

Carbon Capture and Storage: Barriers to Commercial Deployment

Submission by Professor Patricia Park¹

Introduction

I welcome the Government's efforts to reassess priorities and to address implementation of measures to achieve stated policy objectives, and thank the Treasury for sending the consultation document for comment.

In this response, I set out my views on some of the legal issues relevant to issues of policy being considered by the Treasury in its review. I also authored the submission from UKELA to the Government's Energy Review in respect of carbon capture and storage on the continental shelf.

Overall my view is that effective delivery of policy objectives requires an integrated and effective set of implementing measures – regulatory or otherwise. Business, the public and the environment all benefit from measures that are clear, provide long-term certainty, avoid unnecessary complexity and are simple to enforce.

Carbon Sequestration on the continental shelf

The international community is reassessing the two main agreements relevant to this activity. Namely the London Dumping Convention and the OSPAR Convention.

The London Dumping Convention mainly applies¹ to the water column rather than any sub-sea activity but the 1996 Protocol which came into force 24th March 2006 represents a major change of approach to the question of how to regulate the use of the sea as a depository for waste materials, inasmuch as it introduces a general prohibition on dumping of waste materials except for materials on an approved list. At the moment carbon dioxide is not on that approved list. However, there will be a first meeting under the Protocol in November 2006, with a prior meeting of the Legal Working Group held at the IMO on April 10th -12th which discussed the compatibility of CO₂ capture and storage in sub-seabed structures after the Technical Working Party meeting on 3rd – 7th April. It is widely anticipated that clarification and amendments to facilitate and/or regulate the sequestration of CO₂ will be made at these meetings, for ratification in November. The Protocol does not include pipeline discharges from land, operational discharges from vessels or offshore installations or placement for a purpose other than disposal (usually accepted to mean Enhanced Oil Recovery EOR). However, carbon storage could be considered 'a placement for a purpose other than deposit'. If carbon dioxide is 'stored' then this would be acceptable under the Protocol as it stands. However, the operator would need to show that he will extract the CO₂ at a later date for other uses such as

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EOR. The Protocol also contains a stricter precautionary approach than the 1972 Convention as it requires its Contracting Parties to apply the Precautionary Principle (Resolution LDC 44(14) 1991) instead of being 'guided by' it. CO₂ is likely to fall within its scope because it applies to the introduction into the marine environment of 'wastes or other matter'. However, the test is 'whether it is more likely than not to cause damage to the marine environment'. In the experience of the Norwegians they consider that underground sequestration in large amounts *may*, but is unlikely to, (Norwegian Research Council Project No 151393/210) cause some damage 'locally' to the atmosphere, which is covered by the United Nations Convention on the Law of the Sea 1982. But if the sequestration is injected into a geological structure in the subsoil in such a manner that it is *unlikely* to escape, such an injection would pass the 'likely' test. Given that oil companies have been using this operation for the purposes of EOR for over a decade it is expected that 'good oilfield practice' should suffice.

The OSPAR Convention was not drafted with carbon storage in mind and in 2004 the Jurists and Linguists Group of OSPAR accepted an amendment to consider the subject. The placement of CO₂ arising from operations of offshore installations is not prohibited but is regulated as is placement for scientific research. The Convention does not distinguish between ocean storage and subsoil storage, therefore if it does not cause 'pollution' there is no prohibition under Annexes I, II & III. However, the precautionary principle must be considered for any substance introduced 'directly or indirectly' into the marine environment.

When considering the interpretation of international agreements the International Court of Justice held that scientific developments could be taken into account (Botswana 2000). The Vienna Convention on Treaties also provides that all Treaties must be interpreted in good faith.

Under the European Union framework a number of Directives could possibly apply. However, the Netherlands legal taskforce reported on the subject in 2001 and concluded that although CO₂ falls under the Framework Directive on Waste, it did not apply as CO₂ was not a dangerous substance. They also concluded that injection of CO₂ in the deep underground does not fall under the jurisdiction of the Directive on Dumping of Waste Materials.

Norway is the state with the most experience of carbon sequestration in the ocean subsoil and has passed national legislation to cover this.

The most important aspect with regard to CO₂ sequestration in the continental shelf is the liability and compensation for environmental damage. In Norway the Pollution Control Act has special rules on liability for environmental damage, based on strict and severe liability for the operator of the installation or activity that causes the damage. This statute provides for the liability to remain with the operator for the first two years and thereafter the regulatory body. However, even if leakage of CO₂ from underground deposits into the sea occurs it is difficult to see how this can result in a type of damage to public or private interests that may result in a compensatable loss. The environmental, health and

safety risks associated with injection of CO₂ into a geologic formation have been successfully managed for well over a decade in commercial oil and gas operations.

If the UK government introduced domestic legislation similar to that in Norway, including a similar liability regime, this would pave the way for an 80% reduction in UK CO₂ emissions. Alternatively liability could be addressed in a similar manner to liability for decommissioning on the UK continental shelf, which could include the posting of surety bonds, letters of credit, trust funds or environmental liability insurance. However, operators would possibly need a finite liability cap. Nevertheless any apportionment of liability would need to be capable of promoting deterrence as a function of its predictability. Operators and insurers would need the ability to predict the costs of their liability as, if liability costs are significant, organization and investment decisions may be influenced by a desire to minimize their costs.

The largest potential source of CO₂ in the UK is from the power generation sector, more particularly coal fired power plants. However, the government has not taken any steps to create incentives for CO₂ emitters to capture CO₂. In addition there is no mention of CO₂ capture and storage in the 'United Kingdom National Emission Reduction Plan for implementation of the revised Large Combustion Plants Directive (2001/80/EC)' published by DEFRA February 2006.

Conclusion

If carbon capture and storage is to form part of the future of our energy and climate change policy then Government needs to press for international and European agreement on a framework for the recognition and regulation of carbon capture and storage and to bring forward early proposals for a long-term storage monitoring, safety and liability regime. No commercial organisation will commit to this activity without a positive Government policy statement