

**Report to the Global CCS Institute on Legal  
and Regulatory Developments related to  
Carbon Capture and Storage between  
November 2010 – June 2011**

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## Glossary

2011 Measures Act	The <i>Offshore Petroleum and Greenhouse Gas Storage Regulatory Levies Legislation Amendment (2011 Measures No. 1) Act 2011</i> of the Australian Government
4 Kingdoms CCS Initiative	A joint CCS initiative between the governments of Saudi Arabia, Norway, the Netherlands and the UK.
AOSIS	Alliance of Small Island States
ADB	Asian Development Bank
Basel Convention	<i>Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal</i> , opened for signature 22 March 1989, 1973 UNTS 57 (entered into force 5 May 1992)
CCR	Carbon capture readiness
CCS	Carbon capture and storage
CCS Directive	Council Directive 2009/31/EC of 23 April 2009 on the geological storage of CO <sub>2</sub>
CDM	Clean Development Mechanism (established under Article 12 of the Kyoto Protocol)
CEPA	The <i>Canadian Environmental Protection Act 1999</i>
CEPAC	The Brazilian Centre of Excellence in Research on Carbon Storage
COP 16/MOP 6	The 16 <sup>th</sup> session of the Conference of the Parties (COP 16) to the United Nations Framework Convention on Climate Change (UNFCCC) and the 6 <sup>th</sup> meeting of the Parties (MOP 6) to the Kyoto Protocol held in Cancun, Mexico in December 2010.
COP 17/MOP 7	The 17 <sup>th</sup> session of the Conference of the Parties (COP 17) to the United Nations Framework Convention on Climate Change (UNFCCC) and the 7 <sup>th</sup> meeting of the Parties (MOP 7) to the Kyoto Protocol to be held in Durban, South Africa in December 2011.
CO <sub>2</sub>	Carbon dioxide
CSIRO	Commonwealth Scientific and Research Organisation of Australia
CSTF	Carbon Storage Task Force
DoE	South African Department of Energy

DMR	South African Department of Mineral Resources
DWEA	South African Department of Water and Environmental Affairs
EC	European Commission
EIB	European Investment Bank
EOR	Enhanced oil recovery
EPA	The Environment Protection Agency of the United States of America
ETS	Emissions Trading Scheme
EU	European Union
EUA	EU Allowance
GEO No.64/2011	Romanian Governmental Emergency Ordinance No. 64 of 29 June 2011 on the geological storage of CO <sub>2</sub>
Global CCS Institute	Global Carbon Capture and Storage Institute
GHG	Greenhouse gas (and in the context of "carbon capture and storage" means the capture and CO <sub>2</sub> storage of one gas, CO <sub>2</sub> )
Green Growth Act	The <i>Basic Act on Green Growth</i> of the Republic of Korea
Greenhouse Injection and Storage Regulations	The <i>Offshore Petroleum and Greenhouse Gas Storage (Management of Greenhouse Gas Injection and Storage) Regulations 2011</i> of the Australian Government.
GS	Geological sequestration
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
IPPC	Integrated pollution prevention and control
JBIC	Japan Bank of International Co-operation
KRW	South Korean Wan
LC	London Convention
LNG	Liquefied Natural Gas
LP	London Protocol
London Convention	<i>Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter</i> , opened for signature 29 December 1972, 1046 UNTS 138 (entered into force 30 August 1975) and 1996 Protocol Thereto

London Protocol	1996 Protocol to the London Convention
MEML	The <i>Marine Environment Management Law</i> of the Republic of Korea.
Miscellaneous Measures Act	The <i>Offshore Petroleum and Greenhouse Gas Storage Legislation Amendment (Miscellaneous Measures) Act 2010</i> of the Australian Government.
MPCCC	Multi-Party Climate Change Committee of the Australian Government
MRV	Monitoring, reporting and verification
MW	Megawatt
NAMR	Romanian National Agency for Mineral Resources
NEPA	Romanian National Environmental Protection Agency
NER	EU ETS new entrants' reserve
NCCS	National Carbon Capture and Storage Council of Australia
NETS	Norwegian Emissions Trading Scheme
NLEC	National Low Emissions Coal Council of Australia
NOPSA	National Offshore Petroleum Safety Authority
OECD	Organisation for Economic Cooperation and Development
OHS	Occupational health and safety
OPGGS Act	The <i>Offshore Petroleum and Greenhouse Gas Storage Act 2006</i> of the Australian Government
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
R&D	Research and development
REA	The <i>Renewable Energy Act 2011</i> of the Malaysian Government.
Reporting Rule	<i>Mandatory Reporting of Greenhouse Gases from Carbon Dioxide Injection and Geologic Sequestration Rule</i> of the EPA of the Government of the United States of America
Regulatory Levies Act	The <i>Offshore Petroleum and Greenhouse Gas Storage (Regulatory Levies) Act 2003</i> of the Australian Government
Regulatory Levies Regulations	The <i>Offshore Petroleum and Greenhouse Gas Storage (Regulatory Levies) Amendment Regulations 2011</i> of the Australian Government
Resource Management	The <i>Offshore Petroleum and Greenhouse Gas Storage</i>

and Administration Regulations	<i>(Resource Management and Administration) Regulations 2011</i> of the Australian Government
Royalty Bill	The <i>Offshore Petroleum (Royalty) Amendment Bill 2011</i> of the Australian Government
SACCCS	South African Centre for Carbon Capture and Storage
SAfECCS	A feasibility study entitled <i>South Africa-Europe Cooperation on Carbon Capture and Storage Project</i> funded by EuropeAid
Safety Levies Act	The <i>Offshore Petroleum and Greenhouse Gas Storage (Safety Levies) Act 2003</i> of the Australian Government
SANERI	South African National Energy Research Institute
SBSTA	Subsidiary Body on Scientific and Technological Advice
Saskatchewan MOU	A Memorandum of Understanding between the Government of Saskatchewan and the Japan Coal Energy Center entered into in January 2011
Third Foundation Report	The Third Foundation Report on the status of policy and legislation supporting carbon capture and storage development globally prepared by Baker & McKenzie in 2009 for the Global CCS Institute.
UIC	Underground Injection Control
UIC Rule	Federal Requirements Under the Underground Injection Control (UIC) Program for Carbon Dioxide Geologic Sequestration (GS) Wells set out by the Government of the United States of America
UK	United Kingdom
UNFCCC	<i>United Nations Framework Convention on Climate Change</i> , opened for signature 9 May 1992, 1771 UNTS 107 (entered into force 21 March 1994)
UNIDO	United Nations Industrial Development Organisation
US	United States of America

## 1. Introduction

In 2009, Baker & McKenzie prepared the Third Foundation Report on the status of policy and legislation supporting carbon capture and storage (*CCS*) development globally (*Third Foundation Report*) as part of the Strategic Analysis of the Global Status of Carbon Capture and Storage (*Strategic Analysis*) project commissioned by the Global CCS Institute. The Third Foundation Report assessed the status of development of regulatory and policy frameworks in 18 supra-national and national jurisdictions.

Since the publication of the Strategic Analysis and its foundation reports in September 2009, there have been a number of developments related to CCS law and policy. The Global CCS Institute has engaged Baker & McKenzie to undertake a review of developments related to CCS law and policy in 51 supra-national, national and sub-national jurisdictions during the period November 2010 through June 2011 and prepare an Update Report to the Third Foundation Report. This work compliments legal and regulatory reviews undertaken by the International Energy Agency (*IEA*) in October 2010 and May 2011.

This Update Report addresses the following:

- international CCS legal and regulatory developments (including common policies and treaties) – including an update on the status of CCS related decisions/outcomes; key CCS negotiations currently in progress; substantive CCS matters to be considered but potentially not imminently resolvable; and
- national and sub-national governments' CCS legal and regulatory developments – including an update on the status of CCS legal and regulatory decisions/outcomes; signalled intent of future CCS legal and regulatory decisions; and status of CCS legal and regulatory implementation.

The jurisdictions covered by the Update Report are:

- Australia (including Federal and State based CCS legal and regulatory developments);
- Brazil;
- Canada (including Federal and State based CCS legal and regulatory developments);
- China;
- European Union (*EU*) (including all Member States);
- India;
- Indonesia;
- Japan;
- Malaysia;
- Mexico;
- Norway
- Republic of Korea (South Korea);

- Saudi Arabia;
- South Africa; and
- United States of America (*US*) (including Federal and State based CCS legal and regulatory developments).

More in-depth case studies have been undertaken on the CCS legal and regulatory landscapes in Australia, South Africa and Romania.

In preparing the Update Report, we have reviewed published laws, regulations, bills and policy material in each jurisdiction related to CCS. We have also considered developments in related areas such as climate change law and policy, energy policy, support for CCS technology and the wider CCS industry through financial and other incentives. Our desktop review has been supplemented with interviews with a number of responsible agencies and other stakeholders in Australia, Romania and South Africa.

Country/jurisdiction overview tables have been prepared to succinctly capture information regarding the status of CCS development in each jurisdiction, noting key dates and expected timeframes for the implementation of law and policy. We have also identified responsible agencies for decision making and implementation of regulatory frameworks in order to facilitate a comparison between the different approaches to regulation being adopted by different jurisdictions. These tables are in the separate document that accompanies this report.

## 2. Overview of Legal and Regulatory Developments at the National and Sub-national level

### 2.1 Key findings from the Third Foundation Report

The Third Foundation Report provided an empirical analysis of existing CCS policies and laws in the 18 jurisdictions surveyed. It provided policymakers with a digest of approaches taken to CCS regulation by identifying approaches which could be replicated or adapted in jurisdictions wishing to promote and facilitate CCS projects. The report also identified gaps in laws and policies and other barriers which may impede the development and deployment of commercial scale CCS projects in the near term.

The main findings of the Third Foundation Report were that:

- Developing economies have not yet generally enacted specific CCS laws or taken steps to amend existing legislation to accommodate the CCS project cycle. However, opportunities to progress such projects could arise if CCS was included in a revised version of the Clean Development Mechanism (*CDM*).
- In developed economies, existing legal frameworks designed to deal with waste, transport, property rights and pollution liability did not readily accommodate the whole CCS project cycle. This hampers investment not only in CCS projects but also in the technologies required to achieve scalable projects.
- With the exception of the EU, in most jurisdictions surveyed, existing legislative frameworks relating to carbon capture were fragmentary and incomplete. This was the case even in the Australian jurisdictions with dedicated carbon storage legislative frameworks.
- It was likely that in coming years jurisdictions would follow the EU's lead and implement regulations in order to ensure that carbon capture readiness (*CCR*) capability was integrated into new power plant construction.
- Few jurisdictions had dealt in any detail with the question of whether captured CO<sub>2</sub> should be treated as a waste or pollution. The dedicated storage regulations which have been implemented, notably in Australian jurisdictions and the EU, contemplate that captured CO<sub>2</sub> be dealt with as a waste product. However, many other jurisdictions have not addressed this issue yet. This is also particularly important in the context of policies and legislation governing transport of CO<sub>2</sub>.
- Only a few jurisdictions had in place dedicated CCS regulatory regimes (or amendments to existing regimes) to manage the unique legal challenges posed by CCS. These jurisdictions include some Australian and US State jurisdictions, together with the EU and some EU Member States. This poses significant barriers for investment in CCS projects in other jurisdictions. Potential investors and project proponents will be reluctant to support CCS projects where potential long-term risks are present due to insufficient or inflexible regulatory frameworks.

- Some jurisdictions, notably the US and the EU were exploring incentive schemes to provide bonus allowances and other incentives to assist with the funding of CCS facilities. A number of other jurisdictions, including Australia, China, Japan and some US States, had introduced, or were considering introducing, complementary policies which have the effect of imposing a cost on carbon, or which provide support in the form of subsidies or enabling frameworks. The complementary laws and policies include emissions trading schemes, carbon taxes, mandatory renewable energy targets, emissions reporting, incentives for energy efficiency and feed in tariffs.
- Some other jurisdictions, including Norway and Japan, had regulated existing CCS projects through partially integrated CCS schemes or by exception to existing regulations. This approach was considered suitable to facilitate demonstration-scale projects but not for commercial-scale projects due to potential long-term liabilities.

That report also identified a number of barriers to achieving the scaling up of large scale commercial CCS projects. Those barriers included:

- Characterising CO<sub>2</sub> as a "waste" or a "pollutant" may be required to help facilitate and regulate capture and storage, especially where specific CCS laws have not been enacted.
- Many existing pipeline laws need to be amended to adequately (and expeditiously) accommodate CO<sub>2</sub> transport. Similarly, transport of CO<sub>2</sub> by road, rail and ship is inadequately regulated.
- Overly bureaucratic or otherwise inadequate regulations covering access and exploration rights will delay CCS projects.
- Multiple operators' access rules are generally lacking.
- Multiple regulatory regimes are often commonplace.
- Identifying and assigning legal liability for leakage to a suitable party or parties is essential.
- The "storage" dimension of CCS will be the hardest to secure in the short term and it is critical to significant near term CCS investment.
- Insurance products need to be developed to accommodate long term environmental liability where governments are not prepared to assume liability.
- CCS is not yet an accepted carbon credit generating mechanism under either of the Kyoto Protocol's Flexible Mechanisms. There are good reasons why it should be, especially so as to promote investment in developing countries.
- The London Protocol and the Basel Convention may both need to be amended so as to accommodate key elements of CCS projects.

When taking stock of the progress of legal and regulatory developments since 2009 it is fair to say that those countries that were identified in the Third Foundation Report as being leaders in this area continue to play that role. These countries have actively sought to enhance the frameworks that had been, or were being, developed and to respond to some of the barriers identified. A number of other jurisdictions, particularly at the state level in countries such as Australia, Canada and the US, have also prepared integrated CCS laws. Similarly, many EU Member States are engaged in the process

of transposing the EU CCS Directive into their national law. Whilst many developing countries surveyed remain in the early stages of considering CCS and have not yet passed facilitative laws, it is clear that steps are being taken to explore potential legal frameworks and to pursue demonstration projects – China, South Korea and South Africa are notable in this respect. Progress in the period November 2010 through June 2011 is discussed in detail below.

Steps have been taken both at an international level and a national level to address some of the barriers identified above. Amendments to both the London Protocol and the OSPAR Convention will, once they have entered into force, facilitate trans-boundary projects. The recent decision to consider the inclusion of CCS in the CDM is also a positive step towards enabling projects in developing countries. This notwithstanding, a number of the barriers identified remain.

## 2.2 The development continuum of CCS policy, laws and regulations

Policy and law reform is often an iterative or evolutionary process, with initial research undertaken, policy papers prepared for consideration and stakeholder consultation, primary legislation and ancillary amendments drafted and passed, supporting regulations drafted and then, once the legal framework is in force and has been tested, further amendments made to improve its performance. The development of CCS policy and law is no different.

When read in conjunction with the Third Foundation Report, this Update Report provides a snapshot of where different jurisdictions are along this policy - law continuum. In summary, countries and States are at the following stages:

Research / Mapping	Policy Development	Drafting Legislation	Primary Legislation / Amending existing law	Supporting Regulations
Brazil	China	Australia (WA - general)	Australia (Vic)	Australia (Federal)
Indonesia	India	Australia (NSW)	Australia (Qld)	Canada (Alberta)
Malaysia	Republic of Korea	EU Member States	Australia (WA - Gorgon)	Norway
Mexico	South Africa		Australia (SA)	
			Canada (Saskatchewan)	
			Japan	
			USA (Illinois)	
			USA (Texas)	

The staged approach to policy development is taking place in most of the jurisdictions surveyed. In South Africa, for example, a number of government departments are taking preparatory steps towards CCS policy formulation. This is likely to lead to the conceptualisation of an appropriate, country-specific, legal regime. Similarly, the Republic of Korea has prepared a comprehensive national CCS implementation plan and is now working towards the development of a CCS legal framework.

