SEPA
Scottish Environment Protection Agency

ANNEX

Consultative Communication on The Future of Carbon Capture and Storage in Europe [COM(2013) 180]

1. **Should Member States that currently have a high share of coal and gas in their energy mix as well as in industrial processes, and that have not yet done so, be required to:**
   a) **develop a clear roadmap on how to restructure their electricity generation sector towards non-carbon emitting fuels (nuclear or renewables) by 2050,**
   b) **develop a national strategy to prepare for the deployment of CCS technology.**

   We believe that both requirements are a positive step and achievable and could be taken on board in the next revision to the Directive on Geological storage of CO_2. However, for some member states (those too far from suitable storage sites) it should be recognised that CCS may never be a viable or economic solution for reducing greenhouse gas emissions.

2. **How should the ETS be re-structured, so that it could also provide meaningful incentives for CCS deployment? Should this be complemented by using instruments based on auctioning revenues, similar to NER300?**

   On page 20, second paragraph: "For driving CCS deployment without any other incentives, significant ETS price increases (or expectations thereof), of 40 € or more, would be necessary". It seems quite unlikely that such a price will be reached therefore, other incentives will be necessary for CCS deployment. This is acknowledged in note 44 on page 20 of the report which states that 'It is not expected that such levels of the carbon price will be reached any time soon, and it is therefore not likely that industry will commit the appropriate investments to CCS projects on the basis of the carbon price alone.' The ETS allowance price in Phase III has stayed below 4 € since mid-April following the European Parliament vote against the backloading proposal (i.e. a delay of the auctioning timetable that would have reduced the number of Phase III allowances that are available early in Phase III). The slow economic growth and historical surplus of allowances depress the market, and developments on backloading and structural reform of the ETS will continue to remain a key driver of the carbon price over the coming months. Without a reasonable minimum price for CO_2 there is no driver to reduce carbon emissions from the most CO_2 intensive industries. Consequently, we believe that the Commission could seriously consider implementation of a floor price for carbon as an economic instrument. We recognise that during a recession the carbon price should fall. However, as with the approach taken in the UK, a guaranteed lower limit would provide some fiscal certainty in the development and associated economics of the first tranch of capture plant deployment.

3. **Should the Commission propose other means of support or consider other policy measures to pave the road towards early deployment, by:**
   - **support through auctioning recycling or other funding approaches**
   - **an Emission Performance Standard** - yes
   - **a CCS certificate system** - maybe
   - **another type of policy measure** - develop a CCS Bref?

   SEPA believes that additional mechanisms may be required to encourage uptake of CCS and avoid new build fossil fuel power stations operating unabated in the future. There are a

number of ways in which low carbon energy choices could be achieved. For instance, through mandatory CCS by a set date, or to commit to a date by which all power stations would need to meet an emissions standard set in terms of kilograms of CO_2 per megawatt hour of electricity generated. The UK's House of Commons Environmental Audit Committee suggested that this limit should equate to "capturing at least 90% of carbon emissions" from a coal station. Mandatory CCS would send a strong signal to industry that fossil fuel plant cannot continue to operate unabated. An emissions limit would provide a choice that does not prescribe the technology to be implemented, but ensures unabated plant will not be operating in the future. The process of "grandfathering", although it provides certain amount of investment confidence, if set for too long a period could lead to long term reliance on unabated fossil fuel generation.

If CCS is to be promoted, assessment should be undertaken to ascertain which technologies would operate most efficiently in which locations. CCS is unlikely to be appropriate in all geographical areas and more research and planning needs to be undertaken to identify the optimum sites, or group of sites, to consider different technological solutions and to assess storage facilities. It may be advantageous to consider taking forward an approach based on the methodology of the UK Government's Committee on Radioactive Waste Management (CoRWM). This could include:

- setting up an independent advisory body to consider development of methodologies for assessing storage and transport options;
- research and development into the long-term safety of geological storage;
- assessment of different technologies throughout the chain (including energy penalties) and where those might be most successfully deployed; and
- assessment of the most suitable areas for new plant to be sited to maximise access to transportation and storage routes and potential markets for CO_2.

The suggestion of a mandatory CCS certificate system (page 21), where such CCS certificates would replace an equal number of ETS allowances on the market, would of course only work if there are functioning CCS installations available and the yearly capacity of these installations is known and guaranteed. Such a system could work well for promoting CCS, but would lead to further complications in the ETS Registry with an additional type of allowance to keep track of and would increase the Regulatory effort when checking the compliance of each ETS installation that would need to surrender such certificates. It would still be a workable system, but it would be best to limit the requirement for CCS certificates to ETS installations in category C, i.e. with emissions over 500,000 tonnes per year.

