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CCSA POSITION STATEMENT

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ON

INCENTIVES TO FACILITATE THE EARLY INTRODUCTION OF CCS PROJECTS IN THE UK

1. The need for CCS

- 1.1 It is now widely agreed, by the International Panel for Climate Change, Stern, the International Energy Agency and others that there is an urgent need to mitigate climate change by deploying carbon capture and storage (CCS) worldwide. CCS allows the continued use of fossil fuels in power generation combined with very low CO₂ emissions. In many parts of the world there are inadequate alternatives to fossil fuels and in others the use of fossil fuels, especially coal, can bring advantages, including enhanced security of supply, through providing diversity of fuel source. CCS enables large scale electricity generation from coal to continue in a carbon constrained world. In many countries CCS is the only feasible option for large scale, secure, low carbon power generation.
- 1.2 CCS is supported by the European Union (EU) as part of its policy to limit greenhouse gas emissions and associated climate change. The EU Heads of State have agreed that 10 – 12 commercial scale CCS demonstration plants should be operational by 2015, and have discussed mandation of CCS by 2020. The European Parliament are discussing the legislation needed including the possibility of mandation. The current, urgent needs are to deploy existing technologies and capabilities in large scale operation, particularly power generation, and to develop and prove emerging technologies, confirming their performance and associated costs.

2. **The Need for Incentives**

- 2.1 The current and forecast carbon price in the Emissions Trading Scheme (ETS) is not yet high enough or reliable enough to stimulate the development and deployment of CCS projects. Most commentators suggest that it will be post 2020 before the ETS alone is sufficient to drive investment in CCS projects
- 2.2 Even then it is far from clear that investors will be prepared to invest taking on the challenge of managing the “First of a Kind” costs and risks involved. CCS projects are capital intensive and there is no competitive advantage for the generating companies who are the main investors in being the first to adopt this technology.
- 2.3 As evidenced by the number of large scale, credible CCS projects that were under development prior to announcement of the BERR CCS Competition rules and the number of projects that have entered the Competition, there are many developers in the UK who would proceed in the short term if appropriate incentive mechanisms were put in place.
- 2.4 There is therefore a need to put in place now mechanisms to facilitate the earlier introduction of a demonstration tranche of CCS projects. These mechanisms can provide a bridge until the EU ETS is fully able to support the investments required, allowing commercial CCS projects to be constructed and demonstrated in the UK, a decade earlier than would happen if reliance is placed solely in the EU ETS. The UK could make material carbon emissions savings whilst allowing coal to be used in the generation mix maintaining fuel diversity and increased energy security.
- 2.5 This paper outlines the mechanisms that the CCSA considers would be most likely to be effective in attracting the private sector investment required. It results from extensive analysis and discussion involving a substantial cross section of the membership of the CCSA and provides an Association view of possible mechanisms that could be used to incentive and accelerate the introduction of CCS projects.

3. **The potential for CCS investment in the UK**

- 3.1 A range of capture technologies suitable for CCS exists, including pre and post combustion capture, and oxyfuel processes. While the extent varies between these technology types, all stages of the CO₂ chain – capture, transport and storage – have been proven at commercial scale, but there is little or no experience of integrating them in a chain which includes large scale power generation.
- 3.2 Pre-combustion capture technologies are ready now for full scale commercial deployment and there are a number of IGCC projects of up to 800MWe ready to proceed in the UK, i.e. only awaiting suitable economic incentives.

