GLOBAL CCS INSTITUTE

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EPRI ELECTRIC POWER RESEARCH INSTITUTE

Strategic Analysis of the Global Status of Carbon Capture and Storage

Report 3: Country Studies
New Zealand

Final Report

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New Zealand

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Qualifications

This report:

1. *states the law current as at 31 March 2009*
2. *should not be relied upon as a substitute for specific legal advice*
3. *has links and references throughout that were current as at 31 March 2009*
4. *represents the views of Baker & McKenzie only and not of any person or agency that may have contributed to or reviewed any aspect of the report*

Contents

1. Executive summary

New Zealand has supported CCS in the international community and has participated in the research of CCS technologies. The New Zealand Government has monitored international CCS developments and created policy and research groups to determine how CCS may be deployed in New Zealand. This includes a review of the existing legislative framework and what amendments may be required, as well as research into potential CCS sites in New Zealand.

New Zealand appears to be in a unique position as a developed country with a high proportion of agricultural emissions.

Currently, no legislation has been enacted that specifically applies to CCS in New Zealand. Existing legislation may be applicable to some stages of the CCS process, however a more comprehensive legislative framework is necessary before CCS can be deployed in New Zealand.

2. Glossary

AEE	Assessment of Environmental Effects
CCS	Carbon capture and storage
CO2CRC	CO2 Cooperative Research Centre initiative
ESS	Energy Safety (formerly the Energy Safety Service)
FRST	Foundation for Research, Science and Technology
GNS	Institute of Geological Sciences
MED	Ministry of Economic Development
NZ ETS	New Zealand Emissions Trading Scheme
NZU	New Zealand Unit
RGS	NZ CCS Research Steering Group
RMA	Resource Management Act 1991
TCR	Territorial Customary Right

3. CO_2 pricing

3.1 Introduction

New Zealand supports the global uptake of CCS as it recognises that CCS is likely to contribute to reducing global CO_2 emissions, particularly by large CO_2 emitting countries.

The Ministry of Economic Development (MED) is the lead agency for the development of CCS policy in New Zealand. MED chairs the NZ CCS Policy Group, made up of a range of government agencies. The main objective of the policy group's current work program is to ensure that the appropriate legislative and regulatory framework is in place to regulate CCS should it be deployed in New Zealand. However none of the existing relevant legislation was drafted in contemplation of CCS. MED also sits on the NZ CCS Research Steering Group (the RSG), which is a government-industry research partnership established to advance New Zealand's capability to deploy CCS, and which is currently researching New Zealand's capacity to store CO_2 in geological structures.[1]

Approximately half of New Zealand's total GHGs come from agriculture – methane produced by cattle, sheep, deer and goats digesting grass, and nitrous oxide from manure, fertilisers and soils. New Zealand appears to be in a unique position as a developed country with such a high proportion of agricultural emissions.

In addition, a high proportion of New Zealand's electricity is sourced from renewable sources, such as hydro. For most other developed countries, energy emissions from fossil fuel use (e.g. power, transport and manufacturing) dominate.

As a result of New Zealand's emissions profile and the limited scope to apply CCS technologies to existing thermal power stations, the need for CCS in the short-term in New Zealand seems less well proven than in many other countries, though the amount of fossil-fuel fired generation in New Zealand has increased over recent years. New Zealand also has significant hydrocarbon reserves that are currently under-utilised, and therefore CCS remains an option for future use as CCS technology becomes more well developed and as the cost of deploying CCS drops.

3.2 Mandatory cap and trade schemes

The New Zealand Emissions Trading Scheme (NZ ETS) was passed in September 2008 through a series of amendments to the Climate Change Response Act 2002 (Climate Change Response Act). Following a change in government in November 2008, a special select committee was formed to review the NZ ETS legislation. This may result in changes or the development of new alternatives. Therefore the following comments on aspects of the NZ ETS must remain provisional in nature.[2]

The consolidated legislation is supplemented by the following Regulations:

- Climate Change (Unit Register) Regulations 2008;

[1] Further details of the government's CCS work program are available at: http://www.med.govt.nz/templates/StandardSummary____34274.aspx

[2] In 2005 New Zealand proposed a carbon tax on NZ$15 per tonne of CO_2-equivalent, which was scheduled to take effect from April 2007. However it was abandoned in December 2005 after the 2005 election and the government decided to focus on other mechanisms for reducing greenhouse gas emissions. It was thought that the tax would create unequal incentives and be inefficient due to the numerous exemptions throughout the economy.

- Climate Change (Forestry Sector) Regulations 2008; and
- Climate Change (Liquid Fossil Fuels) Regulations 2008.

