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CARBON SEQUESTRATION LEADERSHIP FORUM

POLICY GROUP

**A REPORT FROM THE
LEGAL, REGULATORY AND FINANCIAL ISSUES TASK FORCE**

**CONSIDERATIONS ON LEGAL ISSUES
FOR
CARBON DIOXIDE CAPTURE AND STORAGE PROJECTS**

Note by the Secretariat

Barbara N. McKee
Tel: +1 301 903 3820
Fax: +1 301 903 1591
CSLFSecretariat@hq.doe.gov

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Considerations on Legal Issues for Carbon Dioxide Capture and Storage Projects
Report from the Legal, Regulatory and Financial Issues Taskforce

Background

The inaugural meeting of the CSLF in June 2003 established a Legal, Regulatory and Financial Issues Taskforce. The Taskforce was asked to consider legal issues and subsequently presented a brief paper to the Policy Group in Rome in January 2004.

The Policy Group agreed to hold a workshop to discuss the legal aspects of carbon dioxide capture and storage and develop a forward work plan. The workshop was to be jointly held with the IEA, given the IEA's substantial work to date on such issues. The attached report is a result of the discussions held at the workshop in Paris in July 2004.

Action Requested

The Policy Group is requested to approve the report from the Legal, Regulatory and Financial Issues Taskforce and agree to a future work program for the CSLF policy group on legal issues from the CSLF. Upon approval by the Policy Group, it is requested that the report be presented to the Ministers to approve the recommended future work program on Priority Legal Issues.

**CONSIDERATIONS ON LEGAL ISSUES
FOR CARBON DIOXIDE CAPTURE AND STORAGE PROJECTS
IEA/CSLF Joint Workshop**

The long term storage of carbon dioxide has been addressed directly by few conventions, protocols or laws. The issue is generally considered by existing legal instruments that focus on the subjects of waste and dumping. Most of these instruments were developed before long term carbon dioxide storage had been considered. As a result, the legal interpretation of how to address carbon dioxide storage issues is often blurred or inconsistent. It is important that this problem be addressed to facilitate the introduction of capture and storage technologies.

On 12-13 July 2004, a joint workshop on legal aspects of storing carbon dioxide was held by the IEA and CSLF and aimed to better understand national and international legal frameworks applicable to carbon dioxide capture and storage; identify impediments to carbon dioxide capture and storage development and incentives required; and create a list of priorities and next steps. The workshop was attended by some 80 delegates, including most of the CSLF countries and a number of IEA member countries. This participation contributed to the workshop's success in identifying priority issues. All presentations from the combined IEA/ CSLF workshop are available on the IEA website: http://www.iea.org/Textbase/work/2004/storing_carbon/agenda.htm.

The main outcomes of the workshop included:

- Carbon dioxide capture and storage can contribute to climate change mitigation;
- The need for transparency and public acceptance is critical;
- There is a great deal of activities currently ongoing in carbon dioxide capture and storage involving various organisations and countries e.g. IEA GHG research and development programme; world bank; projects in the United States, the United Kingdom, Japan, Canada and Australia; work at BP and Chevron Texaco;
- The main issues relating to carbon dioxide capture and storage are ownership of carbon dioxide storage site, monitoring (by whom, who controls it), long-term liability, whether carbon dioxide is a waste and if so in which category, acceptance by public;
- Objectives for carbon dioxide capture and storage can be different for example:
 - Pollution / waste control
 - Bio-diversity / environmental protection
 - Stabilisation of carbon dioxide in the atmosphere
- Carbon dioxide capture and storage activities can be classed in different categories for example:
 - Scientific experiment
 - Enhanced oil recovery/ EMCBR
 - Storage
 - Mere disposal
- Carbon dioxide capture and storage regulatory issues are complex involving national and international jurisdictions:
 - Extensive regulations
 - National (Federal, State, Local)
 - International: UNFCCC, Kyoto, UNCLOS, London, OSPAR, European Union
 - Limited public awareness

LEGAL ISSUES COVERED TO DATE

The following sections raise questions that are relevant to the introduction of carbon dioxide capture and storage technologies and may require consideration from a legal perspective. The objective of this discussion is not to resolve the issues but to provide an indication of matters that may be encountered.

