



Strategic Analysis of the Global Status of Carbon Capture and Storage

Report 3: Country Studies
Norway

Final Report



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- 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*
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1. Executive summary

Norway has been active in CCS for more than 10 years and dedicates considerable levels of resource to CCS development and is considered by many to be a world leader in CCS development and deployment.

Norway has no dedicated CCS laws and would likely benefit from a more integrated approach, aimed at simplifying, streamlining and filling in gaps in CCS regulation (Birkeland, 2009: 23). Although Norway has chosen to adopt new European legislation on CCS, it is likely that it will choose to amend existing legislation rather than develop a dedicated CCS framework. An overhaul of existing legislation would require the investment of substantial time and resources and it appears that the Norwegian Government prefers to dedicate its resources to the development and deployment of CCS technologies on a case-by-case basis.

An important feature of Norway's legislative history and future development is its relationship with the EU. Norway is not a Member State of the EU but is a party to the Agreement on the European Economic Area (EEA Agreement).¹ The EEA Agreement allows countries that are not European Member States to participate in the European internal market, provided that they adopt European legislation establishing certain minimum standards. Although the focus of the EEA Agreement is on the efficient functioning of the internal market, it has been (and is expected to continue to be) an effective tool in linking Norway's environmental legislative framework with its European counterpart.

¹ The other two parties to the EEA Agreement are Iceland and Liechtenstein. The EEA Agreement entered into force on 1 January 1994. It governs the relationship between the EU (composed of its 27 Member States) and the three EFTA countries (Iceland, Liechtenstein and Norway). The EEA Agreement is concerned principally with the four fundamental pillars of the internal market, "the four freedoms", i.e. freedom of movement of goods, persons, services and capital. However, it also covers "flanking policies" such as social policy, consumer protection, and environment policy (European Commission, 2009).

2. Glossary

CCS	Carbon Capture and Storage
CCS Directive	Directive 2009/31/EC on the geological storage of CO ₂
EEA	European Economic Area
EEA Agreement	Agreement on the European Economic Area
EFTA	European Free Trade Association
Emissions Act	Greenhouse Gas Emission Allowance Trading and the Duty to Surrender Emission Allowances Act of 17 December 2004 No. 99
Environmental Liability Directive	Directive 2004/35/EC on environmental liability
EU	European Union
EUR	Euro
EU ETS	European Union Emissions Trading Scheme
NAP	National Allocation Plan
NETS	Norwegian Emissions Trading Scheme
NOK	Norwegian Kroner
Petroleum Act	Petroleum Act of 29 November 1996 No. 6
Planning and Building Act	Planning and Building Act of 14 June 1985 No. 77
Pollution Control Act	Pollution Control Act of 13 March 1981 No. 6

3. CO₂ pricing

3.1 Introduction

Norway initially established a cap and trade scheme in 2005 (the Norwegian Emissions Trading Scheme or NETS) through the GHG Emission Allowance Trading and the Duty to Surrender Emission Allowances Act of 17 December 2004 No. 99 (Emissions Act). The original NETS was similar to the EU ETS; any person engaged in activities within the scope of the NETS (an Operator) was required to obtain a discharge permit and surrender allowances corresponding to the volume of emissions generated by the relevant installation(s) for which they were responsible (Pollution Control Act 1981, s 11; Emissions Act, ss 5, 13). In terms of coverage, the original NETS covered CO₂ emissions from large emitters in selected (mainly industrial) sectors, which represented approximately 10-15 percent of Norway's GHG emissions during the period 2005-2007 (Dovland, 2005).

Although the NETS was similar to the EU ETS and commenced at the same time, the two schemes were not linked during the period 2005-2007. In 2007, however, it was announced that Norway would link to the EU ETS through the EEA Agreement. This was achieved through the incorporation of relevant EU instruments into the EEA Agreement² and the adoption of Norwegian national legislation (Emissions Act).³ In 2008, 113 installations were reported to be within the scope of the EU ETS and, between 2008-2012, it is expected the EU ETS, as implemented in Norway, will cover 35 - 40 percent of the GHG emissions from Norwegian sources (Europa, 2009).⁴

3.1.1 Application of emission reduction obligations

The Emissions Act applies to emissions in connection with, *inter alia*:

- energy production;
- refining of mineral oil; and
- coke production.

FOSSIL FUEL EXTRACTION FACILITIES

A significant proportion of the emissions covered by the original NETS (2005-2007) were generated by combustion installations that were used in relation to oil and gas extraction (Norwegian Government, 2008).⁵ This is because Norway's use of hydro-electric power generation, emissions from the energy sector mainly consist of emissions from oil and gas extraction.

² See Point 21a of Annex XX to the EEA Agreement, which incorporates Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC. Subsequent points incorporate ancillary European legislation relevant to emissions trading. The revised EEA Agreement incorporates some amendments to the EU ETS Directive to account for the particular circumstances of EEA Member States.

³ Amendments relevant to the period 2008-2012 entered into force on 1 July 2007 and were aimed at making Norwegian law consistent with European legislation 2008-2012. They extend the scope of the original NETS and define the framework for allocation of allowances, as well as reflecting other provisions of European legislation establishing the EU ETS.

⁴ See further the Norwegian National Allocation Plan for 2008-2012 (developed pursuant to requirements of European legislation establishing the EU ETS).