This legislation provides for the cap-and-trade scheme to be phased in sector by sector over a period of five years, beginning from January 2008 with the forestry industry. Under the existing legislation all major emitting sectors will be covered by 2013. Entities liable under the NZ ETS are required to monitor, record and report GHG emissions, and to surrender to the government one emissions unit (a Kyoto Unit, New Zealand Unit (NZU), or approved overseas unit) to cover each metric tonne of eligible emissions in a compliance period.

3.2.1 CO_2 cost pass-through

Entities covered by the NZ ETS are generally free to pass the costs of the NZ ETS on to energy consumers. However, this will not have immediate effect, therefore, in order to ease the transition into the NZ ETS, the New Zealand Government may allocate free NZUs to eligible "trade exposed" industries. These are producers that sell products that compete (domestically or internationally) with products in other countries in circumstances where New Zealand faces higher costs for than their competitors and cannot pass these costs through to consumers (Climate Change Response Act, s 73(2)(d)). This is facilitated by the Climate Change Response Act requiring the development of an Allocation Plan (Climate Change Response Act, s 79) for eligible firms. These producers may be entitled to a free allocation of NZUs equal to 90 percent of their 2005 emissions up to 2018, when this assistance will be phased out. Businesses that are able to pass on costs to their customers will not be allocated any free NZUs and will need to purchase NZUs required to meet their compliance obligations.

3.2.2 Application of emission reduction obligations

FOSSIL FUEL EXTRACTION FACILITIES

The Climate Change Response Act provides for the NZ ETS to be introduced across the economy through a staged process. In 2010 it will apply to stationary energy and industrial processes and in 2011 it will apply to liquid fossil fuels. However the review of the NZ ETS by the special select committee and any subsequent government decisions may affect these dates.

Once full compliance obligations have commenced under the NZ ETS, participants must surrender the number of units listed in their emissions return (one unit for each tonne of CO_2, or CO_2 equivalent, GHG emissions their activities produce in a year) by 30 April of the following year (Climate Change Response Act, s 65(4)).

The first date by which units must be surrendered for the stationary energy sector is 30 April 2011, and the liquid fossil fuels sector is 30 April 2012.

The NZ ETS was not made in contemplation of CCS, however Schedule 4, Part 2(2) of the Climate Change Response (Emissions Trading) Amendment Act 2008, contains a provision that allows for CCS to be incorporated into the NZ ETS at a future date. The schedule provides that CO_2 sequestration facilities will be allocated one emissions unit for every tonne of CO_2 they sequester, provided that the activity meets appropriate, but as yet undefined, sequestration requirements.

3.3 Non-mandatory emission reduction schemes

The voluntary carbon market in New Zealand is largely unregulated, however a number of international standards have been created to determine how an offset may be produced. Voluntary carbon market project developers can choose the standard that they want their project verified under.

3.3.1 Acceptance into mandatory cap and trade schemes

NZ ETS credits can be sold into the voluntary carbon market and cancelled. However, voluntary units cannot be sold into compliance.

3.4 Indirect cost imposition: renewable energy schemes

3.4.1 Portfolio energy standards

The renewable energy scheme in New Zealand is governed by the New Zealand Energy Strategy, which provides a framework for energy policy including goals and outcomes. This policy sets an aspirational target of 90 percent of energy to come from renewable sources by 2050. There is no scheme in New Zealand to promote the uptake of renewable energy in New Zealand by placing any obligations on electricity suppliers to supply a specific amount of their electricity from renewable sources.

3.4.2 Feed-in tariffs

There are no renewable energy specific feed-in tariffs in New Zealand. Whilst this has been discussed in the past, there are no plans to implement it. However there are several policies in place to raise awareness and support the growth of distributed generation.

3.5 Greenhouse gas emission and energy use reporting schemes

Voluntary and mandatory emissions reporting to underpin the NZ ETS was first introduced in New Zealand in 2008 through amendments to the Climate Change Response Act.

Voluntary reporting gives participants in the liquid fossil fuels (transport), agriculture, waste and synthetic gases sectors the option of reporting emissions before they have mandatory reporting and unit surrender obligations under the NZ ETS. This enables participants to become familiar with reporting systems and the preparation of emissions returns, before mandatory reporting obligations take effect. Mandatory reporting obligations commence the year following voluntary reporting, and participants are then required to complete an emissions return.

Aside from these reporting systems, New Zealand companies may voluntarily monitor and report GHG emissions at an "organisational" level. The Ministry for the Environment's Guidance for Voluntary, Corporate GHG Reporting: Data and Methods for the 2007 Calendar Year, provides assistance for those entities choosing to report on this basis. The document suggests entities follow the GHG Protocol or ISO 14064-1 standard to monitor/report emissions; provides default emissions factors that can be used; suggests that such entities obtain independent verification of reporting; and provides additional information for businesses wishing to report outside the NZ ETS framework.