- 3.3 The responses to the BERR CCS competition have demonstrated that there are a significant number of post combustion and oxyfuel CCS projects which could be developed to commercial scale ca 2014 – 2016. However the competition is a “one off” and there is, as noted above, a more general need and opportunity to incentivise a series of projects in the transition to full commercialisation and deployment of CCS.,
- 3.4 CO₂ storage has been demonstrated in the USA, Canada, Norway, and Algeria. Studies have confirmed that there exists a variety of excellent storage/EOR options in the North Sea, i.e. the UK is extremely fortunate to possess very considerable offshore CO₂ storage capacity, in principle more than enough to meet UK needs for perhaps a century or more.
- 3.5 Support for CCS to date has been for RD&D activities. In the long term (post 2020) the EU ETS should provide the market pull necessary to drive extensive deployment. The current challenge is to move from RD&D to more extensive deployment on the most rapid timescale possible. The growth from single projects to widespread deployment in the UK will be less costly and happen more quickly if the opportunity to develop transport and storage infrastructure hubs and clusters are taken building on the requirements needed for the initial projects. A few carefully selected CCS projects could facilitate a much wider network able to collect CO₂ from a number of capture sources for storage in a number of key storage locations, including mature oil fields where enhanced oil recovery may be undertaken.
- 3.6 Policy makers are targeting 2020 as the year by which full commercialisation of CCS should be achieved, and confidence in the investments established. If this is interpreted as ensuring that several projects operate from ca 2015 for several years, then the investment for these projects will need to be sanctioned ca 2009. The need for clarity on incentives for these projects is therefore urgent. In particular it is not practical to await the operational outcome of the “one off” Competition (ie post 2014) before wider incentivisation is contemplated. Indeed in any event the BERR Competition is of limited use in establishing the costs and defining the issues of relevance to pre-combustion project investments.

4. **The costs and funding of CCS projects**

- 4.1 Carbon Capture and Storage incurs significantly higher costs than unabated fossil fuel combustion. There is both a capital penalty (for capture, transport and storage) and ongoing costs resulting from the reduced generation efficiency and associated with operating the CO₂ capture, transport and disposal process. Hence CCS power generation is uncompetitive with unabated fossil fuel generation unless the price of carbon or other measures offset these costs.
- 4.2 Carbon prices under the EU ETS provide helpful support. However, the further out the period, the more regulatory and other uncertainties exist concerning the scheme’s operation, especially during and after phase 3, which ends in 2020.

As plants typically have an operating life of over 30 years this uncertainty covers most of their operating life.

Furthermore, the EU ETS is not designed to give specific signals for the introduction of new technology. It is widely acknowledged in the major economies that additional incentives are required for new low carbon technologies. Such incentives are, of course, already in place for renewables and for high quality CHP plant.

- 4.3 Precise CCS costs can only be determined following front end engineering and design (FEED) studies and are then subject to variability in the markets for engineering, equipment and construction. However, typical costs are broadly estimated to require CO₂ prices in the range €50 – 100/t CO₂. The actual number is dependent on the specific project details and the means and basis by which the benefits of the carbon support are reflected in the project investment returns. The CCSA agrees with the conclusion made in the 2007 White Paper on Energy which indicated that the cost of carbon abatement from CCS is less than that from renewable generation, in many cases considerably less.

5 **The design of the incentives for CCS**

- 5.1 In the long term, once the technologies are fully proven and costs have benefited from the learning from early projects, the EU ETS should provide the market incentive for CCS, and investors will be able to judge that the carbon price will support the investment and continuing operational costs involved. Current incentives should therefore be designed to manage the introduction of the first projects and bridge the gap before the carbon price in the EU ETS justifies the costs involved. Hence the support should be time limited. The proposals which follow relate to the deployment of a first demonstration tranche of CCS projects.

- 5.2. The incentives provided should generally:

- Not specify technologies, since it is currently too early to determine which technologies will eventually be preferred and in any event different technologies may be preferred for differing applications eg new build or retrofit.
- Provide appropriate incentives for efficient construction and operation.
- Facilitate price competition to ensure value for money is achieved
- Be compatible with the EU ETS, allowing a phase out of the support over time
- Be market based, relating directly to the carbon market
- Be State Aid compliant
- Create minimal distortion to the carbon and electricity markets
- Be simple and able to be implemented on a timescale consistent with investment decisions in 2009 or 2010.
- Result in a material saving of CO₂

Government currently supports several low carbon technologies and the CCSA strongly endorses the principle that there should be, as far as possible, fair treatment of all low carbon technologies as all are needed to address climate change and those not supported are actively disadvantaged.