The EU is slightly different insofar as there is an obligation on all member States to transpose the CCS Directive into national law. Therefore, a number of the early review processes have not taken place but rather political decisions have been made regarding whether to allow or ban geological storage of CO<sub>2</sub>.

The CCS Directive obliges to Member States to bring into force the laws, regulations and administrative provisions necessary to comply with the Directive by 25 June 2011. Transposition into national law involves a staged process and, although twelve Member States have notified the European Commission (*EC*) of transposition, many of those States have only transposed certain elements of the Directive and many others have not met the deadline. Discussions on national transposition measures are expected to continue and intensify in the coming months.

### 2.3 Choosing between an integrated or piecemeal approach to regulation

In the Third Foundation Report, we noted that there is no one template or single "best practice" for end-to-end CCS regulation with even the most robust existing frameworks having gaps. Nevertheless, we considered integrating carbon capture permitting regulation with transport and storage legislation would provide CCS project proponents a greater degree of certainty, in particular, reducing the administrative burden imposed by permitting requirements at various stages of the CCS project cycle. Tailored, end-to-end policies and laws, harmonised across national boundaries, offer the best chance to rapidly and efficiently promote large scale investment in CCS. We recommended that governments examine these dedicated regimes to promote international harmonisation of CCS regulation and to minimise regulatory risks for potential market participants.

In the review period for this Update Report, the jurisdictions that have pursued CCS laws have adopted a range of different approaches. Alberta has decided to develop an integrated framework for CCS permitting through the *Alberta Carbon Capture and Storage Statutes Amendment Act 2010* and the Regulatory Framework Assessment process. In contrast, Saskatchewan has updated a number of existing laws, such as the *Pipelines Act*, *Crown Minerals Act* and *Oil and Gas Conservation Act*, to facilitate CCS as part of the enhanced oil recovery (*EOR*) process. The US State of Illinois has adopted project specific legislation for the FutureGen project in the form of the *Clean Coal FutureGen for Illinois Act 2011*. In Australia, although still in the process of development, the States of WA and NSW are preparing stand-alone legislation for CCS, however, that legislation will draw heavily from existing regimes that apply to petroleum exploration and exploitation and also from the CCS laws developed by the Australian government.

The pressure to transpose the CCS Directive in the EU by the 25 June deadline has resulted in many Member States combining the drafting and passing of intended integrated laws with the amendment of existing laws and regulations to include the CCS activities (e.g. those environmental regulations with a EU background and non-industry base such as the integrated pollution control, the environmental impact assessment and the environmental liability). The laws and bills that address CCS in an integrated manner also refer to existing environmental regulations and require further developments to complete the CCS regulatory framework. Smaller Member States have tended to implement stand alone, storage specific, legislation with the intention of later amending existing pipeline, transport and environmental legislation to regulate capture, transport and injection activities.

The IEA released its CCS Model Regulatory Framework (*MRF*) in November 2010. The MRF identifies 29 key regulatory issues associated with CCS that should be considered when developing national or state/provincial CCS laws. Those issues are set out in the following table.

**Table 1 Key issues relating to CCs regulatory frameworks**

Board regulatory issues	1	Classifying CO <sub>2</sub>
	2	Property rights
	3	Competition with other users and preferential rights issue
	4	Transboundary movement of CO <sub>2</sub>
	5	International laws for the protection of the marine environment
	6	Providing incentives for CCS as part of climate change mitigation strategies
Existing regulatory issues applied to CCS	7	Protecting human health
	8	Composition of the CO <sub>2</sub> stream
	9	The role of environmental impact assessment
	10	Third-party access to storage site and transportation infrastructure
	11	Engaging the public in decision making
CCS-specific regulatory issues	12	CO <sub>2</sub> capture
	13	CO <sub>2</sub> transportation
	14	Scope of framework and prohibitions
	15	Definitions and terminology applicable to CO <sub>2</sub> storage regulations
	16	Authorisation of storage site exploration activities
	17	Regulating site selection and characterisation activities
	18	Authorisation of storage actives
	19	Project inspections

	20	Monitoring, reporting and verification requirements
	21	Corrective measures and remediation measures
	22	Liability during the project period
	23	Authorisation for storage site closure
	24	Liability during the post-closure period
	25	Financial contributions to post-closure stewardship
Emerging CCS regulatory issues	26	Sharing knowledge and experience through the demonstration phase
	27	CCS ready
	28	Using CCS for biomass-based sources
	29	Understanding enhanced hydrocarbon recovery with CCS

Whilst the issues provide a useful checklist for regulators involved in designing policy and legal frameworks, those jurisdictions that have enacted legislation during the review period for the Update Report have only selectively addressed these issues. For example many Australian States have legislation addressing site exploration and CO<sub>2</sub> storage, however few have specifically required CCR for new power stations through legislation (although some States are imposing CCR as a condition of development).

Similarly, in the US, the *Clean Coal FutureGen for Illinois Act* provides a comprehensive regime to address liability for stored CO<sub>2</sub>. However, other aspects of the full CCS project cycle are not included in that framework. The early focus on storage reinforces the importance of this aspect of the CCS project cycle.

We also note that the issues identified in the MRF are being addressed at different stages of the development of legal and regulatory frameworks, rather than in a comprehensive manner from the outset. The Australian Government has, for example, only recently passed regulations that address occupational health and safety (*OHS*) impacts of CCS. Similarly, some of the Australian States are only now in the process of considering third party access and competing tenure issues. In many jurisdictions, detailed regulations will be required for the monitoring, verification and reporting on stored CO<sub>2</sub> and, ordinarily, are only developed following the adoption of primary legislation. This is clearly the case in France, with draft regulations under preparation, and Spain, where its CCS law sets forth principles for the regulation of CCS activities but expressly demands the passing of a further, more detailed regulatory instrument.

## 2.4 Responsible agencies driving the development of policy and law

The jurisdictions surveyed for this Update Report have appointed a number of different types of agencies to drive the development of CCS policies and laws. Those agencies range from environment (e.g. the US EPA, EU and many EU Member States, Japan), to energy (e.g. Alberta, Saskatchewan, Malaysia, Mexico), to science and technology

(China), to mining and petroleum (Australian States, Brazil, Indonesia), to coal (India) to a combination of all of these (South Africa).

In many countries, CCS is viewed as having many similarities to oil and gas exploration and production, and in some instances, is intimately linked to EOR. This has resulted in legislative regimes for on-shore and off-shore petroleum being either amended to include CO<sub>2</sub> as a covered resource, or new regimes being developed that largely mirror the existing regimes – making provision for exploration permits, the release of acreages, royalty payments etc. Legislation at the Australian Federal level and for most of the Australian States follows this approach. The Canadian province of Alberta takes a similar approach to the exploration and exploitation of storage reservoirs. Whilst this approach is sound, and addresses at an early stage the need to prove up suitable storage sites, it is often not integrated with wider environmental planning and permitting requirements for the other stages of the CCS project cycle. In this respect, there is likely to be a need for approvals from other regulatory agencies, such as environment and/or planning departments.

Very few of the non-EU jurisdictions surveyed as part of this Update Report have taken steps during the review period to integrate these wider environmental matters. We note that Saskatchewan, which is pursuing a piecemeal approach to regulation, is proposing to adopt a results based model under its *Environmental Management and Protection Act* which may affect the characterisation of captured CO<sub>2</sub>. Alberta, also, has recognised this issue and is working on its Regulatory Framework Assessment process which will seek to ensure environmental, regulatory, technical and measurement, monitoring and verification processes are comprehensively addressed.

Many of the Member States of the EU have adopted a different approach to determining the appropriate body to regulate CCS. In some States, the national industry and environment Ministries or agencies are taking the lead. In others, where mining is a prominent activity, the mining agency will play a lead role.

## 2.5 Relationship with other policy and legislative frameworks related to climate change

There have been a number of significant developments in climate change related policies and laws during the review period. Of note, the sixteenth conference of the Parties to the United Nations Framework Convention on Climate Change (*UNFCCC*) met in Cancun, Mexico, in December 2010. At this meeting, a number of developed and developing countries confirmed their pledges for mitigation commitments and actions in the medium term (2020). These pledges represent the first time that developing countries have expressed their willingness to undertake nationally appropriate mitigation actions, including in some instances (e.g. Brazil, China, India, South Africa) to reduce the emissions intensity of their economies below a business as usual baseline. Whilst many of the pledges will require funding and technology support from developed countries, the commitments provide a framework within which mitigation action related to CCS can be pursued. The decision to consider the inclusion of CCS in the CDM may, once modalities and procedures are finalised, further incentivise CCS in developing countries.

In addition to global mitigation goals, a number of countries are pursuing climate and energy related measures that will have the effect of putting a price on CO<sub>2</sub> emissions, thereby potentially making CCS more attractive financially. In the Third Foundation report we noted that employing a mechanism which puts a price on carbon will not of itself promote or facilitate CCS projects, however, it should be used as part of a suite of measures. Similarly, delays in increasing the real cost of carbon may, however, retard investment in CCS in the near term.

Australia recently announced the form and content of its carbon pricing mechanism, which will start as a fixed price emissions trading scheme and move to a flexible price after three years. The Republic of Korea has passed the *Low Carbon Green Growth Act* which sets out its GHG emission reduction target and the GHG Target Management System and it is also implementing an emissions trading scheme. South Africa has been exploring various means to price carbon, including the introduction of a carbon tax.

Although the anticipated carbon prices from these scheme is relatively low compared to the prices that will be required to drive the commercial deployment of CCS, they are important first steps in bringing the cost disparity between CCS and non-CCS power stations down.

## 2.6 The need for industry support

One of the most significant barriers to the large scale deployment of CCS projects identified in the Third Foundation Report and the wider Strategic Analysis was the lack of funding at the scale required to move projects from the pre-feasibility to feasibility and construction / demonstration phases. To date, between US\$33-41 billion has been earmarked to support CCS, with the majority of this funding from programmes in the US and EU.

The first call for proposals for NER 300 funding (covering the equivalent of 200 million EU Allowances (*EUAs*)) took place during the review period. Of the EU Member States that have submitted CCS project proposals to the European Investment Bank (*EIB*) (which is responsible for managing the process), the EC has not yet received notifications of transposition of the CCS Directive from Germany, Italy, Poland and the Netherlands. Countries such as Malta, have made decisions not to support project proposals that fall under the CCS category.

Texas has adopted regulations that provide for a reduction in the tax rate where EOR projects use CO<sub>2</sub> captured from anthropogenic sources. Australia has also passed Federal legislation that provides Research and Development (*R&D*) tax offsets which will be available to CCS technology developers (although these laws are not yet in force).

In the review period there has been increased activity by multilateral development banks and funds administered by those banks to progress CCS development. The World Bank and Asian Development Bank (*ADB*) have funded studies to consider application of CCS in a number of jurisdictions including South Africa and Indonesia.

## 2.7 Key findings from Update Report

Having regard to the development in regulatory frameworks during the review period, our key high level findings are that:

- some progress has been made under international treaties to facilitate CCS in the CDM and in the North Atlantic under OSPAR;
- there is no clearly consistent approach being taken by the bodies regulating CCS development across jurisdictions but an evolutionary pattern of law and policy is discernible (just as there is a development continuum for Large Scale Integrated Projects – i.e., "Identify, Evaluate, Define, Execute, Operate");
- different jurisdictions are taking different approaches to, and are using different regulatory agencies for, the regulatory frameworks selected. Some are amending existing laws and others are developing integrated legislation, although that integration is largely related to exploration, storage and long-term liability, rather than the full CCS project cycle, hence other agencies may need to pass associated laws (e.g. regarding CCR);
- a price on carbon (or, conversely, a value for it, as under the CDM) remains a key element to support project development and it is expected that private sector involvement may increase (e.g. tendering for acreages) following the introduction of a carbon price in Australia; and
- CCS development is clearly linked to funding initiatives, with more progress taking place in jurisdictions where grants are available.

One of the strong messages that has come through our research and analysis is that even with the best legal frameworks, CCS project development will not progress in the absence of a sound business case. Developing that business case involves drawing together a number of elements, including government support and funding for early stages of demonstration projects – in particular exploration for potential storage sites, having a clear price signal regarding the cost of CO<sub>2</sub>, providing incentives for longer-term business development and addressing regulatory uncertainty (including matters such as long-term liability and competing resource tenures).

Looking forward, it is significant that developing countries such as South Africa, Indonesia, Malaysia and the Republic of Korea are beginning to undertake CCS mapping and are considering policy and regulatory options. These developments compliment the making of pledges to undertake nationally appropriate mitigation actions under the Cancun Agreements and Copenhagen Accord. If progress can be made to adopt modalities and procedures for CCS in the CDM, this may provide an added incentive to accelerate the establishment of regulatory frameworks and the development and deployment of CCS projects in these countries.

In developed countries with reasonably mature regulatory frameworks for CCS, we expect that regulators will begin to consider ways to address some of the challenges emerging with early integrated CCS demonstration projects. Those challenges include:

- the need to manage competing tenures both between resources (e.g. petroleum, coal seam gas, coal and CO<sub>2</sub> storage) and also between project proponents seeking access to the same aquifer / pores space;

- how to avoid or manage the emergence of monopolies, in particular for pipeline transportation and storage;
- how to transition or convert EOR projects to purely storage projects;
- in countries considering export of CO<sub>2</sub> for offshore / international storage, we expect steps may be taken to overcome barriers under international law, such as the ratification of amendments to the London Protocol; and
- the need to manage public perception of CCS projects and ensure transparent procedures are in place during environmental impacts assessment and permitting processes.

### 3. Overview of Legal and Regulatory Developments at the international level

#### 3.1 United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol

##### CCS in the CDM

A recent decision at COP 16/MOP 6 in Cancun in December 2010 has provided significant encouragement to the future deployment of CCS technology under the CDM.

Following recommendations made by the Subsidiary Body on Scientific and Technological Advice (*SBSTA*), Parties to the Kyoto Protocol have agreed to a decision (Decision 7/CMP.6) that:

- accepts CCS projects under the CDM, provided that issues such as permanence, monitoring, reporting and verification (*MRV*), environmental impacts, project activity boundaries, international law, liability, the potential for perverse outcomes, safety and insurance are resolved in a satisfactory manner;
- requests SBSTA to develop modalities and procedures for the inclusion of CCS in the CDM which address a number of key methodological issues to ensure the safety and environmental integrity of CCS project activities;
- invites Parties and admitted observer organisations to submit their views on how issues under the modalities and procedures can be addressed;
- requests the UNFCCC secretariat to:
  - prepare a synthesis report based on the submissions;
  - organise a workshop with technical and legal experts between the 34th meeting of SBSTA in June in Bonn and the 35th meeting of SBSTA in December in Durban to consider the submissions; and
  - prepare draft modalities and procedures for consideration by the SBSTA at its 35th meeting, with a view to recommending a decision to the Parties at COP 17/MOP 7.

Whilst there are a number of issues that remain to be resolved, this decision represents a significant step towards the ability to deploy and help finance CCS technologies in developing countries.

##### Development of Modalities and Procedures

Under Decision 7/CMP.6, SBSTA must address a range of issues necessary for the inclusion of CCS projects in the CDM through the development of draft modalities and procedures.