4. Should energy utilities henceforth be required to install CCS-ready equipment for all new investments (coal and potentially also gas) in order to facilitate the necessary CCS retrofit?

The carbon capture ready (CCR) requirements put in place under Directive 2009/31/EC do not require new plant to ensure that they will be able to fit carbon capture abatement in the future. A robust CCR requirement is necessary to ensure that Europe will not be locked into a high emissions path over the lifetime of new combustion plant - potentially 40 years. This is particularly important due to significant space requirements of CCS plant which, if not taken into account at the design stage of a new power station, may prohibit future CCS options. However, it can be difficult to outline the specifics of what may be required to ensure carbon capture readiness is possible in the future at any given site. In this respect some good work has already been undertaken in this area in the UK in the development of detailed guidance on CCR issues for a range of CCS technologies. In addition, the UK approach, whereby no new coal fired power plant may be built without fitting (at least partial)

carbon capture from the first day of operation could be considered for adoption in a wider European context.

5. Should fossil fuel providers contribute to CCS demonstration and deployment through specific measures that ensure additional financing?

Yes this option could be considered however it must take on board any impacts arising from a carbon floor price mechanism that may be introduced.

6. What are the main obstacles to ensuring sufficient demonstration of CCS in the EU?

The main barrier to the deployment of CCS is the investment and operational costs of a CCS plant as well as some of the uncertainties associated with developing the CCS chain. There are a lot of experiences from technology development and commercialisation in other sectors that demonstrate that the costs and uncertainties begin to significantly reduce as developers move from the first generation of plant to the "nth" generation. However, technology development can take considerable time and this underlines the importance of ensuring that the EU plans for a demonstration programme for CCS are realised. Some form of governmental/EU funding is almost certainly going to be required for the first demonstration plants as these will be key to reducing the operational, technical and financial uncertainties associated with CCS.

The CCS Interest Group (CCS IG) believes that in parallel with the NER 300 process, there may be a need for additional measures to enable the energy sector, private investors, national governments and technology suppliers to make decisions to deploy CCS based on commercial/competitive reasons. CCS IG suggests that NEPA may be able to provide helpful input on additional measures through a joint response to the next review of the Directive (2009/31/EC) due in 2015. Similarly, the development of a BAT Reference document (BREF) within a short timescale may help reduce the uncertainty associated with the environmental impact and regulation of carbon capture technologies under Directive 2010/75/EU on Industrial Emissions. SEPA is already part of the CCS IG and is committed to assisting in the development of such approaches.

A lack of clear legislative requirements and drivers. See comment above on CCR.

Effective regulatory framework
Europe has been considered a global leader with regard to introducing measures to stimulate the development and deployment of CCS, namely through the provision of a legal and regulatory framework to enable and to encourage the development of CCS under the directive on the geological storage of CO_2 (Directive 2009/31/EC) and the inclusion of CCS in the European Union Emissions Trading Scheme (EU ETS) from 2013. Significant co-financing to full-scale CCS demo projects has been offered (although not all projects successful accessed funding) through the European Energy Programme for Recovery (EEPR) and the New Entrants Reserve 300 (NER 300). Member States and EEA States have also contributed largely on the national level with different approaches to funding of demonstration projects. However, almost four years since Directive 2009/31/EC came into force the full transposition of the Directive across the EU has not been achieved. Currently there are 17 infringement cases running in relation to Member States failure to adequately transpose the Directive. This number of cases is not indicative of a lack of willingness to transpose the Directive but does perhaps reflect some of the difficulties faced by Member States which are facing difficult energy and climate goals in times of financial hardship.

7. How can public acceptance for CCS be increased?

Most of the negative issues raised across Europe in terms of CCS have related to onshore storage. In such cases greater communication needs to occur. In this context, the potential role of off shore storage could be explored further. Only the roll out of commercial sized projects will be able to demonstrate safety and environmentally sound practice and therefore assist in public acceptance. SEPA is aware that certain proprietary barriers to the release of all relevant information for any given technology can be an issue in the development of such demonstration programmes and is addressing this in a Scottish context in a transparent and robust manner. In addition, we note that there has been some funded research into the public perception and engagement with CCS. In this respect the EU research programme should take full account of the recommendations from such studies and ensure that any required follow up and further development is progressed as a matter of urgency.

SEPA
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