5.3 The CCSA have studied in some depth the applicability of a wide range of potential mechanisms and concluded that there are several viable options which it would support as meeting the above objectives. Ideally, the incentives should be designed to address both the additional capital costs and the continuing operating cost disadvantages. It is recognised that there can be political objections to each of the support options and it may well be that a package of measures is appropriate. For example the EU could choose to provide EU wide support which could meet part of the CCS cost and individual Member States could provide the balance of support using mechanisms that relate to the electricity market situation that pertains in each country. Not all of the options below can provide sufficient support alone, however in combination it is firmly believed that a suitable package can be assembled.

5.4 Capital Support

5.4.1 Tax structures, e.g. enhanced capital allowances where the expenditure on CCS projects can be offset against tax in the year in which the expenditure is made, can be appropriate in mitigating the costs and early deployment risks, depending on corporate tax positions. This approach is well established to support the introduction of other low carbon and new technologies for example biomass and wind projects

5.4.2 Capital grants are also suitable approaches to achieve early incentivisation of projects which inevitably suffer a capital disadvantage. This approach has been used to support the introduction of other low carbon technologies for example early offshore wind projects

5.4.3 The CCSA also notes that government backed 'carbon bonds' or low rate UK Government or EU loans if available would also be of benefit if the rate offered is attractive enough.

The CCSA welcomes the statements made by the European Investment Bank that it is considering making available lower cost loans to CCS projects which meet EU policy objectives.

5.4.4 It should be noted that new funds greatly in excess of the sums envisaged here will be accumulated by government as a result of carbon allowance auctions. This auction revenue is new and hence is currently unallocated. It is raised directly from those who are potential investors in CCS and provides a source of funds which, if recycled, would be more than sufficient to meet the cost of supporting an introductory tranche of CCS projects.

5.5 Revenue Support

5.5.1 The CCSA would support a CCS support mechanism – such as a feed in tariff or premium price as paid to renewables – which resulted in an additional payment per MWh or in proportion to the carbon abated, or a Contract For Difference (CFD) with the carbon price. The CCSA believes that these mechanisms should support the development of all new low carbon power generation.

- 5.5.2 The CCSA has concluded that payment via the allocation of free carbon allowances (inside the overall cap) for the carbon abated from compliant CCS projects for a period is another possible mechanism capable of contributing to the level of support required. The CCSA notes the current proposal that free allowances will continue to be a feature of the ETS in phase 3, e.g. outside of the power sector and possibly for the heat content of CHP.
- 5.5.3 CCS projects should, in the CCSA view, be exempt from the climate change levy and receive a waiver of business rates. This would simply place CCS support on the same basis as high quality CHP schemes (which even if fired by gas would be expected to emit at least double the CO₂ per MWh of a coal based CCS plant). Prospective CCS projects would clearly need to be offered Levy Exemption Certificates well beyond the planned review date.

Conclusion

Incentives are required to take CCS from demonstration projects to commercial investments underpinned by the EU ETS post 2020. In the UK a tranche of projects in parallel with the BERR Competition project should be incentivised. The environmental benefits, and the government related costs should be assessed on the same basis as other forms of low carbon power generation, including renewables, as CCS Projects have the potential to make an early and material contribution to the UK's emission reduction targets. Policy makers should reach clear decisions early enough to enable investment decisions to be made in 2009 so that CCS can be operating in 2013 - 2015 when the shortfall in generation capacity is expected to make the capacity reserve margin unacceptably low.

The CCSA is pleased to commend this set of options for the UK government to consider and pursue. The CCSA emphasises that a number of large scale CCS projects can be brought forward now which can make a material and early contribution to carbon reduction targets. Government is urged to agree to support further CCS projects and put in place the conditions to allow its growth. The CCSA is pleased to offer its services and those of its members in working with government to deliver early deployment of these important pathfinder CCS projects.