The issues SBSTA must address include:

- selection criteria for CCS sites to ensure long term permanence and integrity of the site;

- monitoring plans that will apply during and beyond the crediting period;
- the suitability of the use of modelling to meet the stringency requirements of monitoring plans, including the 2006 Intergovernmental Panel on Climate Change (*IPCC*) Guidelines for National Greenhouse Gas Inventories;
- storage site boundaries, including all above ground and underground installations and potential sources for CO<sub>2</sub> release into the atmosphere;
- measurement and accounting of any release of CO<sub>2</sub> from the boundaries of the CCS storage site;
- the appropriateness of trans-boundary CCS projects;
- accounting for project emissions associated with CCS in geological formations as project or leakage emissions and including these in monitoring plans along with an ex ante estimation of the emissions;
- risk and safety assessment methodologies that address the assessment of risk and proposal of mitigation actions related to emissions from injection points, above ground and underground installations, seepage, lateral flows, migrating plumes, catastrophic release of stored CO<sub>2</sub> and impacts on human health, ecosystems and the climate;
- comprehensive socio-environmental impacts assessment to be undertaken by independent entities prior to the deployment of CCS projects;
- risk and safety assessment considerations when assessing technical and environmental viability of CCS projects;
- defining short, medium and long term liability for potential physical leakage of stored CO<sub>2</sub>, geological instability and any other potential damage to the environment, property or public health attributable to the CCS project for the crediting period and beyond;
- a means of redress for stakeholders affected by the release of stored CO<sub>2</sub>, allocation liability where reservoirs are shared, possible transfer of liability at the end of the crediting period and state liability; and
- provision for restoration of damaged ecosystems and full compensation for affected communities in the event of a release of CO<sub>2</sub> from the CCS project.

Parties were invited to submit their views on matters related to the use of CCS in the CDM. Submissions were received from nine Parties (Australia, Grenada on behalf of the Alliance of Small Island States (*AOSIS*), Hungary on behalf of the EU, Indonesia, Japan, Norway, Qatar, Saudi Arabia, United Arab Emirates) and one observer country (the US). With the exception of Grenada on behalf of AOSIS, all submissions were strongly in support of inclusion of CCS in the CDM and the development of robust modalities and procedures. Grenada raised concerns about the ability for inclusion to result in perverse outcomes, but noted that those could be mitigated through the modalities and procedures, for example, through compensating for additional energy use.

The UNFCCC Secretariat reported to the SBSTA plenary during the Bonn Climate Change Meetings in June 2011. However, there was limited substantive discussion on this issue. It is expected that the technical experts meeting, to be convened prior to

November 2011, will continue the work on modalities and procedures and that the outputs of that meeting will be considered at SBSTA 35 in November / December 2011.

### 3.2 London Protocol

The export of wastes or other matters to other countries for dumping or incineration at sea is generally prohibited by Article 6 of the London Protocol (**LP**). In 2008 a CCS legal and technical working group determined that the export ban applied to CO<sub>2</sub>. In October of 2009 the contracting parties adopted a resolution proposing that Article 6 be amended to allow for the export of CO<sub>2</sub> streams in certain circumstances. The amendment must be ratified by two-thirds of the contracting parties to enter into force. There are currently forty parties to the LP. Twenty-seven of them are therefore required to ratify the amendment before it enters into force. If additional parties ratify the LP, the number of parties required to ratify the CO<sub>2</sub> amendment will also increase.

To date, Norway is the only country to have ratified the amendment to Article 6 and it is unlikely that it will enter into force in the foreseeable future. Until the amendment enters into force the ability of parties to the Protocol to co-operate on off-shore storage will be constrained.

At the 32nd consultative meeting and 5<sup>th</sup> meeting of the contracting parties to London Convention (**LC**) and the LP held 11 to 15 October 2010, CO<sub>2</sub> sequestration in sub seabed geological formations was considered by the parties. The meeting of the contracting parties adopted a work plan with timelines to conduct the review of the 2007 CO<sub>2</sub> Sequestration Guidelines in light of the 2009 amendments to Article 6 of the LP. The meeting of the contracting parties also instructed the LP's scientific group to start this review in 2011 with a view to completion in 2012.

Annex 8 to the meeting report provides the work plan for the review of the 2007 CO<sub>2</sub> Sequestration Guidelines. The work plan consists of the following elements:

1. Provide further specific guidance in cases of export of CO<sub>2</sub> streams to other countries for disposal and the issues related to the management of trans boundary movement of CO<sub>2</sub> after injection;
2. Review and incorporate the text recommended by the first meeting of the legal and technical working group on trans boundary CO<sub>2</sub> sequestration issues;
3. Incorporate or include references, as necessary, to the CO<sub>2</sub> sequestration reporting format as adopted in 2008;
4. Take into account any initial experiences of contracting parties with the implementation of the current guidelines;
5. Take into account the recommendations contained in the final survey report in 2008 on the useability and communication of the specific guidelines;
6. Provide an interim report to the 6th meeting of the contracting parties in 2011; and

7. Provide a final report with revised text of the guidelines at the 7th meeting of the contracting parties in 2012.

It is understood that the United Kingdom (*UK*) is leading correspondence on this action and that Australia, Canada, China, Germany, Italy, Japan, the Netherlands, Norway, the US and Greenpeace International have expressed their interest in taking part in this review.

At this meeting delegations also provided reports on their experiences with CO<sub>2</sub> sequestration technologies and their application. Australia provided an update on the Gorgon LNG Project and seismic surveys in Bass Strait being undertaken to investigate reservoir potential under Australia's CCS legislation. The US provided an update on the work of the inter-agency task force on CO<sub>2</sub> sequestration.

As part of the public awareness work being undertaken by the Secretariat, it was noted that the Secretariat has proposed progressing a document that will provide an overview of the LC/LP materials on CO<sub>2</sub> sequestration in sub-seabed geological formations prepared since 2006. The completion of this overview document is aimed for 2012.

We note that the item related to CO<sub>2</sub> sequestration in sub-seabed geological formations is on the substantive agenda for LC33/6 to be held from 17 to 21 October 2011. At that meeting it is expected that amendments to the guidance document on CO<sub>2</sub> sequestration and sub seabed geological formations will be considered along with experiences with CO<sub>2</sub> sequestration projects.

**Table 2 Status of Ratifications London Protocol Amendments amongst surveyed jurisdictions**

Country	Party to London Convention	Party to London Protocol	Ratification of CCS Amendment
Australia	Yes	Yes	
Austria	No	No	
Belgium	Yes	Yes	
Brazil	Yes	No	
Bulgaria	Yes	Yes	
Canada	Yes	Yes	
China	Yes	Yes	
Cyprus	Yes	No	
Czech Republic	No	No	
Denmark	Yes	Yes	
Estonia	No	No	
Finland	Yes	No	

<b>Country</b>	<b>Party to London Convention</b>	<b>Party to London Protocol</b>	<b>Ratification of CCS Amendment</b>
France	Yes	Yes	
Germany	Yes	Yes	
Greece	Yes	No	
Hungary	Yes	No	
India	No	No	
Indonesia	No	No	
Ireland	Yes	Yes	
Italy	Yes	Yes	
Japan	Yes	Yes	
Latvia	No	No	
Lithuania	No	No	
Luxembourg	Yes	Yes	
Malaysia	No	No	
Malta	Yes	No	
Mexico	Yes	Yes	
Norway	Yes	Yes	Yes
Poland	Yes	No	
Portugal	Yes	No	
Romania	No	No	
Saudi Arabia	No	Yes	
Slovakia	No	No	
Slovenia	Yes	Yes	
South Africa	Yes	Yes	
South Korea	Yes	Yes	
Spain	Yes	Yes	
Sweden	Yes	Yes	
The Netherlands	Yes	Yes	[in progress – TBC]
United Kingdom	Yes	Yes	

Country	Party to London Convention	Party to London Protocol	Ratification of CCS Amendment
USA	Yes	No	

### 3.3 OSPAR

In 2007 amendments to the Convention for the Protection of the Marine Environment of the North-East Atlantic (commonly known as the OSPAR Convention) were adopted to allow the storage of CO<sub>2</sub> in geological formations under the seabed. The amendments added CO<sub>2</sub> streams from carbon capture process to the list of exceptions to the general prohibition placed on the dumping of wastes by the Convention.

Ratification, acceptance or approval by at least seven contracting parties is required for the amendments to enter into force. The amendments were ratified by the UK, Norway, the EU and Germany in 2010. At the recent meeting of the OSPAR contracting parties in June, 2011 Spain, Denmark and Luxemburg confirmed that their ratification processes had been completed, bringing the total number of parties to ratify the convention to seven. In light of the ratification of these parties the meeting agreed to release a media statement setting out the details of when the amendments will enter into force once they are available. The statement has not yet been released.

In addition to the changes to the OSPAR Convention that are being progressed, the OSPAR Commission has considered CCS as part of its development of the OSPAR Commission 2010 to 2020 Strategy. CCS is also referred to in the provisions of the Strategy which address the storage of CO<sub>2</sub> streams in geological formations by the off-shore oil and gas industry. An important objective is to ensure that CO<sub>2</sub> streams are retained permanently in those formations and will not lead to significant adverse consequences for the marine environment, human health and other legitimate uses of the marine area (OSPAR decision 2007/2).

The guiding principles contained in the Strategy for the off-shore oil and gas industry include ensuring that the programs and measures adopted in relation to off-shore oil and gas are developed in accordance with relevant provisions of the Convention, including the application of an integrated ecosystem approach. The OSPAR Commission will keep under review and, where necessary develop programs and measures in respect of all phases of off-shore activities in accordance with the provisions of the OSPAR Convention and, to this end, OSPAR will continue monitoring developments of CCS activities including contracting parties, permits and approvals for CCS projects, to ensure that appropriate measures are in place. Contracting parties of OSPAR which participate in other international forums will, if appropriate, endeavour to ensure that programs and measures relevant this strategy, which are developed within those other forums (eg. the London Convention and its protocol) are compatible with any relevant programs and measures adopted by the OSPAR Commission.

**Table 3 OSPAR Ratification**

<b>Contracting Party</b>	<b>Ratification of CCS Amendment</b>
Belgium	
Denmark	Yes
European Union	Yes
Finland	
France	
Germany	Yes
Iceland	
Ireland	
Luxembourg	Yes
The Netherlands	
Norway	Yes
Portugal	
Spain	Yes
Sweden	
Switzerland	
United Kingdom	Yes

### **3.4 Basel Convention**

The Basel Convention establishes a global regime for the control of the international trade in hazardous and other wastes. The Convention provides general obligations requiring Parties to ensure the transboundary movement of wastes are reduced to a minimum, consistent with principles of environmentally sound management. Underpinning this approach is the principle that wastes should primarily be disposed of in the jurisdiction in which they are created. The substantive obligations in the Basel Convention apply to "hazardous wastes".

There is debate as to whether CO<sub>2</sub> falls within the definition of a hazardous waste for the purposes of transboundary movement.

While the majority of States are of the view that the Basel Convention does not apply to the transboundary movements of CO<sub>2</sub>, others, such as the Netherlands and groups such as Greenpeace are of the view that the Basel Convention does apply to the transboundary movement of CO<sub>2</sub>.

The implications if CO<sub>2</sub> is regarded as a hazardous waste under the Basel Convention include:

- that movement of waste between parties and non-parties is prohibited;
- 'appropriate technical guidelines and/or codes of practice' would need to be developed for CO<sub>2</sub>;
- the State of origin must demonstrate that it does not have the technical capacity, storage sites or adequate facilities to dispose of the waste in its own territory; and
- appropriate insurance, bonds or other guarantees may also need to be in place.

In 1995, the parties to the Basel Convention agreed to ban OECD countries from exporting hazardous waste to non-OECD countries for final disposal – the Ban Amendment. (The Ban Amendment has not yet entered into force, however, states such as France, Germany, the UK and Norway have all ratified the Ban Amendment and national implementing legislation has been implemented in the EU). If CO<sub>2</sub> is a hazardous waste, the export of CO<sub>2</sub> to non-OECD countries for final disposal will be prohibited.

An amendment or an interpretative note from Contracting Parties is necessary to clarify the international regulation of CO<sub>2</sub> when it comes to the transboundary transportation phase of CCS. However, this has not so far been put on the agenda of the Contracting Parties to the Basel Convention and is not on the Draft Work Programme of the Basel Convention Open-ended Working group for 2012-13.

## 4. Narrative Summaries of jurisdictions

### 4.1 Australia

#### Federal

There have been significant developments in CCS matters in Australia during the period from 1 November 2010 to 30 June 2011. The majority of these developments have occurred at a federal level. State governments have been less active in the regulatory sphere, focusing on progressing CCS onshore feasibility studies.

#### Legal and Regulatory developments

##### (a) Integrated CCS

Regulatory developments at a federal level during this period fall under four main categories:

- amendments to the principle regulatory mechanism supervising CCS project development offshore, the *Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGS Act)*;
- related amendments to support these regulatory changes;
- new regulations under the OPGGS Act; and
- developments in facility operational standards.

##### Amendments to OPGGS Act

The OPGGS Act was amended by the *Offshore Petroleum and Greenhouse Gas Storage Legislation Amendment (Miscellaneous Measures) Act 2010 (Miscellaneous Measures Act)* on 17 November 2010.

The Miscellaneous Measures Act introduced a number of regulatory changes, the most significant of which was the expansion the functions of the National Offshore Petroleum Safety Authority (*NOPSA*) to include regulatory oversight of non-OHS structural integrity for GHG facilities. The Miscellaneous Measures Act also extended the search and entry powers of NOPSA OHS inspectors in relation to suspected breaches of GHG titleholders duties and introduced a new administrative process for multiple titleholders. Where there is a consortium of titleholders, parties will be able to nominate one titleholder to act in relation to applications, requests, nominations and notices on behalf of the group. Any obligation imposed on registered titleholders will extend to the group structure making all title holders in the consortium jointly responsible for discharging any requirements of the OPGGS Act.

Consequential amendments were also made to the OPGGS Act under the *Offshore Petroleum and Greenhouse Gas Storage Regulatory Levies (Consequential Amendments) Act 2011* to direct titleholders to pay the various cost recovery levies and late payment penalties to NOPSA on behalf of the Commonwealth.

##### Related amendments

A number of amendments related to levies were also introduced to support the expanded functions of NOPSA under the Miscellaneous Measures Act.

The *Offshore Petroleum and Greenhouse Gas Storage Regulatory Levies Legislation Amendment (2011 Measures No. 1) Act 2011*, (**2011 Measures Act**) amended the *Offshore Petroleum and Greenhouse Gas Storage (Safety Levies) Act 2003* (**Safety Levies Act**) to permit NOPSA to recover its costs to cover all its regulatory functions. It introduced three new levies, two of which are relevant to GHG titleholders: an annual well levy to be imposed on titleholders at the start of each year in respect of eligible wells, including non-abandoned wells and wells that began to be drilled but were abandoned during the year; and a well investigation levy imposed where there is a breach or suspected breach of the titleholder's duty of care in relation to wells and the cost of an inspection undertaken by NOPSA exceeds \$30,000. In addition, the 2011 Measures Act renames the Safety Levies Act to the *Offshore Petroleum and Greenhouse Gas Storage (Regulatory Levies) Act 2003* (**Regulatory Levies Act**) to reflect the broader nature of the levies it collects.

Other levies brought in during this period which will be collected by NOPSA include a safety case levy for pipelines which was introduced under the *Offshore Petroleum and Greenhouse Gas Storage (Safety Levies) Amendment Act 2010*. This amendment allows NOPSA to collect a safety case levy for pipelines in designated coastal waters for a transitional period between 1 January 2010 until 31 December 2012.

#### **Regulations under the OPGGS Act**

A number of regulations were introduced during the review period which clarify the rights and obligations of greenhouse gas (**GHG**) titleholders under the OPGGS Act.

