

# CCS Roadmap

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## The regulatory framework

April 2012



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## We are:

- Ensuring that the CCS Commercialisation Programme provides practical experience with the regulatory framework and that the framework adapts in line with experience – it is likely that lessons will be learnt as projects develop, the need for further reform will be kept under active review so that problems are identified early
- Organising a regulatory test exercise on a CCS project to help identify any potential obstacles to effective regulation
- Consulting industry in advance of the European Commission's review of the CCS Directive in 2015 to ensure that UK experience is shared across the EU
- Undertaking a review of the transition from oil and gas production to CO<sub>2</sub> storage

## Role of the regulatory framework

- 1.1. Creating the right regulatory environment is crucial to the development and deployment of CCS, whilst protecting the interests of the workforce, the public and the environment. In the case of CCS much of this regulation is generic and has been successfully applied in a variety of circumstances over many decades, whilst other aspects – particularly those related to the transport and storage of large quantities of CO<sub>2</sub> – are new. One of the key objectives of the CCS programme is to ensure that these regulatory processes are carried out to a high standard, reflecting the interests of project developers and that local communities and other stakeholders are effectively engaged throughout the process of design, construction, operation and decommissioning.

## Progress to date

- 2.1. The UK has done more than any other country to establish a comprehensive legal framework for CCS. In the last 5 years a comprehensive review established that the regulatory arrangements are suitable for all of the stages of CCS, except for the permitting of storage. That gap was addressed in 2008 and has subsequently been developed as part of the UK's implementation of the EU CCS Directive. In addition to creating an environmental permitting regime the 2008 legislation also provides for the decommissioning of structures used for storage and asserts the UK's right to use the Exclusive Economic Zone for the purpose of CO<sub>2</sub> storage.

- 2.2. In parallel with UK legislation in this area the EU also negotiated and agreed the Directive on the geological storage of carbon dioxide (Directive 2009/31/EC). The Directive set out in greater detail than the Energy Act the contents and requirements of a storage permit, largely based on the best available technical guidance at the time and the requirements of pre-existing international agreements such as those agreed under the auspices of the OSPAR Convention and the London Protocol. The UK has completed implementation of the Directive, for example through the Storage of Carbon Dioxide (Licensing etc.) Regulations 2010, which entered into force on 1 October 2010.
- 2.3. In addition to the arrangements for licensing storage sites, the CCS Directive also requires all newly constructed power stations above 300MW thermal to be constructed in a way that is Carbon Capture Ready (CCR) and for provisions to be introduced that facilitate third party access to existing and new proposals for CCS pipelines and storage sites. The CCR provisions have been introduced in the UK through planning guidance and have been reinforced through requirements to restrict the construction of new coal fired power stations to those which install CCS on at least 300MW of capacity and proposals to directly limit emissions of CO<sub>2</sub> through an Emissions Performance Standard.
- 2.4. Third party access requirements to pipelines and storage sites have also been implemented. These are based on arrangements that have been in place for the oil and gas sector for many years and seek to strike an appropriate balance between protecting the legitimate rights of the owner of the pipeline and ensuring that capital investments are made in such a way as to increase their future usefulness. Essentially, these arrangements require operators of storage sites or pipelines with spare capacity to make information about that capacity publicly available and to negotiate access arrangements with third parties on non-discriminatory terms. It will also be possible to appeal to the consenting authority should it not be possible to reach agreement on voluntary grounds. The consenting authorities have agreed to prepare guidance on how they reach an adjudication should they be required to do so. That guidance will be prepared in consultation with those likely to be affected and is expected to be finalised shortly.
- 2.5. The UK also successfully negotiated reform of the EU Emissions Trading Scheme so that permanently stored CO<sub>2</sub> would count as 'not emitted' under the scheme. The emissions trading reforms create an important economic incentive for CCS which, together with the Carbon Price Floor arrangements, are intended to stimulate investment in low carbon electricity.

## Next steps

- 3.1. Whilst the UK is one of the few countries in the world with a comprehensive regulatory framework for CCS this has yet to be tested in practice. This is inevitably an area where policy and practice will develop with experience.
- 3.2. The priority for the CCS Commercialisation Programme is to focus on the UK's unique offshore storage assets. The rationale for this is set out in the storage strategy which also forms part of this Roadmap. It is the offshore area where the majority of suitable storage is located and a lot is known about the underlying geology as a result of many decades of petroleum exploration. The development of CCS is also timely. Many North Sea oil and

gas fields are depleted or close to depletion, and therefore suitable for development as storage sites. The companies and skills that have grown to service the oil and gas sector are also well placed to be redeployed to meet the needs of the emerging CO<sub>2</sub> storage industry.