Is the carbon dioxide Stored or Disposed?

If the injected carbon dioxide is classified as being stored, it could be assumed that the entity with access rights to the storage site will take possession of the gas when the site is sold or the site lease expires. If the carbon dioxide is not recovered at the expiry of a lease, should it be assumed that it has been disposed of? If not, which entity owns the carbon dioxide ?

The issue of storage versus disposal is considered in more detail in a later discussion on a recent IEA Report.

Inconsistent Treatment of carbon dioxide Disposal Under Conventions / Protocols / Directives

The national implementation of the directives and conventions are often by national law which can lead to a divergence in the implementation of the directives. Carbon dioxide capture and storage activities were not envisaged when many of these directives and subsequent national laws were made. For example, European Union directives that could be relevant to carbon dioxide capture and disposal include:

- the framework directive on waste materials (75/442/EEG);
- the directive on the dumping of waste materials (1999/31/EG); and
- the framework directive on water (2000/60/EG).

A Dutch legal taskforce has concluded that:

- carbon dioxide is under the jurisdiction of the directive on waste materials;
- carbon dioxide is not a dangerous waste material;
- carbon dioxide deep underground is not under the jurisdiction of the directive on dumping of waste materials.¹

However other European Union countries could interpret the directives differently when implementing national legislation on carbon dioxide capture and storage. This highlights the need to discuss a consistent approach to capture and storage activities both within the European Union and more broadly.

¹ Lenstra, WJ and van Engelenburg, BCW (2002), *Legal and Policy Aspects: Impact on the development of carbon dioxide Storage* (2002) A paper presented at the IPCC workshop on CARBON DIOXIDE capture and storage.

Choice of Storage Site

How would a suitable storage or disposal site be defined and should a consistent approach be adopted internationally to address the issue of:

- Sites under international waters; and
- Sites that straddle either national boundaries or national boundaries and international waters?

Would the definition of a suitable site only refer to performance of the site (eg maximum leakage rate per annum²) or would it incorporate details about:

- Suitability of the region's formation and hydrodynamics;
- Likely migration pattern and speed of the carbon dioxide ;
- Potential impact on nearby coal, hydrocarbon, water and other resources; and
- Maximum safe storage capacity and maximum rate of injection.
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When determining site suitability should the site be independently assessed?

Established Storage Site Unsuitable

Who is liable following carbon dioxide leakage where the selected site does not meet the needs of the carbon dioxide injector (eg site storage capacity and rate of injection are insufficient)?

This question becomes complex where:

- A site is used by multiple injectors (possibly from different countries);
- Site is under international waters or straddles national borders; or
- Third party assumes responsibility for collecting and injecting the carbon dioxide from emitters.

Site Found to Be Unsuitable or Inadequate Long After Establishment

Improvements in science, better monitoring technology and enhanced knowledge about a specific storage site may prove that a site once considered suitable is subsequently found to be unsuitable or adequate only with substantial additional cost being incurred.

Losses could include:

- financial costs to compensate for releasing carbon dioxide (which could be substantial under emissions trading systems where emissions have been stored for decades); and
- the cost of establishing alternative storage arrangements.

Should the risk of this occurring be considered as being part of normal commercial risk? In what circumstances would the site assessor be liable for financial losses?

² However note that this approach may not be feasible because monitoring surface leaks over background carbon dioxide has not been demonstrated for large scale demonstrations (Wilson, EJ and Keith DW *Geologic Carbon Storage: Understanding the Rules of the Underground*. A paper presented at the 6th International Conference on Greenhouse Gas Control Technologies 2002).

Monitoring and Verification for Operational Sites

What arrangements should be made for the long term monitoring of a site where carbon dioxide has been injected? While the entity responsible for injecting carbon dioxide is still responsible for the lease site, it could be assumed that it would be responsible for meeting the costs of monitoring.