The key regulation introduced is the *Offshore Petroleum and Greenhouse Gas Storage (Management of Greenhouse Gas Injection and Storage) Regulation 2011* ( ) which entered into force on 23 June 2011. The Greenhouse Injection and Storage Regulation is the principle instrument regulating offshore injection and storage operations. It sets out the components of the "significant risk of a significant adverse impact" test referred to in Part 1.2 Division 1 of the OPGGS Act and the formulas and threshold amounts the Minister will use when calculating the risk of adverse impacts. The Greenhouse Injection and Storage Regulation also outlines information that must be set out in an application for a declaration of a part of a geological formation as an identified GHG storage formation, as well as site plan requirements, variations and renewals. Processes related to decommissioning plans and site closure certificates are also detailed.

Also introduced during this period was the *Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulation 2011* (**Resource Management and Administration Regulation**). The Resource Management and Administration Regulation consolidates and updates the existing resource and administration-related regulations made under the OPGGS Act into one legislative instrument. Regulations related to GHG titleholders which have been consolidated include the:

- (a) *Offshore Petroleum and Greenhouse Gas Storage Regulations 1985*;

- (b) *Offshore Petroleum and Greenhouse Gas Storage (Greenhouse Gas Datum) Regulations 2010*; and
- (c) *Offshore Petroleum and Greenhouse Gas Storage (Management of Greenhouse Gas Well Operations) Regulations 2010*.

The Resource Management and Administration Regulation outlines the management and administration requirements for the injection and storage of GHG substances, including notification and reporting of discovery of petroleum, field development plans and approvals. It also specifies requirements for reporting and release of information by regulatory authorities. These requirements are very similar to those for petroleum titleholders, including daily drilling reports and well completion reports, however, the information will be specific to GHG activities. The Resource Management and Administration Regulation also sets out conditions under which petroleum titleholders can explore for potential GHG injection sites in their title area without the need for a GHG assessment permit.

A further regulation introduced during this period was the *Offshore Petroleum and Greenhouse Gas Storage (Regulatory Levies) Amendment Regulation 2011 (Regulatory Levies Regulation)*. The Regulatory Levies Regulation provides supplementary detail on the levies introduced under the Regulatory Levies Act such as of the amounts of levies that will imposed and when the levies become due and payable.

**Facility Operational Standards**

NOPSA has released a number of Guidelines Notes which set out the standards which NOPSA will enforce at offshore facilities. These include:

- OHS Guidance Note – Noise Exposure Standards;
- OHS Guidance Note - Noise Management -Principles of Risk Assessment and Control; and
- Incident Investigation Guidance Note -Notification and Reporting of Accidents and Dangerous Occurrence

**(b) Laws that facilitate stages in the CCS project cycle**

There are no new Commonwealth Acts or amendments related to individual aspects of the CCS project, including capture, transport, exploration, injection, storage and long-term liability.

**Policy developments**

There have been two significant policy developments during the review period at the federal level.

The first is the Australian Government's consultation on its election commitment announcement on 23 July 2010 to require all new power stations to meet best practice emissions standards and be "CCS-Ready". The government released a discussion paper *A Cleaner Future for Power Stations* and invited submissions from stakeholders closing on 24 December 2010. Industry stakeholders highlighted the high regulatory burden the CCS ready policy would impose on new coal fired power plants due to the

early stage of development of CCS. The government has not yet responded to these submissions.

The second significant development was the Australian Government's announcement on 27 January 2011 to reduce and defer funding from the CCS Flagships Program and the Global CCS Institute. The announcement stated the government would cut AUSS\$90 million from the budget and defer AUSS\$160 million until after 2015, when CO<sub>2</sub> storage sites have been proven to a greater level of certainty, and was largely driven to help pay for Queensland flood relief. Since making this announcement the government has provided \$52 million in funding to Collie Hub Project in Western Australia to complete a detailed storage viability study. The government has also allocated \$60.9 million in funding in the 2011/2012 budget for a new national CO<sub>2</sub> Infrastructure Plan, indicating it is likely the Australian Government will continue to provide financial support to CCS development in Australia.

**Regulatory developments in related areas**

**(a) Climate Change & Energy**

The most significant climate change and energy policy development closely after the review period is the Australian Government's announcement on 9 July 2011 that its Multi-Party Climate Change Committee (*MPCCC*) had reached an agreement on the detail of a carbon price mechanism. The Government has indicate legislation will be introduced to parliament during the Spring sitting, with the intention of commencing the carbon price on 1 July 2012. The carbon price will follow a fixed price structure set at \$23 per tonne of GHG emissions, evolving to a fully-fledged emissions trading scheme, with a flexible price determined by market forces after three years. The carbon price will cover stationary energy, waste, industrial processes and fugitive emissions. A number of new funding initiatives were announced as part of the carbon price package, including the establishment of a Clean Energy Finance Corporation (*CEFC*) and a number of clean technology and innovation programmes. Whilst the coal sector will receive approximately \$1.3 billion over 6 years in structural adjustment assistance to emissions intensive mines and \$70 million to support investment in carbon abatement technologies, the CEFC will not invest in CCS technology. The Government, working with the Greens and Independent members of Parliament should have sufficient numbers to pass the carbon price package in Spring 2011. The Opposition (which has refused to participate in the MPCCC to date) has labelled the carbon price mechanism a carbon tax and rejected the proposal outright, vowing to repeal any scheme that is introduced.

**(b) Industry Support**

On 30 November 2011 the Australian Government announced the establishment of the National Carbon Capture and Storage (*NCCS*) Council to supersede and build on the work of the National Low Emissions Coal Council (*NLEC*) and the Carbon Storage Taskforce (*CSTF*). The NCCS Council membership includes the coal industry, oil and gas sectors, coal and gas-fired power generators, representatives of the research community, several states, and the Australian Governments. The Council will advise

the Minister for Resources, Energy and Tourism in relation to CCS development in Australia.

The Federal Government also introduced two new Bills to amend the laws relating to taxation and R&D to parliament on 22 November 2010. The Bills introduce a new R&D incentive, the core components of which are a 45 per cent refundable R&D tax offset for eligible entities with a turnover of less than \$20 million and a non-refundable 40 per cent R&D tax offset for all other eligible entities. The Bills refine the current R&D incentive eligibility test, introducing clearer provisions for "core" or "supporting" R&D activities. A number of activities remain excluded from "core" R&D activities including prospecting, exploring or drilling for minerals or petroleum for the purpose of determining deposit size. Generally, only R&D activities undertaken in Australia will qualify for the new R&D tax incentive. The Bills passed the House on 22 November 2010 and were introduced to the Senate on the 23 November 2010. The second reading in the senate has currently been adjourned.

**(c) Secondary / Supporting legislation**

There were no secondary regulatory developments during this period.

**Significant Reports, Studies or Conferences**

No significant reports or studies have been commenced or released during the reporting period and no significant conferences have been held.

**Expectations in the next 6-12 months**

Five Bills were introduced into Parliament on 25 May 2011 to amend the OPGGS Act and are expected to be passed in late 2011. The primary Bill is the *Offshore Petroleum and Greenhouse Gas Storage Amendment (National Regulator) Bill 2011*. It introduces two new regulatory bodies: the National Offshore Petroleum Safety and Environmental Management Authority (**NOPSEMA**) which will be an expanded version of NOPSA and the National Offshore Petroleum Titles Administrator (**NOPTA**) which will sit within the Department of Resources, Energy and Tourism and will assist regulatory authorities in the management of petroleum and GHG titles.

The second Bill, the *Offshore Petroleum and Greenhouse Gas Storage Regulatory Levies Legislation Amendment (2011 Measures No 2) Bill 2011* introduces two new cost recovery levies to support these bodies in a similar manner to the levies introduced under the 2011 Measures Act. The new levies are an annual titles administration levy imposed for an eligible title in force, for each year of the term of the title, and an environment plan levy imposed on a titleholder when an application is made under the environment regulations for either acceptance or revision of an environment plan.

The third Bill, *Offshore Resources Legislation Amendment (Personal Property Securities) Bill 2011* introduces provisions to support the Government's policy that offshore petroleum, GHG and minerals titles should not be considered "personal property" for the purposes of the *Personal Property Securities Act 2009*.

Both the fourth and fifth Bills, the *Offshore Petroleum and Greenhouse Gas Storage (Registration Fees) Amendment Bill 2011* and the *Offshore Petroleum (Royalty)*

*Amendment Bill 2011 (Royalty Bill)*, introduce minor regularity changes to the OPGGS Act to ensure NOPTA is correctly referenced in the originating Act and able to recover the relevant levies. Government amendments to the Royalty Bill were introduced following an advisory report tabled by the House of Representatives Standing Committee on Agriculture, Resources, Fisheries and Forestry on 27 June 2011, to exclude Western Australia from these amendments. This will allow Western Australia to continue to collect royalty payments from titleholders in offshore areas. All states royalty payments in relation to offshore areas will be paid to NOPTA.

## States

Minor developments in CCS matters have taken place in Australian state jurisdictions during the period from 1 November 2010 to 30 June 2011.

### Legal and Regulatory developments

#### (a) Integrated CCS

Whilst some significant legal and regulatory developments related to integrated CCS are in the process of development, no new legislation has been passed during the review period.

Of note, The *Greenhouse Gas Storage Bill 2010* (NSW) (*GHG Storage Bill*) was introduced to the NSW Legislative Assembly in November 2010 and provided a statutory regime for the storage of GHGs in underground geological reservoirs in NSW. The GHG Storage Bill was not passed before Parliament was prorogued for the State government elections in March 2011 and therefore lapsed. The Bill, nonetheless, gives some indication of how future NSW Governments may approach GHG underground storage legislation, being an approach modelled on existing onshore petroleum laws.

Western Australia, which has already passed project specific legislation for the Gorgon Project, is now developing a State-wide legal framework for CCS. The Western Australian government, through the Petroleum Division of the Department of Mines and Petroleum, has commenced drafting a Greenhouse Gas Storage Bill to amend the *Petroleum and Geothermal Energy Resources Act 1967* and the *Petroleum Pipelines Act 1969* to support a legislative framework for CCS for onshore geological storage and transportation of GHGs. We understand that the approach being taken in this legislation mirrors that adopted by the Federal Government in the OPGGS Act, including with respect to post-closure liability. Once drafting is complete, an exposure draft of the Bill will be released for review by stakeholders towards the end of 2011, before the Bill is introduced into Parliament.

A number of existing regulations related to the management of petroleum exploration and resource management, such as the *Administrative Regulation for Petroleum and Resource Management* may need to be amended to cover GHGs and to reflect the amendments to equivalent regulations at the Commonwealth level (as described above). In addition, Environmental regulations for petroleum activities are being

developed, these will cover matters such as seismic surveys. These are expected to be released in the next 12-18 months.

Similarly, in Victoria, regulations are being drafted for the Victorian OPGGS Act. These regulations are intended to be in place when that Act commences in 2012. As the Victorian Act mirrors the Commonwealth OPGGS Act, it is likely that the regulations will mirror the regulations that have been developed by the Commonwealth, with minor variations to reflect differences between the jurisdictions.

**(b) Laws that facilitate stages in the CCS project cycle**

No developments in laws that facilitate stages in the CCS project cycle have taken place during the reporting period.

**Policy developments**

No significant CCS related policy developments have taken place during the reporting period.

In those States with legal frameworks already in place the next stage of CCS development is to conduct acreage releases and invite tenders for persons to undertake exploration activities to prove up storage resources. To date, the private sector has not actively responded to these invitations. One, but not the only, factor that has influenced this is the absence of a carbon price in Australia. If the carbon price mechanisms referred to above is legislated, there may be more appetite for the private sector to pursue integrated CCS projects. In the interim, it is unlikely that further invitations to tender will take place before 2012. This notwithstanding, government agencies in Victoria and NSW are undertaking their own exploration programmes.

**Regulatory or policy developments in related areas**

No regulatory or policy developments have taken place in related areas during the reporting period.

The *Climate Change Act 2010* (Vic) was passed by the Victorian Parliament on 3 September 2010 establishing a state-wide GHG emissions reduction target of 20% below 2000 levels by 2020, providing statutory recognition of a new class of proprietary rights for forestry and soil carbon sequestration, and requiring certain decision-makers to have regard to climate change when making administrative decisions under certain pieces of legislation. The Act was scheduled to commence July 2011.

**Significant Reports, Studies or Conferences**

Significant reports and studies announced or produced during the period include:

- An airborne gravity survey and a soil gas survey to examine geological data relating to potential storage sites in the offshore Gippsland Basin to be undertaken during 2011 by the Victorian CarbonNet project.
- A report prepared by the CSIRO for the Western Australia Department of Mines and Petroleum assessing the public’s knowledge and attitudes towards climate change science and low emissions energy technologies, particularly CCS. The

report was based on information gathered at a workshop held in February 2011 in the town of Harvey near the Collie Hub CCS project. Participant feedback from the workshop indicated there were concerns about the potential risks and effectiveness of CCS technology. Participants were also interested in the potential for CO<sub>2</sub> to be used as a resource. Attitudes towards CCS shifted following the workshop to become more supportive, however, this was not statistically significant.

**Expectations in the next 6-12 months**

We would expect the legislative and regulatory developments in Western Australia and Victoria described above to be progressed in the coming year.

## 4.2 Brazil

No developments in CCS matters have taken place in Brazil during the period from 1 November 2010 to 30 June 2011. Some developments have occurred in the related area of climate change and energy.

### Legal and Regulatory developments

#### (a) Integrated CCS

Brazil does not have an integrated legal framework for CCS.

#### (b) Laws that facilitate stages in the CCS project cycle

No developments in laws that facilitate stages in the CCS project cycle have taken place during the reporting period.

### Policy developments

No significant CCS specific policy developments have taken place during the reporting period. However, work continues to progress on technological developments.

The Centre of Excellence in Research on Carbon Storage (*CEPAC*) was launched in 2006 and has been working with government agencies such as the Ministry of Science and Technology and industry stakeholders such as Petrobras to build a clean coal centre and develop demonstration project. This work is ongoing. CEPAC is conducting a study on sources and sinks throughout Brazil and intends to release a storage atlas at the end of 2011 which will provide preliminary mapping of storage at a country and basin scale.

### Regulatory developments in related areas

#### (a) Climate Change & Energy

In December, 2010 Brazil released *Decree No. 7,390/2010*. The Decree regulates the National Policy on Climate Change set out in *Law No. 12,187/2009*. Released during the United Nations Climate Change Conference in Cancun, Mexico, the Decree sets an emissions reduction target of between 36.1% and 38.9% of projected future emissions by 2020. The Decree also provides a list of actions that will be taken to enable this target to be reached. The main actions include reducing deforestation, increasing renewable energy generation and reforestation.

### Significant Reports, Studies or Conferences

No significant reports or studies have been commenced or released during the reporting period that specifically relate to the legal and regulatory aspects of CCS and no significant conferences have been held on these issues. There was, however, a Global Technology Roadmap for CCS in Industry Policy Workshop held in Rio de Janeiro on 7-8 April 2011, sponsored by the United Nations Industrial Development Organisation (*UNIDO*).

### Expectations in the next 6-12 months

No significant policy or regulatory developments are expected in the next 6-12 months. Work will continue on storage mapping and demonstration projects.

### 4.3 Canada

#### Federal

A few minor developments in CCS matters have taken place in Canada during the period from 1 November 2010 to 30 June 2011.

Through 2010-2011, Canada has not demonstrated any interest in moving to regulate GHGs (either through a tax or market based mechanisms). The proposed coal-fired electricity generation regulation and the Renewable Fuels Regulation discussed below represent the main actions in Canada.