4. Existing CCS initiatives

4.1 Introduction

New Zealand has recognised that CCS is an emerging technology with significant potential to reduce GHG emissions. The Minister of Energy and Resources has stated that:

- "New Zealand is in the early stages of investigating the potential of CCS for our unique energy mix and environment";
- "there are two aspects to this - domestic and international. Domestically, this support is designed to ensure maximum flexibility for New Zealand's energy future. We have much work to do in order to establish whether CCS is a viable option for us"; and
- "internationally, New Zealand supports CCS deployment, particularly in significant CO_2-emitting economies, recognising that global uptake of CCS is likely to contribute to reducing global CO_2 emissions in the future" (Brownlee, 2009).

4.2 Government or government-business research facilities

Through the NZ CCS Policy Group, MED leads the development of a governing CCS framework policy for New Zealand. At the same time, led by the Foundation for Research, Science and Technology, and also comprising industry participants and MED, the NZ CCS Research Steering Group funds research into New Zealand's capacity to deploy CCS .

4.3 Government funding

4.3.1 Research, development and commercialisation

GOVERNING FRAMEWORK: NZ CCS POLICY GROUP

A key objective of the NZ CCS Policy Group is to ensure that CCS remains an option for New Zealand. The immediate goals of the work program are to establish a governing legislative and regulatory framework for CCS. The CCS Policy Group also monitors international developments in CCS.[3]

RESEARCH: NZ CCS RESEARCH STEERING GROUP.

The RSG is a government-industry partnership, consisting of representatives from the Foundation for Research, Science and Technology, the Ministry of Economic Development, and various industry groups. Its aim is to increase New Zealand's capability and knowledge in CCS and to participate in

[3] The NZ CCS Policy Group consists of MED, the Department of Labour, the Ministry of Foreign Affairs and Trade, the Ministry for the Environment, the Ministry for Research, Science and Technology, the Foundation for Research, Science and Technology, the Ministry of Transport and Maritime New Zealand.

knowledge-sharing with Australia's CO_2 Cooperative Research Centre initiative (CO2CRC). The RSG has also commissioned work into New Zealand's capacity to store CO_2 in geological structures.[4]

4.4 Government-business joint ventures

In 2004 three New Zealand state-owned entities: Solid Energy, the Institute of Geological and Nuclear Sciences (GNS) and Genesis Energy, committed to invest A$1.75 million (US$1.42) over the years 2004-2011 into CO2CRC. CO2CRC researchers are currently undertaking a CCS demonstration project in south-western Victoria known as the Otway Project. This is the world's largest geosequestration demonstration project, which involves separating approximately 100,000 tonnes of CO_2 from natural gas, and injecting it into a depleted natural gas field.

4.5 Evaluation

New Zealand is positioning itself to be able to deploy CCS technologies, once they become proven, at a commercial-scale. This is reflected in developing CCS policy, which involves monitoring international developments, engaging in research regarding CCS in New Zealand and reviewing the legislative framework. However, a considerable amount of further research and enactment of legislation will be necessary before CCS technologies can be deployed in New Zealand. Possible incentives to encourage industry to participate in the research process are still being considered.

[4] For example, the RSG has commissioned research into the feasibility of CO_2 storage in the Waikato and Taranaki regions. The work includes preliminary basin assessments for Waikato and Taranaki; preliminary assessments of economic and risk assessment; current technology assessment for capture, transport and injection; and monitoring and verification.

5. Capture of CO_2

5.1 Introduction

There is no specific legislation governing the capture of CO_2, however environmental requirements under the Resource Management Act 1991 (RMA) would apply to this stage of a CCS project. In the absence of CCS specific legislation, this section looks at legislation applicable to other comparable activities, for example, planning, construction and environmental approvals for new infrastructure such as plants, pipelines and the treatment of natural resources.

5.2 General policy and legislation with applicability to CO_2 capture

5.2.1 Planning requirements

The construction of facilities for the capture of CO_2 may require approval under the Building Act 2004, which governs construction, alteration and demolition. This process involves completing a Project Information Memorandum, inspection, consent and the issuance of a compliance certificate.