However should the proponent injecting carbon dioxide be responsible for conducting monitoring operations given the potential conflict of interest? It would not be in the interests of the injector to declare that there has been leakage particularly if there were financial penalties involved. Independent monitoring arrangements could address this issue.

Consideration could be given to:

- International conventions for monitoring carbon dioxide movement underground; and
- International accreditation of monitoring organisations (particularly where national or International borders are near disposal sites).

Long Term Monitoring and Verification

When carbon dioxide injection ceases, who is responsible for ongoing monitoring? Should the organisation injecting carbon dioxide be responsible in perpetuity or for a specified period after injection ceases? In the latter case who would own the carbon dioxide and have the responsibility for monitoring in perpetuity after the specified period?

It is unclear where responsibility would lie if the injection occurred in international waters or where the injection site straddles national boundaries.

Long Term Maintenance Costs

Responsibility for maintenance costs associated with carbon dioxide storage needs to be determined to ensure carbon dioxide containment in the long term. Well casings in the storage region may need to be checked and recapped at regular intervals due to the corrosive nature of the carbon dioxide in solution. The liability may be considerable if there are a significant number of wells in the storage region.

Who would be responsible for these costs after the carbon dioxide injection ceases? What arrangements would be needed to address sites straddling national boundaries or under international waters?

Long Term Liability

Who would be held liable under market based mechanisms for greenhouse emissions released from storage sites which ceased operation decades earlier?

Would emissions from long term carbon dioxide storage sites be counted against a country's greenhouse emission targets under existing protocols and conventions?

Trans-Border Liability

If the carbon dioxide leaked from a geological structure in another nation but the original injection point was not within that nation's borders, how would liability for any leakage to the ocean or atmosphere be addressed?

This situation could occur where carbon dioxide migrates faster than expected or in a different direction than expected and proceeds under a border. It is possible that the original injection point was under international waters and the carbon dioxide moved inside nation's borders.

Liability for Loss of Resource

Carbon dioxide may move underground into areas containing resources such as hydrocarbons or water resources preventing their utilisation. How would liability for loss of resources be addressed?

Examples of scenarios include:

- Resources were known to exist but the carbon dioxide was not expected to move so quickly or in the direction of the resources;
- Resources were not previously known to exist and the carbon dioxide has moved beyond the anticipated containment area; and
- Resources were not originally economically viable and the carbon dioxide has moved beyond the anticipated containment area into the resource region.

LEGAL LITERATURE REVIEW SUMMARIES

(1) 'Legal Aspects of Underground Carbon Dioxide Storage', Fridtjof Nansen Institute, 2001

This paper was commissioned by Statoil as part of the CO₂ Capture Project, in response to accusations that injecting carbon dioxide as part of the Sleipner West project can be considered to be dumping of 'industrial waste'. The paper summarises developments under the London Convention, the OSPAR Convention and the North Sea Conference. The paper found that disposal or storage of wastes or other matter from offshore oil and gas activities is not covered by the London Convention, so injection of carbon dioxide from offshore installations to sub-seabed formations or into the sea is not covered.

Some of the main findings of the report are as follows:

- The London Convention is the most relevant forum for a regulatory framework for carbon dioxide storage;
- It does not currently explicitly cover carbon dioxide storage but is likely to address this issue in the future;
- There are differing views between nations as to how 'urgent' the issue is, and this will impact on the timing of when the issue will be addressed;
- There are also differing views between nations about the legal status of carbon dioxide storage in relation to dumping and classifications of 'industrial waste';
- The issue of carbon dioxide storage has so far mainly been addressed in relation to ocean rather than underground storage.

(2) Legal and policy aspects: impact on the development of carbon dioxide storage, WJ Lenstra and BCW van Engelenburg, Ministry of Environment, The Netherlands, 2002

This paper was prepared for the Intergovernmental Panel on Climate Change (IPCC) Working Group III: Mitigation of Climate Change, Workshop on Carbon Dioxide Capture and Storage held in Canada in November 2002. The paper discusses legislation in three areas: international law, European directives and national legislation. On international law it finds that the main issue is whether carbon dioxide storage falls under the jurisdiction of the treaties or conventions – the London Convention, the United Nations Convention on the Law of the Sea (UNCLOS), the Paris Convention, OSPAR and the North Sea Conference.