- 3.3. The Government does not intend to change the emphasis on offshore storage in the short-term, although there are potential benefits of avoiding the challenging environment and costs associated with storage offshore. Given potential public anxiety about storage onshore, the Government's view is that the priority for the present time is to develop an understanding of the benefits and costs of CCS with offshore storage.
- 3.4. If storage is to take place offshore then it is likely that some of the selected sites will have previously been used for oil and gas production. We have previously set out some high level principles about the transition from oil and gas production to CO<sub>2</sub> storage, and much of the detail will be filled in as real-life examples arise. However, the Government recognises that there is also likely to be benefit in setting out further detail where this is possible, to reduce the level of uncertainty for these early projects. We would have expected to have developed policy in this area, including one or more consultations, by 2015.
- 3.5. Another area of priority is the UK's position in relation to the storage of CO<sub>2</sub> that originates overseas. The CCS Directive requires us not to discriminate against other EU Member States when permitting access to the UK's storage capacity. Whilst it is right in principle that storage sites located in UK waters are able to be used to store CO<sub>2</sub> from other Member States, the storage of CO<sub>2</sub> results in a net transfer of CO<sub>2</sub> that would have been emitted in one Member State to another. That is of no consequence if the CO<sub>2</sub> were to remain permanently contained but if not then those emissions would count toward the national inventory of the Member State in which the CO<sub>2</sub> is stored. This could have financial implications for the Member State concerned, but it could also have implications for the number of Emissions Trading System allowances available within the Member State that is storing the CO<sub>2</sub>. The Government's view is that any storage of CO<sub>2</sub> from other countries that were to take place would have to provide for this possibility in agreements with the exporting country.
- 3.6. The CCS Directive is scheduled to be reviewed during 2015, informed by experience of practical application to at least one early CCS project before then. We expect to start to collect views in 2014 about changes that might need to be made to the Directive to inform the UK's negotiating position. The liability arrangements have attracted considerable concern from those interested in developing CO<sub>2</sub> storage sites and this is one area where the Government would expect the Directive to come under close scrutiny during its review.
- 3.7. CCS has important potential benefits to air quality, although these depend upon the carbon capture technology. Pre-combustion systems remove sulphur before combustion, thus removing the subsequent need for removal of sulphur dioxide emissions from combustion. The oxy-fuel variant requires greatly reduced nitrogen dioxide concentrations in the gas stream to be treated, thus probably necessitating both flue gas desulphurisation (FGD) and selective catalytic reduction (SCR) to be applied ahead of the capture process. However, capture processes could, if not tightly controlled raise other emission issues. The CCS Commercialisation Programme will provide important learning to enable appropriate regulation to develop.

- 3.8. Capture processes increase the water use of the host power station which could be particularly significant if a number of such power stations were to be abstracting water from the same source. Recent work by the Environment Agency suggests that there are significant future risks of increasing water scarcity driven by climate change and population growth. DECC is working closely with Defra, the Environment Agency and industry to understand the implications of these risks for CCS deployment. The Government has committed to reform water abstraction regulations to help water abstractors such as power stations more efficiently meet their water need while protecting water ecosystems in the face of these increasing risks.

### The regulatory test exercise

The Scottish Government co-ordinated a scenario project to assess the regulatory framework for CCS in Scotland. The aim was to identify any regulatory gaps or overlaps that could be better streamlined or managed, and to evaluate the risks, barriers, information gaps and any other issues that would affect the successful demonstration and deployment of CCS in Scotland.

The process identified that the regulatory framework for CCS is emerging well in the UK whilst also highlighting the complexity and size of CCS projects and the large numbers of permits required.

Whilst recognising that much of the learning, including on the regulatory aspects, will come from projects themselves the Government will run a scenario project in England on one of the early projects, if projects in England are taken forward, at the appropriate time. This will allow for the involvement of new players such as the Infrastructure Planning Commission, for testing to ensure CCS projects under UK and EU competitions can be delivered by the required timetables, and for exploring new circumstances such as how to manage the permitting regime to support a CCS cluster.

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