Further, the RMA is a comprehensive environmental code based on sustainability which applies to all environmental effects of any activity. The RMA creates functions, powers and duties for government on a national, regional and district level. In order to carry out their duties, each level creates environmental standards, policy statements and rules. If any use of land contravenes these policy statements and plans, resource consent is required. In determining the level of resource consent required, the RMA designates five types of activities:

- a permitted activity: may be carried out without the need for a resource consent so long as it complies with any standards, terms or conditions specified in the relevant regional or district plan. A building permit will usually still be required if the activity is a building;
- a controlled activity: requires a resource consent before it can be carried out. The consent authority must grant the consent. It can impose conditions on the consent but only on matters over which the council has reserved control in the relevant plan;
- a restricted discretionary activity: requires a resource consent before it can be carried out. The consent authority can exercise discretion as to whether or not to grant consent, and to impose conditions, but only in respect of matters to which it has restricted its discretion in the plan;
- a discretionary activity: requires a resource consent before it can be carried out. The consent authority can exercise full discretion as to whether or not to grant consent and as to what conditions to impose on the consent if granted; and
- a non-complying activity: requires a resource consent before it can be carried out. A resource consent can be granted for a non-complying activity, but first the applicant must establish that the adverse effects of the activity on the environment will be minor or that the activity will not be contrary to the objectives of the relevant plan or proposed plan. Any effect on a person who has given written approval to the application will not be considered. In addition, the consent authority may disregard an adverse effect of the proposed activity if the plan permits an activity with that effect (the “permitted baseline” test).

All types of activity, other than permitted activity, require resource consent. Resource consent includes land use consent, subdivision consent, coastal permits, water permits and discharge permits. The procedures for obtaining consent include completing a detailed Assessment of Environmental Effects (AEE). The construction of CO_2 capture facilities would be considered an activity that requires resource consent under the RMA.

5.2.2 Retrofitting

Retrofitting a power plant with CO_2 capture technology would also require approval under the Building Act 2004 and resource consent under the RMA.

5.2.3 Relevant pollution laws and policies

Pollution laws are also governed by the RMA, which provides that all individuals are responsible for ensuring that their activities do not result in any adverse affects on the environment. Further, no person may discharge any contaminant into the water, or on to land where it may end up in the water. A contaminant includes any substance (including gas), which, when discharged onto or into land or into air, changes or is likely to change the physical, chemical or biological condition of the land or air onto or into which it is discharged.

This is a very broad definition as most gases are likely to change the physical, chemical or biological condition of the surrounding land or air. Whether CO_2 is considered a contaminant for the purposes of this definition may depend on the other gases it comes into contact with.

The RMA also provides that national, district and regional levels of government may create standards, policy statements and plans relating to the environment. The basis for these rules is the actual or potential effect on the environment of the activity. However the RMA also provides the authority should not have regard to the effects of such a discharge on climate change, except to the extent that the use of renewable energy results in a reduction in the discharge of GHGs.

5.3 Liability for failure to capture

If CO_2 capture failed at a facility covered by the NZ ETS, that facility would be required to produce permits equal to the amount of emissions not captured. Further, if CO_2 is a contaminant under the RMA, this may be considered to breach the pollution provisions of the RMA.

5.4 Evaluation

Whilst the existing requirements under the RMA are very comprehensive, there is a need for clarity as to the exact status of CO_2 under the RMA, as well as what type of activity the capture of CO_2 is, for the purpose of obtaining resource consent.

6. Transport of CO_2

6.1 Introduction

There is currently no comprehensive regulatory scheme for transport of CO_2 in New Zealand. The Gas Act 1992 and regulations apply to the New Zealand gas industry, and include safety requirements, standards for design, construction, installation and certification of pipelines and disclosure requirements for owners of gas pipelines. The legislation also creates the Energy Safety Service (ESS), which ensures compliance by conducting audits, surveys, investigations of accidents and incidents, the development of standards and provision of safety information. While CO_2 does not currently fall under the definition of gas, this regulatory framework could be considered to identify possible options for the regulation of the transportation of CO_2 for CCS activities.

6.2 General policy and legislation specific to transport of CO_2

6.2.1 Licencing of transportation activities

PIPELINES

NEW PIPELINES

A company proposing to construct a pipeline would be required to apply for a resource consent under the RMA. Consents that would typically be necessary for the construction of a pipeline include:

- a water permit: to use and divert groundwater during the construction of the pipeline;
- a discharge permit: to discharge contaminants such as sediments onto land and into water along the pipeline route where the groundwater table is intercepted;
- a land use consent: for construction; and
- a coastal consent: for construction and to discharge sediment during construction.

EXISTING PIPELINES

The RMA applies to the environmental effects of any activity. Therefore, if existing pipelines are to be used for transport of CO_2, the environmental effects of that activity will change and resource consent will have to be applied for.