Clarification is sought on the following questions:

- Should carbon dioxide be classified as an industrial waste?
- Which body has or should have jurisdiction?
- What are the practical consequences of that possible jurisdiction?
- Where does the ocean/ sea end and the deep underground begin?
- Whose is the carbon dioxide once it is stored?

The paper concludes that nothing is clear yet, and there is no consensus about the answers to these questions, but that the treaties can become a show-stopper for carbon dioxide capture and storage (carbon dioxide capture and storage). On European Commission directives, the paper finds that there are a few directives which can influence national legislation: waste materials, dumping of waste materials, and water.

Work by the Dutch Government found that carbon dioxide falls under jurisdiction of the directive of waste materials, but it is not a dangerous waste material, and injection of carbon dioxide in the deep underground does not fall under the jurisdiction of the directive on dumping of waste materials. The discussion about interpretation of the directives will be carried out by national governments, which could mean there are different outcomes for each European Union country.

On national legislation, the paper made the following points:

- Carbon dioxide capture and storage is not yet included in national legislation; if carbon dioxide capture and storage is related to an existing practice, e.g. for, the legal position is more clear;
- An environmental impact assessment should be carried out for a carbon dioxide capture and storage project;
- Carbon dioxide capture and storage is a new technology with its own risks, need to prove that no 'irreparable harm' will result;
- A carbon dioxide capture and storage project will have to deal with a large variety of 'official' bodies, including federal and local governments and interest groups;
- A carbon dioxide capture and storage project mostly has two parts: above ground, which is very likely covered by present legislation, and below ground.

Managing the risks is the most important part of a carbon dioxide capture and storage project. This requires a reliable process for monitoring and verification, which will in turn assist in 'earning' a licence to operate.

(3) Review of the Feasibility of Carbon Dioxide Capture and Storage in the UK, UK Department of Trade and Industry, 2003

On international regulation, the paper finds that enhanced oil recovery is permitted, and sequestration from certain pipelines originating from land appear not to be prohibited under the London and OSPAR Conventions. However, these treaties preclude the use of existing offshore installations for sequestration without enhanced oil recovery. Further, the paper concludes that the process of amendment of these treaties would probably take several years and would take international agreement.

Both the London and OSPAR Conventions place the obligation on national governments to establish strict regimes for authorisation and regulation of activities which affect marine ecosystems.

The paper identifies areas of work which are needed, including on legal and regulatory issues, which is defined to be the clarification or amendment of the London and OSPAR Conventions, particularly gaining the agreement of other Parties to the Conventions, i.e. national governments.

The paper finds that it is essential that authorisation and regulatory frameworks are established in collaboration with other Contracting Parties, and recommends that the United Kingdom take the lead to establish international collaboration on this.

The paper also recommends that work should address the regulatory requirements, particularly for transport and storage, and that storage regulations should be developed in collaboration with other countries around the North Sea rim.

(4) Intergovernmental Panel on Climate Change Special Report on Carbon Dioxide Capture and Storage

The Intergovernmental Panel On Climate Change is preparing a report on geological and oceanic carbon separation, capture and storage, which should be completed in the first half of 2005. The report includes sections on the legal aspects of geological storage, transport and ocean storage, including national legislation and international treaties and conventions. It is also looking at greenhouse gas emission inventories and accounting issues.

The Special Report is due in early to mid 2005. The Technical Working Group is currently looking at the work of the Intergovernmental Panel On Climate Change. Australia is checking with the Intergovernmental Panel On Climate Change whether there may be an opportunity for individual government's to review a late draft of the report at the end of 2004.