#### Legal and Regulatory developments

##### (a) Integrated CCS

The current approach to CCS regulation in Canada is to regulate GHG emissions under the *Canadian Environmental Protection Act, 1999 (CEPA)*. In addition, CCS projects may trigger federal responsibilities under the *Canadian Environmental Assessment Act*. Canada has not demonstrated any interest in moving to regulate carbon (either through a tax or market based mechanisms) in the last year. The main regulatory development in the period has been the proposed coal-fired electricity generation regulation (see below).

##### (b) Laws that facilitate stages in the CCS project cycle

*Technology development:* A proposed regulatory approach to coal-fired electricity generation was announced by the Minister of Environment in June 2010. This regulatory approach would apply a performance standard to new coal-fired electricity generation units, and units that have reached the end of their economic life, through regulations under the CEPA. The performance standard would come into effect in mid-2015. New units that incorporate technology for CCS would be exempted from the performance standard until 2025, at which point commercially viable CCS is expected to be available. The details of these requirements would be finalized in the development of the regulation.

In addition, the proposed regulatory approach to coal-fire electricity generation will require all new plants to be capture ready by providing exemptions from minimum standards for plants that incorporate capture technologies.

#### Policy developments

No significant CCS related policy developments have taken place during the reporting period.

#### Regulatory developments in related areas

No significant regulatory or policy developments in related areas have taken place during the reporting period.

#### Significant Reports, Studies or Conferences

No significant reports or studies have been commenced or released during the reporting period and no significant conferences have been held.

**Expectations in the next 6-12 months**

Draft regulations to reduce GHG emissions from the electricity sector were expected to be published in the *Canada Gazette* early in 2011 and final regulations published later in the year. This was to allow sufficient time for consultations and outreach with industry and other stakeholders. The proposed coal-fired electricity generation regulations have not been discussed since the majority election victory by the Conservative government on 3 May 2011, however, they are still expected to be published in 2011.

**Provinces**

**Alberta**

**Legal and Regulatory developments**

**(a) Integrated CCS**

The *Alberta Carbon Capture and Storage Statutes Amendment Act, 2010* was assented to on 2 December 2010 and provides for amendments to a number of provincial statutes to facilitate CCS. While the Act is not comprehensive, it does address a number of areas relevant to CCS project development, including clarifying that all pore space is held unalienably by the Crown, mandating the Minister of Energy to enter into agreements for CCS projects and, most notably, transferring many areas of civil and administrative liability for CCS projects to the Crown following the (approved) closure of CCS facilities.

**(b) Laws that facilitate stages in the CCS project cycle**

The *Carbon Sequestration Tenure Regulation* to the *Alberta Mines and Minerals Act*, enacted in April 2011, facilitates storage exploitation with the mandate to grant long term leases and permits for qualifying CCS projects.

Also notable is the *Alberta Carbon Capture Storage and Funding Act* and the *Carbon Capture Storage and Funding Act Regulation* which provide for a funding mechanism for the design, construction and operation of CCS projects.

**Policy developments**

Perhaps the most significant CCS policy initiative in Canada to date is the Regulatory Framework Assessment process, which will look at the existing regulatory regime in Alberta as well as CCS frameworks from other jurisdictions. The review will focus on a number of areas including regulatory, environmental, geological and technical considerations as well as measuring, monitoring and verification requirements.

The process is anticipated to result in a report to the Ministry of Energy in the Fall of 2012, with a likely mandate for a comprehensive CCS regulatory scheme to follow thereafter. As representatives from the federal government and other provinces are participating in the process, it is foreseeable that the outcome of the process could

result in similar regulatory schemes for CCS in other provinces and even at the federal government level.

**Regulatory developments in related areas**

Aside from the development of three separate legislative enactments facilitating CCS in Alberta, there has not been any other significant regulatory developments applicable to CCS in related areas.

Alberta was one of the first jurisdictions in North America to implement a carbon pricing scheme, the *Alberta Specified Gas Emitters Regulation*.

**(a) Climate Change & Energy**

The Alberta Government announced that it was temporarily amended its provincial carbon offset scheme under the Alberta Specified Gas Emitters Regulation to grant large-scale CCS facilities using direct injection and sequestration matching bonus offset credits for every tonne of offset credit created through CCS.

**(b) Industry Support**

Key industry representatives, including the Alberta Carbon Capture and Storage Development Council, are actively participating in the Regulatory Framework Assessment.

**Significant Reports, Studies or Conferences**

The most significant report will be Regulatory Framework Assessment report to the government of Alberta, expected in the Fall of 2012.

**Expectations in the next 6-12 months**

The Regulatory Framework Assessment is due in the Fall of 2012

**Saskatchewan**

**Legal and Regulatory developments**

**(a) Integrated CCS**

The current approach to CCS regulation in Saskatchewan is to work within existing regulatory frameworks that have proven to accommodate commercial-scale CCS projects, in particular injection for EOR. The Saskatchewan government has recently amended existing regulations to clarify the treatment of CCS activities and, as such, the province has gone the route of updating its existing regulatory framework rather than developing a comprehensive integrated CCS framework.

**(b) Laws that facilitate stages in the CCS project cycle**

*Transport:* The *Pipelines Act*, which contains provisions regulating the operation of pipelines and the grant of licenses for all pipelines transporting CO<sub>2</sub> in the province, was updated on 6 Jan 2011. (Changes to the Act were limited to cross references to other updated acts as opposed to substantive legislative changes.)

*Storage:* The *Crown Minerals Act* was amended on 30 November 2010. The *Crown Minerals Act* designates the ownership and controls access to the sub-surface pore space at the CCS sites. The act empowers the Crown to enter into leasing agreements, authorizing injection into Crown mineral holdings for whatever purpose.

*Storage:* The *Oil and Gas Conservation Act* was given royal assent by the Minister of Energy and Resources on 18 May 2011. Through the *Oil and Gas Conservation Act*, the Minister has the power to, among other things, govern injection and storage of CO<sub>2</sub>. The *Oil and Gas Conservation Act* provides controls over injection of CO<sub>2</sub>. The legislation sets out provisions governing development, operation and decommissioning. Licensing is required for oil and gas production facilities and for individual wells.

### Policy developments

*Technology Development:* The Government of Saskatchewan entered into a Memorandum of Understanding with Japan Coal Energy Center in January 2011 (*Saskatchewan MOU*). The Saskatchewan MOU will regulate information exchange between scientists in Japan and Saskatchewan. This agreement sets the stage for future information exchanges and research projects involving scientists and companies in both jurisdictions, and it could lead to Japanese investment in Saskatchewan CCS projects.

### Regulatory developments in related areas

The main regulatory developments in related areas in the period have been:

- the continued development of Bill 126 which concerns the *Management and Reduction of Greenhouse Gases*;
- the funding, approval and beginning of construction of the Boundary Dam Integrated Carbon Capture and Storage Demonstration Project by the Government of Saskatchewan in collaboration with other partners; and
- the introduction of the *Upstream Petroleum Industry Associated Gas Conservation Standards* on 22 June 2011.

#### (a) Climate Change & Energy

Since 2009, Bill 126, which would bring into force the *Management and Reduction of Greenhouse Gases Act* has been at various stages of development. In 2010, the Government of Saskatchewan conducted consultations and, in 2011, it released the results of the consultations on its website. The current progress status of the Management and Reduction of Greenhouse Gases has not been announced. Once in force, the *Management and Reduction of Greenhouse Gase sAct* will establish a made-in-Saskatchewan plan for reducing GHG emissions to meet provincial targets and promote investments in low-carbon technologies.

#### (b) Industry Support

On 26 April 2011, the Government of Saskatchewan, in collaboration with other partners, initiated the Boundary Dam Integrated Carbon Capture and Storage Demonstration Project. The Canadian Government has committed \$240 million and

SaskPower will contribute \$1 billion to the project. The project will deploy CCS technology at an existing coal plant on a commercial scale. This will involve life extension and retrofitting of Unit 3 of the Boundary Dam coal-fired electricity generation station. The objective will be to capture one million tonnes of CO<sub>2</sub> per year which would be available for EOR purposes. Cansolv and SNC-Lavalin will supply the CCS technology. Captured CO<sub>2</sub> will be sold to oil producers in the region for EOR projects. The CCS technology will also capture sulphur dioxide, which will be used to produce sulphuric acid.

**(c) Secondary / Supporting legislation**

The *Upstream Petroleum Industry Associated Gas Conservation Standards* were introduced on June 22, 2011. The standards were designed to reduce emissions from the flaring and venting of associated gas. They establish a specified limit for the amount of natural gas that can be flared and vented from an oil well or associated facility. If that limit is exceeded, the producer is required to conserve and store the associated gas, and then either use or sell it.

**Significant Reports, Studies or Conferences**

Saskatchewan is a participant in the Alberta CCS Regulatory Framework Assessment, including holding membership on the steering committee. This process may cause the Saskatchewan government to look more closely at fully integrating its CCS regulations. In Fall 2012, the 6-person panel guiding Alberta’s Regulatory Framework Assessment will report to the Alberta Ministry of Energy on its findings.

**Expectations in the next 6-12 months**

Saskatchewan’s participation in the Alberta CCS Regulatory Framework Assessment could help inform future policy developments in the province. Construction of the fully integrated Boundary Dam project will build additional provincial expertise.

## 4.4 China

Minor developments in CCS matters have taken place in China during the period from 1 November 2010 to 30 June 2011.

### Legal and Regulatory developments

#### (a) Integrated CCS

China does not have an integrated legal framework for CCS.

#### (b) Laws that facilitate stages in the CCS project cycle

No developments in laws that facilitate stages in the CCS project cycle have taken place during the reporting period.

### Policy developments

No significant CCS specific policy developments have taken place during the reporting period.

### Regulatory developments in related areas

#### (a) Climate Change & Energy

At the United Nations Climate Change Convention held at Cancun, Mexico in December, 2010 China made a pledge to reduce emissions by 40-45% per unit of GDP by 2010 compared with 2005 levels.

In March, 2011 the Twelfth Five Year Plan of the People's Republic of China was adopted. The plan sets an energy intensity reduction target of 16% by 2015 compared to 2005 levels.

### Significant Reports, Studies or Conferences

Tsinghua University, in conjunction with the World Resources Institute produced draft guidelines for the safe and effective implementation of CCS in China. The guidelines, which are yet to be released, address capture, transport and storage issues from a China focused policy and technology perspective.

### Expectations in the next 6-12 months

In the next 6-12 months it is expected that the Tsinghua University draft CCS guidelines will be released.

## 4.5 EU

Some significant developments in CCS matters have taken place in the EU during the period from 1 November 2010 to 30 June 2011.

### Legal and Regulatory developments

The transposition of the Directive 2009/31/CE of the European Parliament and the Council of 23 April 2009 on the geological storage of CO<sub>2</sub> (the *CCS Directive*) was due on 25 June 2011. By this date, Member States were required to have brought into force the laws, regulations and administrative provisions necessary to comply with the CCS Directive and have communicated the text of those measures to the EC.

Member States have reported to the EC on a number of barriers to transposition.

Those barriers include:

- that CCS was not part of the national policy;
- the ongoing public and political debates regarding the appropriateness of CCS and apparent lack of public acceptance;
- the likely insufficient or absent storage capacity in their jurisdictions;
- financial matters; and
- the complexity in the distribution of competences due to the national and sub-national organization.

To support the coherent implementation of the EU CCS Directive across the Member States, the General Directorate of Climate Change published, on 31 March 2011, four Guidance Documents focusing on:

- GD 1: CO<sub>2</sub> Storage Life Cycle Risk Management Framework;
- GD 2: Characterization of the Storage Complex, CO<sub>2</sub> Stream Composition, Monitoring and Corrective Measures;
- GD 3: Criteria for Transfer of Responsibility to the Competent Authority; and
- GD 4: Financial Security and Financial Mechanism.

On 30 June 2011, the EU website identified 12 Member States that had communicated the adoption of national measures toward the implementation of the CCS Directive. The references to national implementation measures were posted regarding Austria, Belgium, Denmark, Finland, France, Ireland, Latvia, Lithuania, Luxembourg, Romania, Spain and the UK. On the same date, the EC unofficially reported that the UK, France and Spain led the 12 out of 27 Member States that met the transposition deadline, and that after the deadline had passed, notifications were still being received. However, the notifications received by the EC are not necessarily indications of complete transposition and many of the Member States, such as Ireland, that are said to have met the transposition deadline have only transposed a small portion of the CCS Directive. Indeed, countries such as Romania had well advanced the transposition work at the end of the transposition period but only adopted the national measures days after the deadline elapsed. Other Countries, such as Cyprus, are only weeks away from completing the transposition process.

Member States are required to report on transposition measures no later than 11 August 2012. The EC intends to issue letters of formal notice to member states that have submitted no or only partial transposition notification as part of due process.

So far, six Member States (Denmark, France, Lithuania, Portugal, Romania and Spain) appear to have completed the transposition at a primary level (pending verification decision by the EC on conformity and comprehensiveness). In seventeen Member States the transposition has started and some progress has been made, sometimes in varying levels across their territorial organization. Finally, three Member States (Bulgaria, Estonia and Greece) are in the very early stages of transposition or have not yet started the process.

As noted above, among those Member States that have formally transposed the CCS Directive, not all the regulations and administrative provisions prescribed by the EC have been adopted. Some of those States refer to the supplementary application of pre-existing legislation and regulations being applicable and will rely upon those. Further work is therefore required to draft regulations and administrative provisions necessary to facilitate project deployment. Conflicts of interest with other intended underground uses, financial security, corrective measures and site transfer are the main areas requiring further development.

Several Member States have also raised the need to discuss some uncovered aspects of the CCS that have become relevant and problematic in their jurisdictions. Reference has been made, principally, to the need to fully link the CCS chain and other sectoral EU legislation, the public awareness on CCS technology and geological structures and to cross-border issues and connections with non-EU countries.

The main differences between Member States are due to the different regulatory model applied, the existence or not of bans for CO<sub>2</sub> storage and to the aftercare period to follow the closing of the storage facility prior to transfer of storage risk to the State.

The implementation of the CCS Directive is approached and conducted in several ways. Some of the Member States are passing CCS-specific primary pieces of legislation. Others have started amending existing environmental or mining instruments and will develop CCS-specific secondary legislation.

In a number of Member States the implementation has required the passing of framework legislation with further steps required to be undertaken to materially implement the Directive at different legal and regulatory levels. Italy is an example of this approach.

Many Member States have been able to start the implementation tasks directly through specific legislation. In France, the implementation of a specific legal framework for CCS has required the amendment of the Environmental Code and the Mining Code and its inclusion through the modification of the Environmental Code. In Denmark the reference context has been the Law on the Use of the Danish Subsoil. In Hungary, the Mining Law. In Poland it is the Geological and Mining Law, although further amendments and additional regulations are required.

A third way to proceed with the implementation has involved the passing of a new law, providing an integrated CCS framework, comprehensive of the EU CCS Directive

content. This is the case for Romania and for Spain, where the CCS law has included the amendments required to sectoral environmental laws to add the CCS to their scope of application. It is also the approach adopted in the draft bills for Austria, Czech Republic and envisaged for Germany. Italy, after the completion of the initial formal step referred above, has adopted this scheme under the CCS bill too. The UK has combined the passing of the storage regulations with the inclusion of CO<sub>2</sub> related activities into the environmental permitting.

Finally, the implementation has also been started by means of scattered amendments of a number of existing regulations, most of them consisting in the mere inclusion of the CCS within the activities and facilities covered by such laws and regulations. This is the case of Finland, for instance, where the CCS legislative framework started being established by means of expressly including the CCS within the scope of application of the environmental impact assessment, environmental protection, large combustion plants and waste decrees, although a bill on the banning of the CO<sub>2</sub> storage is currently being drafted.