ROAD AND RAIL TRANSPORT

To the extent that CO_2 is transported by road or rail in New Zealand, the Hazardous Substances and New Organisms Act 1996 would apply. Carbon dioxide is considered a class 2 (non-flammable, non-toxic gas) hazardous substance under this legislation. Therefore the Land Transport (Dangerous Goods) Regulation 2005 applies to the transportation of CO_2 on land.

TRANSPORTATION BY SHIP

The RMA and the Resource Management (Marine Pollution) Regulations 1998 apply to activities offshore to 12 nautical miles (territorial sea). Outside this area, the Maritime Transport Act 1994 and the Marine Protection Rules apply, which contain detailed technical requirements for a ship's construction, pollution prevention equipment and operation, as well as regulation of offshore oil and gas installations. Maritime Rule Part 24A sets out the responsibilities of seafarers, ship owners, shippers and other parties, with respect to dangerous goods to be carried by sea.

6.2.2 Planning

CONSTRUCTION AND BUILDING CODES

Clause F3 of the Building Code requires construction of buildings to provide for the safe storage of hazardous substances. The Health and Safety in Employment Act 1992 also influences the storage and movement of hazardous wastes by placing legal obligations on employers to identify and manage (eliminate, isolate, or minimise) hazards in the work place.

PIPELINE LICENCING REGIMES – NEW PIPELINES

New onshore and offshore pipelines require resource consent under the RMA. There is no further applicable legislation for pipeline licencing.

PIPELINE LICENCING REGIMES – EXISTING PIPELINES

Existing onshore and offshore pipelines require resource consent under the RMA. There is no further applicable legislation for pipeline licencing.

ENVIRONMENTAL IMPACT ASSESSMENT

An AEE must accompany each application for a resource consent under the RMA. This consists of a written statement identifying the effects of the proposed activity on the environment. If the activity is going to have negative effects on the environment, the AEE must also identify how these effects will be avoided or reduced.

STAKEHOLDER ENGAGEMENT

PUBLIC CONSULTATION

The consent authority must notify the public of an application for a resource consent within ten working days of the lodgement of the application unless it is a controlled activity or they are satisfied that the effects will be minor. If public notification is not required, the consent authority must serve a copy of the application on every person who they consider may be adversely affected by the activity.

If there is public notification, any person can make submissions to the consent authority regarding the application. If there is no public notification, any person served with a copy of the application may make submissions to the consent authority regarding the application. Submissions must be made within 20 working days of public notification or receipt of the application.

LEGAL CHALLENGE

The consent authority may refer a person or persons to mediation and if they consider it necessary they may hold a hearing. In making a determination, the consent authority must have regard to the actual or potential effects of the proposed activity, the provisions of the RMA and any other relevant policies.

6.2.3 Access / tenure

NATURE OF PROPERTY INTERESTS CONFERRED

The Submarine Cables and Pipelines Act 1996 provides for the protection of pipelines by allowing the creation of protected areas for them. It is an offence to damage pipelines.

A resource consent granted under the RMA will set out how priority is conferred. A consent is neither real nor personal property, and the rights associated with a consent are set out in section 122 of the RMA.

ESTABLISHING PRIORITY BETWEEN TRANSPORT AND EXISTING USES AND RIGHTS (INCLUDING PETROLEUM EXTRACTION)

FISHING

Under the Submarine Cables and Pipelines Act 1996 it is an offence to conduct fishing operations or anchor in a protected area.

FAUNA AND FLORA, INCLUDING ENDANGERED SPECIES

The Department of Conservation manages protected land under the Conservation Amendment (No 2) Act 1996, the Conservation Act 1987, the National Parks Act 1980, the Reserves Act 1977 and the Wildlife Act 1953. In order to operate commercial activities on land managed by the Department of Conservation under this legislation, a concession is required in the form of a lease, licence, permit or easement. The application must include a description of the proposed activity and any adverse affects there may be on the area. If a concession is granted, the holder will be required to pay concession fees, which are determined according to the type of activity and market rates.

RIGHTS OF INDIGENOUS PEOPLES AND OTHER CUSTOMARY RIGHTS

The New Zealand government recently passed the Foreshore and Seabed Act 2004, which affirmed the ownership of the Crown of the foreshore and seabed and a right of public access to these areas.

However this ownership may be subject to a Territorial Customary Right (TCR) which may be granted by the High Court. A TCR may only be granted to groups continuing to hold ownership of adjoining dry land. The terms of the right are to be approved by the High Court, and may include the right to oppose the grant of a resource consent under the Land Management Act 1991 and the power to regulate activities on foreshore and seabed areas. The Foreshore and Seabed Act 2004 has been considered somewhat controversial in New Zealand and its application to customary land rights still remains unclear.

