared to follow through on any such threat, in the face of inevitable strong lobbying from industry on the grounds of energy security and cost impacts. WWF believes that an emissions ceiling represents a better approach as it would both protect the environment and provide investors with regulatory certainty now.

Another possibility is that the technology did work but was expensive and the power companies demanded that the Government part fund the retrofit programme. This would then represent a potentially large liability for taxpayers.

Ultimately, WWF believes that it is insufficient to require a new coal-fired power station to be 'CCS ready' in the anticipation of some future date for retrofitting – there are simply too many

12 M Wicks MP, former Energy Minister, Hansard, Energy Bill Committee, 26 February 2008, Col: 217

13 Letter to Rt Hon John Hutton MP, former Secretary of State for DBERR, from Lord Rees of Ludlow, President of the Royal Society

risks and unknowns for this to be a credible policy. Instead no new unabated coal stations should be approved – something which the emissions ceiling would achieve.

3. The 'Energy Gap' – The Government states that the UK faces a major energy generation gap in the near future and, therefore, should not rule out any options including new coal. By 2015 12 Gigawatts (GW) of fossil fuel generation will have closed and by 2016 6.3 GW of nuclear power will have closed with another 4 GW to close in the years after[14]. Hence 22.5 GW will have to be replaced over the next ten years.

This argument on the energy gap, however, assumes a complete failure by the Government to achieve its own energy policies. A new report by Poyry, commissioned by WWF and Greenpeace, shows that if the Government were to meet its own energy efficiency and renewable targets, new baseload electricity capacity will not be needed until the period beyond 2020[15]. By this point other low carbon technologies will be close to commercialisation. Importantly, the Poyry report assumed that no new gas plants were approved other than those that so far have already been consented to.

Furthermore, the report showed that if the targets were met then the UK could reduce its total gas consumption by up to 42% by 2020. In addition, the UK's carbon dioxide emissions would be reduced by up to 34% by 2020.

4. Energy security - Energy security has also been cited as a concern, that an emission standard would increase our reliance on imported gas. However, 75% of the coal burnt in the UK in 2006 (up from 71% in 2005) was imported[16]. Indeed, Russia is a large supplier of coal to the UK. The main reason for this is price competitiveness and the need for the UK to import low sulphur coal[17].

Moreover, a serious push for renewable energy and energy efficiency would greatly enhance our energy security. As mentioned, the Poyry report shows that if the UK meets its targets gas use in the UK could be reduced by up to 42% by 2020. It should also be remembered that most of our gas imports are used for heating rather than power generation – and that investments in gas storage and gas supplies from countries such as Norway will go a long way to ease the fears on security of supply. Finally, coal may also play some role in meeting our energy needs – but only in the context of fully operational carbon capture and storage in a well-regulated environment.

Conclusion

WWF, therefore, believes that while the construction of new unabated coal stations in the UK is unnecessary it is a grave threat to the country's climate change targets. The Government's current 'CCS ready' approach is inadequate and carries numerous risks. The emissions standard is a necessary additional measure that would provide the market with clarity and certainty and set the UK on a firm path to reducing its emissions.

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19th December 2008

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14 M Wicks MP, former Energy Minister, Hansard, Energy Bill Committee, 26 February 2008, Col: 216

15 Poyry report , Implications of the UK meeting its 2020 renewable energy target, 31 July 2008
http://www.ilexenergy.com/pages/Documents/Reports/Renewables/July08_2020RenewablesTarget.pdf

16 DBERR website, Energy statistics: Coal, Quarterly Tables: Energy Trends, last updated 27 March 2008, http://stats.berr.gov.uk/energystats/et2_1.xls

17 UK Coal Production Outlook: 2004-16, March 2004, http://www.berr.gov.uk/files/file14151.pdf, p8

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