Some Member States have made the decision to ban CO<sub>2</sub> storage within their jurisdiction. For example, Austria's draft bill foresees banning commercial CO<sub>2</sub> storage projects and Germany has included a clause which will allow German states to ban geological storage. And Finland, as explained, has announced its plans to enact laws prohibiting CO<sub>2</sub> storage within its territories due to the absence of geological conditions for safe CO<sub>2</sub> storage. Also Latvia plans to enact laws prohibiting CO<sub>2</sub> storage within its territories due to priority being given to geothermal and natural gas storage use of geological structures. In Denmark, a decision regarding onshore and offshore subsoil storage has been postponed until 2020 through a decision to delay the debate regarding the subject in Parliament (however, EOR offshore in the North Sea has been permitted).

Most States have adopted the same post-closure and liability regimes provided for in the Directive. The laws and bills of Czech Republic, Denmark, Italy, Spain and UK provide for a 20-year period before liability transfers to the State. Germany and Poland however, have adopted a 30-year period.

**Policy developments**

**(a) NER-300 Programme**

The EC, on 3 November 2010, adopted a decision that laid down criteria and measures for the financing of commercial demonstration projects that promote the environmentally safe capture and geological storage of CO<sub>2</sub> as well as demonstration projects of innovative renewable energy technologies under the EU Emissions Trading Scheme (*ETS*). The so-called NER-300 Programme aims to fund at least eight CCS and at least 34 innovative renewable energy demonstration projects, and will be funded from the sale of 300 million emission allowances held in the New Entrants Reserve (*NER*) of the EU ETS.

A first call for proposals was launched in November 2010, covering the equivalent of 200 million EUAs. Project sponsors had to submit their funding applications to their respective Member State authorities by 9 February 2011. Member States then had

until 9 May 2011 to check the eligibility of the projects submitted and to submit the projects they wished to support to the EIB. Thirteen project proposals on CCS matters have been submitted to the EIB (three for project generation pre-combustion, six for power-generation post combustion, two for power-generation oxyfuel and two CCS industrial demonstration applications). Of the EU Member States that have submitted CCS project proposals to the EIB for NER 300 funding, the EC has not yet received notifications of transposition of the CCS Directive from Germany, Italy, Poland and the Netherlands.

The EIB has started financial and technical due diligence assessments of the project proposals submitted. The awarding decision by the Commission is expected by the second half of 2012. Countries such as Malta have made decisions not to support project proposals that fall under the CCS category.

**(b) European Energy Program for Recovery**

The European Energy Program for Recovery (*EEPR*) has been supporting six out of the twelve CCS projects that, as called for by the EU Council, should be operational by 2015. The EEPR is a key instrument to achieve the EU objective to make the CCS technology commercially viable by 2020. The knowledge gained during all the projects is being shared via the CCS project network, as required by the EEPR Regulation.

**(c) Taxation**

On 13 April 2011, the Commission presented its proposal to restructure the way energy products are taxed to remove current imbalances and take into account both their CO<sub>2</sub> emissions and energy content. Cutting CO<sub>2</sub> emissions is one of the goals of the review.

**Other significant developments**

The Information Exchange Group has continued the exchange of information between the competent authorities of the Member States to promote a coherent implementation of the CCS Directive throughout the EU. Its last meeting was held on 16 March 2011.

Parallel to legal and policy developments and to the existing dialogue, the EU territory already hosts a number of ongoing CCS pilot and demonstration projects:

- Industrially operated: France and the Netherlands.
- Research/demo site in operation: Germany and Poland.
- Injection test site: Spain.
- Sites in evaluation/application/preparation: UK, Italy and Romania.

**Expectations in the next 6-12 months**

Following the submission of reports on national implementation measures, due on 11 August 2011, the Commission will assess the extent to which these measures conform with the CCS Directive. The Commission may use its enforcement powers to secure or speed up the integration of the CCS Directive into the national law of Member States not meeting the transposition target at all, and to complete the implementation at a secondary level when so required for the incompleteness of the primary national

measures adopted. If required, infringement procedures would begin with letters of formal notice being sent regarding the absence or incompleteness of transposition.

In terms of projects, it is expected that the first awarding of funds from the NER project will be announced in the second half of 2012. It is also expected that the Commission will perform the review of one or two storage permits.

Inputs in the developments occurred in each Member State are provided in the individual country tables included in the supplementary document that accompanies this report. Additionally, a detailed country-study for Romania in Section 4.13 below completes the review of the developments occurred in the EU.

## 4.6 India

Minor developments in CCS matters have taken place in India during the period from 1 November 2010 to 30 June 2011.

### Legal and Regulatory developments

#### (a) Integrated CCS

India does not have an integrated legal framework for CCS.

#### (b) Laws that facilitate stages in the CCS project cycle

No developments in laws that facilitate stages in the CCS project cycle have taken place during the reporting period.

### Policy developments

The Ministry of Coal has proposed to establish a task force to advise on measures for the implementation of clean coal technologies, including CCS. The proposed task force is to be established by September 2011. It will be tasked with the production of a Clean Coal Road Map to be released by June 2012 and implemented in December 2013.

### Regulatory and policy developments in related areas

No regulatory and policy developments in related areas have taken place in the reporting period.

### Significant Reports, Studies or Conferences

No significant reports or studies have been commenced or released during the reporting period and no significant conferences have been held.

### Expectations in the next 6-12 months

In the next 6-12 months it is expected that the Clean Coal Task Force will be established and commence work.

## 4.7 Indonesia

No significant developments in CCS matters have taken place in Indonesia during the period from 1 November 2010 to 30 June 2011.

### Legal and Regulatory developments

#### (a) Integrated CCS

Indonesia has not yet implemented an integrated legal framework for CCS.

#### (b) Laws that facilitate stages in the CCS project cycle

There have been no developments in laws that facilitate stages in the CCS project cycle during the reporting period.

### Policy developments

On 21 February 2011 Indonesia made a submission to SBSTA welcoming the potential inclusion of CO<sub>2</sub> capture and storage in geological formations as a CDM project activity.

### Regulatory or policy developments in related areas

#### (a) Climate Change & Energy

At the United Nations Climate Change Conference held in Cancun in December 2010 Indonesia pledged to reduce projected future GHG emissions by 26% by 2020. As part of the effort to achieve this emissions reduction, a presidential instruction implementing a two year moratorium on concession permits for primary natural forest and peatland was issued on 20 May 2011. The moratorium aims to slow Indonesia's deforestation rate.

#### (b) Industry Support

Indonesia has entered into a Memorandum of Understanding with the Asian Development Bank (*ADB*) to support a study aimed at determining the potential for CCS in Indonesia.

### Significant Reports, Studies or Conferences

In November 2009 the World Energy Council published "Understanding Carbon Capture and Storage Potential in Indonesia". The report examined the technical, commercial and regulatory aspects of a CCS deployment in Indonesia. While the study indentified a number of potential sites for CCS storage, we are not aware of steps to implement the recommendations of the report.

### Expectations in the next 6-12 months

In the next 6-12 months it is expected that the study into the potential of CCS for Indonesia supported by the ADB will progress.

## 4.8 Japan

A few minor developments in CCS matters have taken place in Japan during the period from 1 November 2010 to 30 June 2011.

### Legal and Regulatory developments

#### (a) Integrated CCS

There have been no developments in integrated CCS regulations in Japan during the reporting period.

#### (b) Laws that facilitate stages in the CCS project cycle

There have been no developments in laws that facilitate stages in the CCS project cycle during the reporting period.

### Policy developments

The main policy developments in the period have been:

- Outsourcing of the responsibility for identification of a CCS verification test site in the Tomakomai area. The project has been outsourced to Japan CCS Co. Ltd by the Ministry of Economy, Trade and Industry.
- Consideration of long term storage issues by the Ministry of Environment. To date, no details of the process have been publically disclosed and a formal review has not been announced.
- Delivery of a submission welcoming the potential inclusion of CO<sub>2</sub> capture and storage in geological formations as a CDM project activity.

### Regulatory and policy developments in related areas

#### (a) Industry Support

On 19 November 2010 a cabinet ordinance governing the scope of the financing activities that may be undertaken by the Japan Bank of International Co-operation (*JBIC*) was revised. As part of the revision, CCS projects were added to the list of approved projects for developed countries that are permitted to be financed by JBIC. The revised ordinance aims to improve the competitiveness of Japanese companies involved in CCS projects.

### Significant Reports, Studies or Conferences

A report on the impacts of CO<sub>2</sub> concentrations in sea water on marine life was published in March 2011 by the Ministry of Environment. In 2007 an amendment to the *Marine Pollution Prevention Law* was enacted to enable the disposal of CO<sub>2</sub> at sea. The Ministry of Environment is now examining what environmental assessment and monitoring procedures should be put into place around sea based CO<sub>2</sub> storage. It is predicted that the marine life report will influence the nature of the environmental impact assessment requirements that will be imposed upon those seeking approval for CO<sub>2</sub> storage projects of this nature.

**Expectations in the next 6-12 months**

In the next 6-12 months it is expected that:

- Formal documentation relating to the review of long terms storage issues will be released.
- Further R&D relating to the types of environmental impact assessment obligations that should be placed on sea based CO<sub>2</sub> storage projects will be undertaken.

## 4.9 Malaysia

Minor developments in CCS matters have taken place in Malaysia during the period from 1 November 2010 to 30 June 2011.

### Legal and Regulatory developments

#### (a) Integrated CCS

Malaysia presently does not have an integrated CCS legal framework.

#### (b) Laws that facilitate stages in the CCS project cycle

There have been no developments in laws that facilitate stages of the CCS project cycle during the reporting period.

### Policy developments

There have been no significant CCS related policy developments during the reporting period.

### Regulatory developments in related areas

#### (a) Climate Change & Energy

Malaysia is incentivising clean energy. The *Renewable Energy Act (REA)* was passed by Parliament on 4 April 2011 and will enter into force on 1 September 2011. The REA regulates distribution licensees and parties who generate electricity from prescribed renewable sources. It also creates a feed-in tariff system that will apply to solar, biogas, biomass and small hydro resources.

On 17 December 2009, at Copenhagen, the Malaysian Prime Minister announced that Malaysia would reduce emissions by 40% of 2005 levels by 2020. The Minister of Natural Resources and Environment restated Malaysia's commitment to reaching the target at the UN Climate Change Conference in Cancun in December 2011.

### Significant Reports, Studies or Conferences

A scoping study on CCS in Malaysia was released by the Global CCS Institute, the Clinton Climate Initiative and the Malaysian Ministry of Energy, Green Technology and Water in January 2011. The study found that CCS technologies present an opportunity to significantly reduce CO<sub>2</sub> emissions in Malaysia. It also found that Malaysia has a lack legal and regulatory frameworks that are capable of being applied to the various stages of the CCS project cycle.

### Expectations in the next 6-12 months

In the next 6-12 months it is expected that:

- An inter-agency CCS steering committee will be established by the Ministry of Energy, Green Technology and Water. The committee will consider the findings of the scoping study and will work towards the implementation of CCS in Malaysia.
- Consideration will be given to the possible development of a CCS storage study in conjunction with the Global CCS Institute.

## 4.10 Mexico

No developments in CCS matters have taken place in Mexico during the period from 1 November 2010 to 30 June 2011. Some developments have occurred in the related area of climate change and energy.

### Legal and Regulatory developments

#### (a) Integrated CCS

Mexico does not have an integrated legal framework for CCS.

#### (b) Laws that facilitate stages in the CCS project cycle

No developments in laws that facilitate stages in the CCS project cycle have taken place during the reporting period.

### Policy developments

No significant CCS related policy developments have taken place during the reporting period.

### Regulatory and policy developments in related areas

#### (a) Climate Change & Energy

In early 2011 the *General Law of Ecological Balance and Environmental Protection* was amended to incorporate climate change regulations. The amendments included:

- Incorporation of a definition of climate change in the Act and
- Provisions setting out the authority of environmental agencies to formulate and execute mitigation actions.

Currently, a bill for a *General Law for Climate Change* is being discussed in Congress.

### Significant Reports, Studies or Conferences

No significant reports or studies have been commenced or released during the reporting period and no significant conferences have been held.

### Expectations in the next 6-12 months

In the next 6-12 months it is expected that debate will continue on the *General Law for Climate Change*.

## 4.11 Norway

A number of developments in CCS matters have taken place in Norway during the period from 1 November 2010 to 30 June 2011.

### Legal and Regulatory developments

#### (a) Integrated CCS

Norway currently does not have an integrated CCS Regime. CCS projects are addressed on a case by case basis using existing environmental legislation. There have been no moves to implement integrated CCS legislation in the reporting period.

#### (b) Laws that facilitate stages in the CCS project cycle

Regulations relating to the storage of CO<sub>2</sub> in sub-sea reservoirs on the Norwegian continental shelf are currently being developed by the Ministry of Environment, the Ministry of Petroleum, the Ministry of Labour, the Climate and Pollution Agency and the Petroleum Safety Authority. The regulations will cover both transportation and storage of CO<sub>2</sub> at sea.

It is assumed that the draft regulations will also include provisions relating to long term storage liability. It is further assumed that in line with the EU CCS Directive, the responsibility for CO<sub>2</sub> stored within Norwegian territory will be transferred to the state for a period after the closure of a storage location. The new regulations relating to storage liability will supplement general environmental liability provisions contained in the *Pollution Control Act* and, in circumstances where CO<sub>2</sub> projects are integrated as part of petroleum activities, the *Petroleum Act*. Norway currently has two petroleum integrated CCS projects.

### Policy developments

The main policy developments in the period have been:

- Delivery of a submission welcoming the potential inclusion of CO<sub>2</sub> capture and storage in geological formations as a CDM project activity.
- The issue of an invitation from the Ministry of Petroleum and Energy for CO<sub>2</sub> storage sites to be nominated for use by the CCS Project at Mongstad.

### Regulatory and policy developments in related areas

#### (a) Climate Change & Energy

At the United Nations Climate Change Conference held in Cancun, Mexico in December of 2010, Norway agreed to reduce its GHG emissions to 40% of 1990 emission by 2020. The pledge is conditional on a comprehensive global emissions reduction agreement being reached after 2012.

Norway has also pledged to be carbon neutral by 2050 (when taking into account its contributions to emissions reductions abroad). If a significant number of countries take on major emissions reduction obligations it has further pledged to move this target forward to 2030. Norway aims for two thirds of the reductions to be met by domestic

measures and will continue the Norwegian Emissions Trading Scheme (*NETS*) into the post-Kyoto period in order to achieve this goal.

**Significant Reports, Studies or Conferences**

The BIGCCS International CCS Research Centre was established in February 2011 by the Research Council of Norway. The BIGCCS Centre aims build expertise and close critical knowledge gaps in the CO<sub>2</sub> chain. It will ultimately work towards the development of novel technologies in an extensive collaborative research effort.

**Expectations in the next 6-12 months**

In the next 6-12 months it is expected that:

- The Ministry of Environment, the Ministry of Petroleum, the Ministry of Labour, the Climate and Pollution Agency and the Petroleum Safety Authority will produce draft regulations relating to the storage of CO<sub>2</sub> in sub-sea reservoirs on the Norwegian continental shelf.
- The deadline for nominations of storage sites for the Mongstad project will close.

## 4.12 Republic of Korea (South Korea)

A number of developments in CCS matters took place in the Republic of Korea in 2010 and these have been implemented on an ongoing basis during the period to 30 June 2011.

### Legal and Regulatory developments

#### (a) Integrated CCS

The Republic of Korea has not yet developed an integrated legal framework for CCS.