6.2.4 Environmental and other risks

LEAKAGE OF TRANSPORTED CO_2

Leakage of transported CO_2 may be in breach of the provision of the RMA that provides that no person may discharge any contaminant into the water, or on to land where it may end up in the water. Further, if the entity is covered by the NZ ETS, they will be required to surrender NZUs in proportion to the amount of CO_2 leaked.

POLLUTION – NOISE, AIR AND WATER

This is regulated by the RMA and would be dealt with at the proposal stage. Any forms of pollution would be anticipated, and conditions relating to this would be included in the resource consent.

THREATENED/ENDANGERED SPECIES

A concession is required to operate commercial activities on land managed by the Department of Conservation. This concession would contain restrictions protecting threatened and endangered species in accordance with the legislation.

MIGRATORY SPECIES

A concession is required to operate commercial activities on land managed by the Department of Conservation. This concession would contain restrictions protecting migratory species in accordance with the legislation.

6.3 Evaluation

Whilst the RMA already applies to the construction of pipelines, there is a need for further development of CO_2 transport legislation, either through the extension of the application of the Gas Act 1992 to CO_2 if possible, or the creation of specific legislation.

7. Exploration of potential CO_2 storage sites

7.1 Introduction

The exploration of potential CO_2 sequestration sites is an important research output of the NZ CCS RSG.

7.2 General policy and legislation with application to exploration of potential CO_2 sequestration sites

7.2.1 Exploration licencing

Within the territorial sea of New Zealand, mining rights are governed by the Crown Minerals Act 1991.

This legislation governs extraction rather than injection, and CO_2 is not a mineral, therefore it does not seem to currently apply to CCS. However the CCS Policy Group is investigating whether it could apply to the allocation of geological storage spaces. In relation to resources outside the territorial sea, the Continental Shelf Act 1964 vests all rights in the Crown for the purpose of exploring the continental shelf and exploiting these resources. This includes the allocation of rights to mine minerals and requirements for access agreements between the land owner and mining company. However it is also limited to extraction, and relates to minerals. Section 27(d) of the Territorial Sea and Exclusive Economic Zone Act 1977 provides that the Governor-General may make regulations for the exploration and exploitation of the exclusive economic zone for any economic purposes, however no such regulations have been made.

If the Crown Minerals Act 1991 and the Continental Shelf Act 1964 were amended to include injection as well as extraction, and to apply to CO_2, exploration licences could potentially be granted under these acts for exploration within the territorial sea and on the continental shelf respectively.

Under the Crown Minerals Act 1991 different restrictions apply depending on the type of permit granted. Section 7 of the Continental Shelf Act 1964 gives the Minister for Foreign Affairs power to regulate the construction or use of installations or structures on the continental shelf in connection with the exploitation of natural resources. Permits are subject to such restrictions as the Minister for Energy thinks fit in the circumstances. Further, the Governor General is able to prohibit or restrict any continental shelf investigation that could interfere with navigating, fishing, conserving living resources, national defence, scientific research, submarine cables or pipelines.

7.2.2 Access / tenure

NATURE OF PROPERTY INTERESTS CONFERRED

A further impediment is the uncertainty regarding the ownership of potential CO_2 sequestration sites in the territorial sea. The New Zealand Government has recently passed the Foreshore and Seabed Act 2004, which affirmed the ownership of the Crown of the foreshore and seabed and a right of public access to these areas. However this ownership may be subject to a TCR which may be granted by the High Court to certain customary land owners. The Crown Minerals Act 1991 does not provide any further illumination on this issue. This ambiguity must be clarified before access rights can be granted.

ESTABLISHING PRIORITY BETWEEN EXPLORATION AND EXISTING USES AND RIGHTS

PETROLEUM AND RESOURCE EXPLORATION AND EXTRACTION

Petroleum and resource extraction is governed by the Crown Minerals Act 1991 and the Continental Shelf Act 1964. To the extent that exclusive rights had been granted to areas under this legislation, other rights could not be granted in conflict with this.

FISHING

The Continental Shelf Act 1964 grants the Governor General the right to prohibit or restrict any continental shelf investigation that could interfere with navigating, fishing, conserving living resources, national defence, scientific research, submarine cables or pipelines.

MINING

Mining rights are governed by the Crown Minerals Act 1991 and the Continental Shelf Act 1964. To the extent that exclusive rights had been granted to areas under this legislation, other rights could not be granted in conflict with this.

RIGHTS OF INDIGENOUS PEOPLES AND OTHER CUSTOMARY RIGHTS

See section 6.2.3 above.