(5) IEA Greenhouse Gas R&D Programme, Review of International Conventions Having Implications for the Storage of carbon dioxide in the Ocean and Beneath the Seabed, 2003

The most significant recent work on legal issues appears to be the IEA Greenhouse Gas Research and Development Programme's *Review of International Conventions Having Implications for the Storage of carbon dioxide in the Ocean and Beneath the Seabed* (Report PH4/16). The report describes and analyses conventions and agreements which may have implications for carbon dioxide storage including seven global conventions, eleven European Union directives and 16 regional conventions and agreements.

Overview of IEA Report PH4/16

Significant points from the report are outlined below:

Is the seabed included in conventions?

- Most regional conventions do not sufficiently define their area of jurisdiction to determine whether the seabed and sub seabed are included. This deficiency makes it difficult to determine the convention's relevance to geological disposal. The Vienna Convention on the Law of Treaties would need to be considered when determining whether the seabed is included.

Can carbon dioxide be dumped or stored in the seabed and in the ocean?

- One key convention constraining ocean or seabed storage is the London Convention 1972 which is global in scope;
- It applies to sea dumping from ships, aircraft and offshore installations and prohibits dumping except for specific categories of which the closest that fits carbon dioxide is inert, organic geological material (though carbon dioxide is neither inert nor geological);
- The definition of dumping appears to exclude wastes derived from the normal operation of offshore platforms which might include stripping carbon dioxide from offshore natural gas, if this is seen to be part of normal operations;
- The phrase dumping does not include the placement of matter for a purpose other than the mere disposal thereof, provided that such placement is not contrary to the aims of the Convention could imply that carbon dioxide storage in the seabed might be permitted. However it would be difficult to prove that the intent is to recover it at some stage in the future. It would be extremely difficult to argue that carbon dioxide placed in deep ocean water is being stored for future recovery. (Ocean sequestration won't be dealt with in this paper);

- The above phrase would appear not to prohibit enhanced oil recovery from carbon dioxide injection. However injection would not be allowed if the intent were to inject carbon dioxide for primarily storage/dumping purposes;
- If the 1996 Protocol to the London Convention comes into effect, there will no longer be a general ban on dumping of industrial waste (which may be more advantageous for carbon dioxide storage than under the London Convention 1972). The categories of material allowed to be dumped are basically unchanged;
- The 1996 Protocol also defines dumping as any storage of wastes or other matter in the seabed and subsoil thereof from vessels, aircraft, platforms or other manmade structures at sea which is more restrictive on carbon dioxide sequestration than the London Convention 1972;
- “Storage” of carbon dioxide transported by pipeline from the mainland to the seabed or water is not prohibited by this or other conventions.

IEA PH4/16 Recommendations

The report’s recommendations suggest a strategy for proponents of carbon dioxide storage to gain acceptance for storage under international conventions. The strategy includes:

- gaining acceptance of storage among Contracting Parties to the London Convention 1972 and the 1996 Protocol to the Convention;
- demonstrating the net benefit to society of carbon dioxide storage;
- increasing participation at relevant convention forums and in particular those conventions which are more restrictive (e.g. the London and OSPAR Conventions); and
- determining the level of purity of carbon dioxide to be stored and what impact trace contaminants would have under various conventions.

<u>PRIORITY LEGAL ISSUES</u> <i>FUTURE WORK PROGRAM</i>		
PRIORITY ISSUES	LEAD	TIMEFRAME
<p>Work closely with industry on more enhanced oil recovery and carbon dioxide capture and storage projects to:</p> <ul style="list-style-type: none"> • verify results and effects • establish monitoring benchmarks • inform public of past enhanced oil recovery results and new carbon capture and storage project 	IEA and CSLF members	2 years
Seek to improve national regulations for on shore carbon dioxide capture and storage and enhanced oil recovery projects	IEA and CSLF members	As appropriate
Contracting CSLF parties to take more proactive stance on reconciling objectives in international conventions	IEA and CSLF members	3 years
Encourage a level playing field for carbon dioxide capture and storage climate mitigation technology	IEA and CSLF members	24 months