#### (b) Laws that facilitate stages in the CCS project cycle

The *Marine Environment Management Law (MEML)* prohibits wastes generated on land from being disposed of in the sea, except in circumstances where the waste is prescribed under the Ministerial Decree to the MEML. In September 2010 the *Ministerial Decree to the Marine Environment Management Law Amendment* was adopted. The amendment allows for CO<sub>2</sub> streams generated by CO<sub>2</sub> capture processes to be disposed of in the sea provided that additional notice is given to the Ministry of Land Transport and Maritime Affairs.

### Policy developments

In July 2010, the Comprehensive National CCS Implementation Plan was announced by the Presidential Green Growth Commission, the Ministry of Land Transport and Maritime Affairs, the Ministry of Environment, the Ministry of Strategy and Finance and the Ministry of Education, Science and Technology. The Comprehensive National CCS Implementation Plan provides key policy objectives and government plans for the development of CCS in the Republic of Korea and includes:

- A two phase carbon capture pilot project. The phase I pilot will operate between 2010 and 2018 and will have a capture capacity of 10-30 MW. The phase II project will operate between 2012 and 2020 and will have a capacity of 100-300MW.
- Development of technology for ship and pipeline transportation.
- Identification of the need for KRW 240 billion of investment for technology development in capture, storage integration and conversion.
- A recommendation that for large scale capture pilot projects 20% of the investment required should be from the government and 80% of investment should be from the private sector. The plan also recommends that for large scale storage pilot projects 60% of the investment required should be provided by government sources and 40% should be from the private sector.
- Identification of the need for KRW 2.3 trillion of total investment.

### Regulatory and policy developments in related areas

#### (a) Climate Change & Energy

The Republic of Korea initiated a trial ETS in January 2010, to operate until 2012. The scheme covers around 640 installations.

The Republic of Korea passed the *Basic Act on Green Growth* in December 2009 (*Green Growth Act*), which stipulates the introduction of a mandatory ETS. Legislation that was due to be introduced to Parliament in December 2010 (for a 2013 start to the scheme) was delayed but is still expected to be considered early in 2011, possibly with a later start date.

Separately, the government announced on 28 September 2010 that companies with factories producing more than 25,000 tonnes of CO<sub>2</sub> a year must set energy-saving and GHG -reduction targets by September 2011

While no emissions trading scheme has been implemented in Korea, the Green Growth Act contains mandatory reporting of carbon emissions provisions and provides the framework for an emissions trading scheme. The Green Growth Act requires mandatory emissions reductions for big emitters and also requires the development of a national strategy for low carbon and green growth and basic plans for climate change and energy every five years.

The Green Growth Act prescribes that the government may establish a GHG emissions trading scheme in the future, including a cap-and-trade based ETS, in order to efficiently meet its GHG reduction target and that the specifics of the ETS will be prescribed in a separate Act.

The *Emissions Trading Bill*, first proposed by the government on 17 November 2010 and submitted to the National Assembly on 15 April 2011, does not include many details regarding the Korean ETS. These details are to be included in the Presidential Decree to be promulgated under the Bill, the draft of which has not yet been released. The ETS is to include those companies identified as GHG Regulated Companies under the Green Growth Act and any other entities that chose to voluntarily participate in the scheme.

According to the Emissions Trading Bill, the ETS will be implemented from 1 January 2015. During Phase I, 95% or more of GHG emissions credits will be allocated for free and the rate of such future allocation will be adjusted in subsequent phases.

### **Significant Reports, Studies or Conferences**

In October, 2010 the Korea Carbon Capture and Storage Association commenced a review of the CCS Legal and Regulatory System. The Ministry of Knowledge Economy has states that the report will produce recommendations for changes to the Korean Legal Framework.

### **Expectations in the next 6-12months**

In the next 6-12 months it is expected that:

- The Korea Carbon Capture and Storage Association will complete its review of the CCS Legal and Regulatory system in the Republic of Korea.
- Construction of a 10MW pilot capture plant will commence as part of phase 1 of the capture pilot project.

### 4.13 Romania

Some significant developments in CCS matters have taken place in Romania during the period from 1 November 2010 to 30 June 2011.

#### Legal and Regulatory developments

##### (a) Integrated CCS

The main development in the review period was the transposition into Romanian law of the CCS Directive 2009/31/CE through the Governmental Emergency Ordinance No. 64 of 29 June 2011 on the geological storage of CO<sub>2</sub>, published in the Official Gazette of Romania, Part I, No. 461 of 30 June 2011 (*GEO No. 64/2011*).

GEO No. 64/2011 mainly regulates CO<sub>2</sub> storage and transportation activities, while at the same time referring incidentally and indirectly to CCS in an integrated context. While the integrated CCS is not excluded from the scope of application of GEO No. 64/2011, the newly-adopted document focuses on defining the general rules governing the permitting procedure for CO<sub>2</sub> storage and the liability arising in connection with such storage activity.

The CCS Ordinance is generally similar with the CCS Directive, except for limited differences (e.g., the application for storage permit under the GEO No. 64/2011 requires the submission of the final document issued in the environmental impact assessment procedure, whereas the CCS Directive requires only the inclusion of the initial information document required under the aforementioned procedure). It is unclear if such differences will be maintained in the legislation and, if so, whether the environmental impact assessment regulatory framework will be adapted to ensure correlation between the two sets of enactments.

In terms of CO<sub>2</sub> storage, GEO No. 64/2011 does not go beyond the rules set out in the CCS Directive. Thus, while GEO No. 64/2011 reproduces the main rules on storage site identification, general permitting conditions for exploration and exploitation of such sites, the actual procedural steps to be followed are not detailed in this regulation. Instead, GEO No. 64/2011 provides that these procedural rules will be adopted by the authority mainly competent to enforce this enactment, namely the National Agency for Mineral Resources (*NAMR*) with the involvement of other authorities having limited competence in this field, e.g.: the Ministry of Environment and Forests, the National Environmental Protection Agency (*NEPA*), the National Environmental Guard.

While the selection of the authorities having competencies in the CCS field has been done bearing in mind the competencies and experience of such authorities in related fields, until now only NEPA has formally amended its organizational framework to reflect the newly-gaining competencies in the CCS field. The amendment of the framework governing the other authorities having competencies in the CCS field will need to also be amended in the near future in order to ensure the necessary funds and manpower for the implementation of the CCS legal framework.

In terms of storage liability, GEO No. 64/2011 reiterates the general rules under the CCS Directive, including in terms of consequences of leakages or significant

irregularities, and the obligation of the storage site operators to set up (i) financial guarantees for operation, closure and post-closure obligations, including those arising under the emission trading scheme framework, and (ii) financial contributions to be made available to the competent authority before transferring responsibility for a closed site.

Pursuant to the discussions had with the NAMR and Ministry of Environment and Forests representatives, the actual forms and rules governing the establishment of the financial guaranties and contributions have yet to be considered. While no decision has been taken in this respect, it is likely that such rules will be set out in secondary legislation adopted by the aforementioned authorities, with the involvement of the Ministry of Public Finances and, possibly, other competent authorities.

In addition to the liability rules set out above, GEO No. 64/2011 introduces an amendment to the Government Emergency Ordinance No. 68 of 28 June 2007 on environmental liability with regard to the prevention and remedying of environmental damage (which transposes the Environmental Liability Directive 2004/35/CE), amendment meant to extend the scope of applicability of the environmental liability framework to CO<sub>2</sub> storage as well (for details, please see the Regulatory developments in related area sub-section below).

GEO No. 64/2011 fails to address issues which may be relevant for the CCS projects, such, as:

- ensuring rights over the land necessary for performance of CCS activities, as well as the access rights to such lands;
- determining the priority that CCS activities take as compared to other competing land uses that may be carried out involving the same land;

Note: In this respect, NAMR representatives indicated in informal discussions that CCS will only be implemented at sites where other natural resources exploitation activities may no longer be performed. For this reason, NAMR deems that, at least for the immediate future, only saline aquifers will be considered for CO<sub>2</sub> storage projects.

- what criteria will be used for determining potential incompatibilities between CCS activities and other activities carried out in the area where CCS activities are carried out; and
- whether any fees or royalties related to the performance of CCS activities will be applied and the manner of establishing such (e.g. the possibility of applying royalties only to the operators that provide CO<sub>2</sub> storage services to third parties).

While some of these gaps may be covered by the secondary legislation to be adopted to ensure the full implementation of GEO No. 64/2011, in some instances (e.g., ensuring land rights, taxes) the passing of laws by the Romanian Parliament may be required. Romanian authorities' failure to address the aforementioned issues may result in difficulties or barriers affecting the implementation of CCS projects.

**(b) Laws that facilitate stages in the CCS project cycle**

In addition to the adoption of GEO No. 64/2011, during the relevant period the Romanian Parliament approved an amendment to the current national integrated pollution prevention and control (*IPPC*) framework in order to include the capture of CO<sub>2</sub> fluxes from IPPC plants for the purpose of geological storage among the industrial activities subject to the IPPC regulatory framework. This was introduced through Law No. 205 of 11 November 2010 approving the Government Emergency Ordinance No. 40/2010 on the amendment of the Government Emergency Ordinance No. 152/2005 on integrated pollution prevention and control and entered into force on 19 November 2010.

According to the Ministry of Environment and Forests (competent to oversee the transposition of the IPPC framework), no technical guidance on best available techniques are available currently for the CO<sub>2</sub> capture activity. The lack of any guidance on best available techniques may prove a challenge in the permitting process of CO<sub>2</sub> capture projects.

**Policy developments**

While no significant policy developments have occurred in the relevant period, some are currently under discussion (for details, please refer to the information on the draft energy strategy set out in the Expectations section below and on support schemes set out in Industry support sub-section below).

**Regulatory developments in related areas**

In addition to setting the general rules for site selection and storage exploitation, GEO No. 64/2011 also amends three pieces of legislation:

- Waters Law No. 107 of 25 September 1996 (the main legal enactment regarding protection of water resources, transposing the Waters Framework Directive 2000/60/EC and the Floods Directive 2007/60/EC);

Note: The newly-introduced amendments are meant to remove potential barriers to CO<sub>2</sub> geological storage from a water management perspective.

- Government Emergency Ordinance No. 68 of 28 June 2007 on environmental liability with regard to the prevention and remedying of environmental damage (which transposes the Environmental Liability Directive 2004/35/CE);

Note: The newly introduced amendment resides in the inclusion of activities consisting of the operation of CO<sub>2</sub> storage sites within the scope of application of this environmental liability regulatory framework, thus ensuring that the competent authorities may set forth prevention and remediation measures in case of environmental incidents.

- Government Emergency Ordinance No. 78 of 16 June 2000 regarding waste regime (which transposes the Directive 75/442, the Directive 91/689 and the Directive 2006/12/CE).

Note: This amendment was meant to exempt the gaseous effluents emitted into the atmosphere and the CO<sub>2</sub> subject to capture, transportation and geological storage from the application of the general legal regime on waste.

**(a) Climate Change & Energy**

Except for the general rules provided under GEO No. 64/2011 (similar to the CCS Directive), which link the CCS framework to the emission trading scheme one (including by providing the operators’ obligation to surrender GHG emission allowances in case of leakages), no significant legislative developments have been enacted in the relevant period.

**(b) Industry Support**

Geo No. 64/2011 provides that the Ministry of Economy, Trade and Business Environment may propose support schemes for the development of CO<sub>2</sub> capture, transportation and storage technologies. Such schemes will have to be approved by the Romanian Government subject to compliance with the state aid rules. While the wording of GEO No. 64/2011 is unclear, pursuant to the information made available by various competent authorities’ representatives, the development of CO<sub>2</sub> capture, transportation and storage technologies will cover the actual implementation and operations of such technologies. It was further clarified that while two support alternatives may generally be considered - i.e., CCS certificates and feed-in tariff, the latter alternative is currently preferred by Romanian authorities.

Considering the usual duration for the drafting and approval of support schemes, it may take time before these schemes are prepared. Pursuant to the information provided by various competent authorities’ representatives, the main aspects of the support schemes will be set out in a proposed amendment to the main energy law (due to be approved next year), while the actual implementation thereof will most probably be conditional upon the EC’s approval of the support scheme pursuant to the state aid rules.

**(c) Secondary / Supporting legislation**

Please see the Laws that facilitate stages in the CCS project cycle and the Regulatory developments in related areas sub-sections above.

**Significant Reports, Studies or Conferences**

On 12 May 2011, the Ministry of Economy, Trade and Business Environment organized a conference on “CO<sub>2</sub> Carbon and Storage – 2020 horizon” together with the Romanian National Committee of the World Energy Council. The event was organized by the promoters of GETICA CCS pilot project in view of addressing sensitive issues that may be relevant for the implementation of this project. The GETICA CCS project is officially promoted by Romania’s Prime Minister and its implementation is coordinated by the Ministry of Economy, Trade and Business Environment. GETICA CCS will be developed in the energy sector by means of a project company having as shareholders Turceni Energetic Complex (which is a 4x330 MW thermo-electrical plant functioning on lignite), SNTGN Transgaz SA Mediaş (which currently is the sole

natural gas transport operator in Romania) and SNGN Romgaz Mediaş (which is the largest natural gas storage operator in Romania and holds numerous concessions of natural gas storage sites). The Romanian Government, through the Ministry of Economy, Trade and Business Environment has proposed GETICA CCS for financing under the “NER 300” demonstration program for low-carbon technologies launched by the EC.

**Expectations in the next 6-12 months**

The most significant developments expected for the next 6-12 months are:

- The entry into force on 30 July 2011 of chapter VI of GEO No. 64/2011 setting forth the applicable sanctions in case of non-compliance;
- The approval by the Romanian Parliament of GEO No. 64/2011 through a law;

Note: This approval is required for all ordinances adopted by the Government. During the approval process, changes may be brought to the ordinance, which changes will be reflected in the final approval law to be adopted by the Parliament and published in the Official Gazette.

- The adoption by the Romanian Government of the energy strategy for the years 2011 – 2035 (the current proposal of which is published for public consultation on the website of the Ministry of Economy, Trade and Business Environment at;

Note: The draft strategy sets forth the promotion of CCS technologies as a measure for ensuring the development of the energy sector while achieving the climate change objectives already undertaken by Romania and the EU.

- The approval by NAMR (with the endorsement of Ministry of Environment and Forests) of the procedures for the issuance of the exploration permit (within 90 days as of 30 June 2011) and for the issuance of the storage permit (within 180 days as of 30 June 2011);
- The approval by NAMR of the procedure on the access of the potential operators to the CO<sub>2</sub> storage sites for the purpose of the geological storage of CO<sub>2</sub> (within 9 months as of 30 June 2011);
- The adoption by NAMR, NEPA and NEG (and, possibly, other competent authorities) of a protocol on the investigation of compliance with GEO No. 64/2011’s requirements (within 180 days as of 30 June 2011);
- The approval by the Romanian Energy Regulatory Authority of the procedure regarding the access of the potential CO<sub>2</sub> emitters to the CO<sub>2</sub> transportation networks (within 9 months as of 30 June 2011);

Note: While not expressly provided by GEO No. 64/2011, it is likely that the aforementioned procedure (or a separate enactment approved by the Romanian Energy Regulatory Authority) will also set forth rules on the issuance of the

CO<sub>2</sub> transportation license. The need for this license is regulated by GEO No. 64/2011.

- The provision of the support scheme for CCS projects as part of the amendment of the Romanian energy law.

#### 4.14 Saudi Arabia

Minor developments in CCS matters have taken place in Saudi Arabia during the period from 1 November 2010 to 30 June 2011.