7.2.3 Planning and construction regulation applicable to CO_2 sequestration facilities

Anyone proposing to construct a CO_2 sequestration facility within territorial waters would be required to apply for a resource consent under the RMA. It is likely that they would require a coastal permit. Further, they would be required to comply with the Building Code and any conservation legislation.

Beyond territorial waters, the main environmental obligations arise from section 8 of the Continental Shelf Act 1964, which provides that the Governor-General may make regulations to restrict exploitation of natural resources that could result in an interference with the conservation of the living resources of the sea. No such regulations have been made. Further, section 27(b) of the Territorial Sea and Exclusive Economic Zone Act 1977 provides that the Governor-General may prescribe measures for the protection of the marine environment of the exclusive economic zone.

ENVIRONMENTAL IMPACT ASSESSMENT

An AEE must accompany each application for a resource consent under the Resource Management Act. This consists of a written statement identifying the effects of the proposed activity on the environment. If the activity is going to have negative effects on the environment, the AEE must also identify how these effects will be avoided or reduced.

PIPELINE LICENCING REGIMES

Onshore and offshore pipelines require resource consent under the RMA. There is no further applicable legislation for pipeline licencing.

CONSTRUCTION AND BUILDING CODES

Clause F3 of the Building Code requires construction of buildings to provide for the safe storage of hazardous substances. The Health and Safety in Employment Act 1992 also influences the storage and movement of hazardous wastes by placing legal obligations on employers to identify and manage (eliminate, isolate, or minimise) hazards in the work place.

STAKEHOLDER ENGAGEMENT

PUBLIC CONSULTATION

The consent authority must notify the public of an application for a resource consent within ten working days of the lodgement of the application unless it is a controlled activity or they are satisfied that the effects will be minor. If public notification is not required, the consent authority must serve a copy of the application on every person who they consider may be adversely affected by the activity.

If there is public notification, any person can make submissions to the consent authority regarding the application. If there is no public notification, any person served with a copy of the application may make submissions to the consent authority regarding the application. Submissions must be made within 20 working days of public notification or receipt of the application.

LEGAL CHALLENGE

The consent authority may refer a person or persons to mediation and, if they consider it necessary, they may hold a hearing. In making a determination, the consent authority must have regard to the actual or potential effects of the proposed activity, the provisions of the RMA and any other relevant policies.

7.3 Evaluation

The legislation in its current state does not apply to CCS, thus there is little guidance as to how CO_2 sequestration exploration would be regulated and how exploration rights might interrelate to other rights. This could be remedied if the Crown Minerals Act 1991 and the Continental Shelf Act 1964 were amended to include injection as well as extraction. Clarification is also required in determining land rights within territorial waters.

8. Injection and pre-closure of CO_2 storage formations

8.1 Introduction

There is no legislation in New Zealand governing the subsurface injection of CO_2. As with the other stages of the process, resource consent would be required under the RMA for activities within territorial waters. A land use consent is required for the deposit of a substance in, on or under land and a coastal consent is required for the deposit of any substance in, on or under any foreshore or seabed in a manner that is likely to have an adverse affect on the land, foreshore or seabed. As previously stated, the Crown Minerals Act 1991 does not currently apply to injection of CO_2. Land use consents may have an unlimited duration, whereas coastal permits have a maximum duration of 35 years, with a default duration of five years.

Outside territorial waters the Continental Shelf Act 1964 and the Territorial Sea and Exclusive Economic Zone Act 1977 apply, although in their present state they do not apply to the injection of CO_2.

8.2 General policy and legislation

8.2.1 Access / tenure

LEGAL ACCESS TO AND USE OF DEEP GEOLOGICAL FORMATIONS FOR SEQUESTRATION

Legal access to the deep seabed presents a problem as ownership of potential sites is unclear. The New Zealand Government has recently passed the Foreshore and Seabed Act 2004, which affirmed the ownership of the Crown of the foreshore and seabed and a right of public access to these areas.

However this ownership may be subject to a TCR which may be granted by the High Court to certain customary land owners. Further, there is no mechanism for granting injection rights under any legislation in New Zealand law.

NATURE OF PROPERTY INTERESTS CONFERRED

A resource consent granted under the RMA is neither real nor personal property. If the Crown Minerals Act 1991 and the Continental Shelf Act 1964 were amended to include injection of CO_2, licences could be granted under these acts. The nature of the property interest conferred would depend on how the legislation was amended.

8.2.2 Planning and construction regulation applicable to CO_2 sequestration facilities

ENVIRONMENTAL IMPACT ASSESSMENT

An AEE must accompany each application for a resource consent under the RMA. This consists of a written statement identifying the effects of the proposed activity on the environment. If the activity is going to have negative effects on the environment, the AEE must also identify how these effects will be avoided or reduced.

PIPELINE LICENCING REGIMES

Onshore and offshore pipelines require resource consent under the RMA. There is no further applicable legislation for pipeline licencing.

CONSTRUCTION AND BUILDING CODES

Clause F3 of the Building Code requires construction of buildings to provide for the safe storage of hazardous substances. The Health and Safety in Employment Act 1992 also influences the storage and movement of hazardous wastes by placing legal obligations on employers to identify and manage (eliminate, isolate, or minimise) hazards in the work place.

STAKEHOLDER ENGAGEMENT

PUBLIC CONSULTATION

The consent authority must notify the public of an application for a resource consent within ten working days of the lodgement of the application unless it is a controlled activity or they are satisfied that the effects will be minor. If public notification is not required, the consent authority must serve a copy of the application on every person who they consider may be adversely affected by the activity.

If there is public notification, any person can make submissions to the consent authority regarding the application. If there is no public notification, any person served with a copy of the application may make submissions to the consent authority regarding the application. Submissions must be made within 20 working days of public notification or receipt of the application.

LEGAL CHALLENGE

The consent authority may refer a person or persons to mediation and if they consider it necessary they may hold a hearing. In making a determination, the consent authority must have regard to the actual or potential effects of the proposed activity, the provisions of the RMA and any other relevant policies.

8.2.3 Leakage liability

There is no provision for leakage liability in the current legislation. Further, there appears to be no existing precedent in New Zealand legislation. A liability regime has been created under contaminated land legislation, but it does not deal with long-term liability, which is the nature of the liability for CCS. The CCS Policy Group is currently considering the applicability of international precedents.

8.3 Evaluation

No existing legislation appears to offer precedence for the injection and pre-closure stages of CCS. New legislation would need to be enacted, particularly with relation to injection licencing and leakage liability before CCS could be deployed in New Zealand.

9. Post-closure of long-term storage of CO_2

It is doubtful that any existing legislation in New Zealand could apply to this stage of the CCS process. The RMA has limited long-term application due to time limits in the legislation. There is nothing to govern the effective monitoring of stored CO_2 and there are no precedents in New Zealand legislation for assuming liability on such a timescale. For example, the liability regime for contaminated land has only been in place since 1991 and is only at a very preliminary stage. The CCS Policy Group is considering the applicability of international precedents for this purpose.

10. Summary

New Zealand's policy position is to enable the deployment of CCS in the future. New Zealand has supported CCS internationally and has played a limited role in CCS research. Further, it monitors international CCS developments and has created policy and research groups to determine how CCS may be deployed in New Zealand. In particular, it is conducting a review of the existing legislative framework to determine what amendments may be required, as well as research into potential CCS sites in New Zealand.

10.1 CCS policy and legislation 'best practice'

Although New Zealand has not yet enacted specific or integrated CCS laws, aspects of the following regulations may be useful in assembling a global CCS "best practice" template:

- RMA;
- Continental Shelf Act 1964;
- Territorial Sea and Exclusive Economic Zone Act 1977;
- Submarine Cables and Pipelines Act 1996;
- Foreshore and Seabed Act 2004;
- Transport (Dangerous Goods) Regulation 2005; and
- Health and Safety in Employment Act 1992.

10.2 Gaps in CCS policy and legislation

Currently, no legislation has been enacted that specifically applies to CCS in New Zealand. Existing legislation may be applicable to some stages of the CCS process, however, a more comprehensive legislative framework is necessary before CCS can be deployed in New Zealand.

The NZ ETS contemplates the inclusion of CCS at a future date. The RMA provides a comprehensive system of resource consents for land use and water use in territorial waters which would apply to the environmental effects of the various stages of the CCS project. However the RMA is restricted in that consents are subject to time limitations that do not allow for long-term monitoring and liability.

There is no applicable licencing scheme as major pieces of legislation including the Gas Act 1992 and the Crown Minerals Act 1991 do not apply to the CCS process in their current form. Either this legislation must be amended or new legislation needs to be introduced. It is also unclear how the legislation governing the exclusive economic zone and the continental shelf might apply to CCS.

Further, land rights within territorial waters are currently a somewhat controversial issue in New Zealand. Finally, there is no applicable legislation to the post-closure and long-term storage stage of the CCS project. The assumption of liability remains an issue for which there is no precedent.

10.3 Priority areas for future policy and legislative development

Priority areas include the development of an enabling legislative framework. This will likely involve both amendment to existing legislation and regulation and the creation of new, CCS-specific legislation

and regulation. The issue of long-term liability will need to be considered as part of the overall CCS governing framework.

11. References

11.1 Legislation, regulation and international material

11.1.1 International

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