##### Legal and Regulatory developments

###### (b) Integrated CCS

Saudi Arabia does not have an integrated CCS legal and regulatory framework.

###### (c) Laws that facilitate stages in the CCS project cycle

There have been no developments to facilitate CCS in other related laws during the reporting period.

##### Policy developments

On 21 February 2011 Saudi Arabia made a submission welcoming the potential inclusion of CO<sub>2</sub> capture and storage in geological formations as a CDM project activity.

##### Regulatory developments in related areas

There have been no developments to facilitate CCS in other related areas during the reporting period.

##### Climate change and energy related developments

Global renewable energy, policies & measures have been adopted through Royal Decree dated 3/5/1431H corresponding to 17/4/2010G on the King Abdullah City for Atomic and Renewable Energies (*K.A.CARE*).

Key elements of the policy include:

- (a) education and outreach including information dissemination and policy promotion;
- (b) financial measures including taxes and tax incentives;
- (c) institutional creation;
- (d) project-Based Programmes;
- (e) RD & D;
- (f) Diffusion.

Fully funded by the Saudi government, K.A.CARE will be located in Riyadh. K.A.CARE will be in charge of drafting policies for renewable and nuclear energy deployment plans. K.A.CARE will also coordinate the action of the different national Renewable Energy Centres and host university research institutes and private sector enterprises involved in the field of low carbon energy.

K.A.CARE will be supervised by a 13 member council from relevant ministries and have two main targets:

- ensure continued supplies of drinking water; and
- ensuring continued supplies of electricity.

Major attention will be paid to solar energy for desalination. K.A.CARE will be exempted from all taxes and tariffs on imported machinery and equipment dedicated to its activities

**Significant Reports, Studies or Conferences**

Saudi Arabia, Norway, the Netherlands and the UK announced their Carbon Capture and Sequestration initiative (*4 Kingdom CCS Initiative*) to identify and address technical issues, including gaps in knowledge, which could impede further commercialization of CCS, and to act in a coordinated manner to seek to enhance national expertise on CCS, and to encourage the sharing of knowledge and the transfer of technology.

On 26 February 2011 the 4 Kingdoms CCS Initiative held its First Technical Workshop. The workshop addressed the important role that CO<sub>2</sub>-EOR technology can play to help offset the costs of the first round of expensive demonstration CCS projects and in accelerating the deployment of CCS technology. Also, the workshop focused on emerging technologies or measures that could have immediate benefit in CO<sub>2</sub> EOR applications.

**Expectations in the next 6-12 months**

We are not aware of any immediate developments with respect to legal and regulatory reform.

#### 4.15 South Africa

Some significant CCS policy and R&D developments have taken place in South Africa during the period from 1 November 2010 to 30 June 2011. These developments represent a step-change in work around CCS in the country and are the logical conclusion of a range of preparatory initiatives that have been undertaken over the past few years, which have included:

- Establishment of the South African Centre for Carbon Capture and Storage (**SACCCS**) – under the auspices of the South African National Energy Research Institute (**SANERI**).
- Release of the South African CCS Atlas (which occurred immediately prior to the period under review on 1 October 2010).

As the concept of CCS is new to the country, certain work is necessary to advance CCS in South Africa. Consequently, SACCCS's focus is *inter alia* on storage and regulatory issues, which tend to be country-specific, although it is acknowledged that South Africa stands to learn from the experiences of other countries in this regard.

#### Legal and Regulatory developments

##### (a) Integrated CCS

A policy, regulatory and / or legislative system for integrated CCS does not yet exist in South Africa; nor has the country, to date, promulgated any CCS specific legislation. However, current trends suggest that this is likely to be government's ultimate intention and a range of national government departments are currently initiating steps towards the conceptualisation and establishment of a legal regime for CCS in the country, including: Department of Energy (**DoE**), Department of Mineral Resources (**DMR**) and Department of Water and Environmental Affairs (**DWEA**).

##### (b) Laws that facilitate stages in the CCS project cycle

See comments below under the heading "Regulatory developments in related areas".

#### Policy developments

Specific CCS developments have been in the realm of preparatory steps towards policy formulation but it has been made clear by government officials interviewed for the purposes of this update that, while the government has made progress in this regard, final decisions on the scope and direction of future CCS policy are still pending.

The DoE is regarded as the lead agency in CCS matters. The DoE's Strategic Plan for 2011 includes reference to CCS and provides for the development of a CCS discussion document during the current financial year, which compilation is still pending. A CCS Concept Note was also approved as a joint initiative between the DoE and the World Bank during the second quarter of 2011. Funding for this initiative derives from finance held in trust by the World Bank and provided by Norway and Global CCS Institute.

The following tasks have been delineated in the Concept Note:

- Assistance for the development of a CCS regulatory framework in South Africa.
- The consideration of scenarios for CCS implementation, including costs thereof.
- Capacity building across the range of disciplines potentially involved in CCS projects, and including public and private sector.
- Development of public outreach.

Non-CCS specific policy development includes:

- The National Climate Change Response Green Paper, 2010, GG 33801, Number 1083, 25 November 2010, which makes direct reference to CCS as a possible mitigation measure while noting the complexity and cost of the technology. The Green Paper was released under the *aegis* of the DEA.
- Discussion Paper for public comment, “Reducing Greenhouse Gas Emissions, The Carbon Tax Option”, December 2010, National Treasury, which promotes the idea of a carbon tax to encourage emissions reductions. While no reference is made to CCS in the document, the imposition of a carbon tax on big emitters may work as an impetus for CCS development in the country.

**Regulatory developments in related areas**

In light of the abovementioned lack of policy, regulatory and legislative specificity and in the interests of a comprehensive approach this review also considers developments within existing and peripheral or non-CCS specific regulation and national standards which have some bearing on CCS. Relevant regulatory developments in the period largely comprise amendments and refinements to existing but peripheral legislation and regulation. Examples include:

- Changes to relevant South African National Standards, e.g., standards for the transport of hazardous / dangerous substances (CO<sub>2</sub> falls into the definition of “class 2 dangers good in terms of an applicable South African national Standard (SANS 10228: 2006 (4th Edition), *The Identification and Classification of Dangerous Goods for Transport, ISBN 0-626-17933-5*).
- Changes to National regulations providing for environmental impact assessment and prior environment authorisation for activities which have the potential for a significant detrimental impact on the environment.
- Further elaboration of waste management activities that have, or are likely to have, a detrimental effect on the environment and certain Waste Classification and Management Regulations.
- The finalization of the so-called Integrated Resource Plan 2010 which provides for electricity planning to 2030.

**(c) Climate Change & Energy**

Please refer to regulatory and policy developments above.

**(d) Industry Support**

As abovementioned the SACCCS was established on 30 March 2009 after the signing of the SACCCS Charter on 27 March 2009. The following core parties are included in SACCCS: SANERI; Eskom; Sasol; British High Commission to South Africa;

Norwegian Embassy to South Africa; Anglo Coal; Schlumberger; Xstrata Coal; Total; PetroSA; Exxaro; and, the French Development Bank (AfD). The Fossil Fuel Foundation hosts periodic conferences dealing with CCS issues.

**Significant Reports, Studies or Conferences**

SACCCS has commenced with two studies during the prescribed period, namely:

- A Scoping Study for a Planned CCS Test Injection. The planned test injection is part of SACCCS’s 5-year workplan, which feeds into the overall South Africa CCS road map aimed at achieving commercial CCS operation by 2025.
- A study relating to the notion of CCR and CCS in South Africa.

In parallel to these studies is a EuropeAid funded feasibility study for a test injection named *South Africa-Europe Cooperation on Carbon Capture and Storage Project (SAfECCS)*, which will promote cooperation in the field of CCS between South African and European partners and which comprises the following two main activities: capacity building and knowledge sharing; and, assistance with the critical path to the implementation of CCS in South Africa.

Two directly-relevant workshops have been held during the period:

- *CCS Legal and Regulatory Workshop*: DoE and the IEA with support from SACCCS and the World Bank. Among the outcomes of this workshop is agreement between the IEA and the DoE to establish an Inter-Departmental Task Team to undertake a number of CCS-specific activities.
- *CCS Workshop: Perspectives for the Southern African Region*: arranged and hosted by the World Bank. This workshop occurred within the context of the range of CCS work currently being undertaken by the World Bank in the South African Development Community region which work includes the commissioning and finalisation of a report entitled *High Level Review of the Legal, Regulatory and Institutional Framework for the Implementation of Carbon Capture and Storage (CCS) Projects in South Africa*, December 2010 (researched and drafted by IMBEWU Sustainability Legal Specialists (Pty) Ltd). The outcomes of this workshop are not currently available.

**Expectations in the next 6-12 months**

- Finalisation of the scoping study for the proposed CCS test injection: October 2011 (approximately).
- Finalisation of the CCR / CCS study: August 2011 (approximately).
- Preliminary findings of SAfECCS (end of fourth quarter of 2011).
- Commencement of compilation of CCS policy by the DoE (third and fourth quarters of 2011).
- Release of a Climate Change Response White Paper (third and fourth quarters of 2011) – building on the foundation established by the Green Paper.

## 4.16 USA

### Federal

Some significant developments in CCS matters have taken place at the federal level in the US during the period from 1 November 2010 to 30 June 2011.

#### Legal and Regulatory developments

##### (a) Integrated CCS

No legal or regulatory developments in integrated CCS have taken place during the reporting period.

##### (b) Laws that facilitate stages in the CCS project cycle

On 10 December 2010, the Environmental Protection Agency (*EPA*) finalized its Federal Requirements under the Underground Injection Control (*UIC*) Program for Carbon Dioxide Geologic Sequestration (*GS*) Wells (*UIC Rule*). The UIC Rule establishes a new class of injection well (Class VI) and sets forth minimum federal requirements to ensure geologic sequestration is conducted in a manner to protect underground drinking water sources. The UIC Rule sets forth various requirements, including obligations related to site characterization, modelling of the injected area, well construction materials, monitoring of the CO<sub>2</sub> stream, post-injection monitoring and site care and financial responsibility. The UIC Rule applies to owners and operators of wells that will be used to inject CO<sub>2</sub> into the subsurface for long-term storage.

#### Policy developments

In February 2011 the US made a submission welcoming the potential inclusion of CO<sub>2</sub> capture and storage in geological formations as a CDM project activity.

#### Regulatory developments in related areas

##### (a) Climate Change & Energy

On 1 December 2010, the EPA finalized its Mandatory Reporting of Greenhouse Gases from Carbon Dioxide Injection and Geologic Sequestration (*Reporting Rule*)—Subparts RR and UU. The Reporting Rule covers facilities that conduct geologic sequestration of CO<sub>2</sub> (Subpart RR) and all other facilities that conduct injection of CO<sub>2</sub> (e.g., CO<sub>2</sub> enhanced oil and gas recovery projects) (Subpart UU). Facilities covered by Subpart RR must report CO<sub>2</sub> received, injected, produced, emitted from surface leakage and equipment leaks and CO<sub>2</sub> sequestered in subsurface geologic formations. Facilities covered by Subpart RR must also submit a Monitoring, Reporting and Verification plan for EPA approval. Facilities covered by Subpart UU have a lesser reporting burden. These facilities must report the source of the CO<sub>2</sub> and mass of CO<sub>2</sub> received.

#### Significant Reports, Studies or Conferences

No significant reports or studies have been commenced or released during the reporting period and no significant conferences have been held.

**Expectations in the next 6-12 months**

No significant developments are expected in the next 6- 12 months.

**States**

Significant developments in CCS matters has taken place in the States of Illinois and minor development in CCS matters have taken place in Texas during the period from 1 November 2010 to 30 June 2011.

**Legal and Regulatory developments**

**(a) Integrated CCS**

In the State of Illinois the *Clean Coal FutureGen for Illinois Act of 2011* was passed by the Illinois legislature on May 31, 2011. The Act sets forth a liability regime applicable to the FutureGen project, which is a public-private partnership between the Department of Energy, the FutureGen Alliance and other partners. The Act requires the FutureGen Alliance to procure a private insurance policy that insures it during the operations phase. The FutureGen Alliance must establish a CO<sub>2</sub> Storage Trust Fund, which is to be used to complement insurance products. The FutureGen Alliance retains primary liability for CO<sub>2</sub> injected during the operations phase of project (plus ten years following the operations phase) for claims that exceed the trust fund and insurance coverage. The State of Illinois assumes all liability for the CO<sub>2</sub> after the end of the operations phase (plus an additional ten year period). The State of Illinois will indemnify and provide representation of the FutureGen Alliance for certain post-injection actions. The Act has not yet been signed by the Governor.

**(b) Laws that facilitate stages in the CCS project cycle**

No significant developments in laws that facilitate stages in the CCS project cycle have taken place.

**Policy developments**

No significant CCS related policy developments have taken place during the reporting period,

**Regulatory developments in related areas**

**(a) Industry Support**

In Texas a new regulation, the *Crude Oil Production Tax/Enhanced Oil Recovery Projects Regulation*, establishing a tax break for CCS projects became effective on March 9, 2011. The regulation provides for a 50% reduction in the crude oil tax rate for producers producing oil from an approved EOR project that use CO<sub>2</sub> captured from an anthropogenic source in Texas. The CO<sub>2</sub> must have otherwise been released as an industrial emission, be measureable and sequestered in a geological formation following the EOR.

**Significant Reports, Studies or Conferences**

No significant reports or studies have been commenced or released during the reporting period and no significant conferences have been held.

**Expectations in the next 6-12 months**

In the next 6-12 months it is expected that the *Clean Coal FutureGen for Illinois Act of 2011* will enter into force.

## 5. Legislation

### Australia

*Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cth).*

*Offshore Petroleum and Greenhouse Gas Storage Legislation Amendment (Miscellaneous Measures) Act 2010 (Cth.).*

*Offshore Petroleum and Greenhouse Gas Storage Regulatory Levies Legislation Amendment (2011 Measures No. 1) Act 2011 (Cth.).*

*Offshore Petroleum and Greenhouse Gas Storage (Greenhouse Gas Injection and Storage) Regulations 2011 (Cth.).*

*Offshore Petroleum and Greenhouse Gas Storage (Regulatory Levies) Act 2003 (Cth.).*

*Offshore Petroleum and Greenhouse Gas Storage (Regulatory Levies) Amendment Regulations 2011 (Cth.).*

*Offshore Petroleum and Greenhouse Gas Storage Regulatory Levies (Consequential Amendments) Act 2011 (Cth.).*

*Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011 (Cth.).*

*Offshore Petroleum and Greenhouse Gas Storage (Safety Levies) Amendment Act 2009 (Cth).*

*Offshore Petroleum and Greenhouse Gas Storage (Safety Levies) Amendment Act 2010. (Cth.).*

*Personal Property Securities Act 2009 (Cth).*

### Brazil

*Federal Decree No. 7,390/2010.*

### Canada

*Alberta Carbon Capture and Storage Statutes Amendment Act 2010.*

*Amendment of Crown Mineral Act.*

*Canadian Environmental Protection Act, 1999.*

*Canadian Environmental Assessment Act.*

*Carbon Sequestration Tenure Regulation, 2011.*

*Carbon Capture Storage and Funding Act 2009.*

*Carbon Capture Storage and Funding Act Regulation 2010.*

*Environmental Management and Protection Act, 2002.*

*Oil and Gas Conservation Amendment Act.*

*Pipelines Act.*

**China**

*Twelfth Five Year Plan of the People's Republic of China*

**European Union**

*Commission decision of 3/11/2010 on the financing of projects.*

*Decision on the questionnaire to report on the implementation of the CCS Directive*

*Guidance documents for the implementation of the CCS Directive*

**Denmark**

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