⁵ Figures for 2005 are set out in the Norwegian National Allocation Plan for 2008-2012, page 4.

Norway's inclusion in the EU ETS for 2008-2012 means that the sectors covered in Norway will be similar to those covered in EU Member States. As noted in the EU report, the EU ETS covers flaring from offshore oil and gas production, with coverage defined as the combustion of materials derived from the exploration, appraisal, production, storage and processing of offshore oil and gas (including imported oil and gas stored in offshore reservoirs), for purposes other than energy production, where such activities are undertaken at offshore oil and gas facilities or onshore oil and gas reception terminals that are designated combustion installations with a rated thermal input exceeding 20 MW.⁶

CO₂ CAPTURE AND TRANSMISSION INFRASTRUCTURE

In its original National Allocation Plan (NAP) for 2008-2012, the Norwegian Government proposed a reserve to be set aside for new gas-fired power plants based on CCS technology and for highly efficient heat and power plants. This proposal was rejected, however, by the European Free Trade Association (EFTA) Surveillance Authority during its assessment of the Norwegian NAP as incompatible with the EU ETS (Koeniquer & Thygesen, 2009).⁷ The Norwegian Government has decided, therefore, against establishing such a reserve.

In the EU, the EU ETS will be extended to cover the capture, transport and geological storage of GHGs. Operators of installations that fall within the scope of the EU ETS from 2013 onwards will not need to surrender allowances for CO₂ that is permanently stored or avoided (EU ETS, Annex 1).⁸ Because Norwegian law includes, for the moment, provisions that only relate to the 2008-2012 period of the EU ETS, it remains to be seen how the CCS rules for 2013 onwards will be implemented in Norway.

3.2 Non-mandatory emission reduction schemes

Local authorities are encouraged to develop local climate plans that will act as a stimulus for steps to reduce emissions (State of the Environment Norway, 2009).

3.3 CO₂ taxation schemes

In 1991, the Norwegian government introduced a CO₂ tax which applies to emissions from oil and gas production operations. Installations that were subject to the tax were exempt from the NETS. However, Norway has now joined the EU ETS and, from 2008, installations required to surrender allowances under the trading schemes are exempt from paying the CO₂ tax. Such installations will, however, be required to pay the general tax rate on heating oils as well as a tax on heavy fuel oils. In addition, taxation of the petroleum industry has been reduced to account for the expected price of CO₂ emissions allowances (Ministry of Finance, 2009).

Taxes on imports of chemicals containing hydrofluorocarbons and perfluorocarbons and on final waste disposal are other instruments used to tax GHG emissions, either directly or indirectly.

⁶ In Norway the Emissions Act (as amended) broadly follows the categories set out in the relevant European legislation.

⁷ For the EFTA Surveillance Authority Decision of 16 July 2008 see Clayton et al. 2008. The main task of the EFTA Surveillance Authority is to ensure that EEA rules are properly enacted and applied by the EFTA States.

⁸ . This is discussed in more detail in the EU Country Study of this report.

3.4 Greenhouse gas emission and energy use reporting schemes

Under Chapter 4 of the Emissions Act, Operators must report their GHG emissions to the pollution control authorities by 1 March each year. The pollution control authorities may request a reasonable level of further information from operators or alternatively commission investigations.

4. Existing CCS initiatives

4.1 Introduction

The Norwegian Government is heavily involved in, and committed to, the development and deployment of CCS technologies, although it has no integrated CCS legislation. It has established a State-owned entity, Gassnova, that plans, executes and safeguards the interests of Norwegian CCS projects. To date, each project has been approached on a case-by-case basis and existing law has been amended or interpreted in such a way as to accommodate or control the specific CCS project.

4.2 Acreage releases

The State owns the property rights to all natural underground resources located on the Norwegian continental shelf and land territory. The State therefore has control over underground storage of CO₂. A permit is required in order to use a reservoir and these permits are issued pursuant to the Petroleum Act and/or the Continental Shelf Act 1963 depending on the activity and type of reservoir.

4.3 Government or government-business research facilities

Norway is considered by many commentators to be a global leader in CCS research.

The Norwegian government (through the Ministry of Petroleum and Energy), in conjunction with Statoil, has established a full-scale CCS plant at the CHP facility in Mongstad. The project will first comprise the construction of a test centre, where CO₂ technologies will be tested in parallel from 2011. It is intended that a full-scale CO₂ capture plant will be operational at the site from 2014.

The Sleipner project, which involves the capture of CO₂ from natural gas and injection into a saline formation 1000 meters below the sea bed, is operated by Statoil, the Norwegian oil and gas company. The Norwegian environmental authority has been involved in this project for many years and the CO₂ storage facility has been monitored to ensure that no leakage occurs.

4.4 Government funding

The Norwegian Government intends to make widespread use of CCS through co-operation with industry and the provision of public funding to support CCS projects. Its goal is to ensure that all new gas-fired power plants incorporate CO₂ capture technology (Stig Oyvind Uhr Svenningsen, 2009). In addition, Norway has also demonstrated its policy commitment to work alongside the EU in the development and deployment of CCS technology by allocating EUR 140 million over five years for CCS projects in selected EU member states (Office of the Prime Minister, 2009).

4.4.1 Mapping and data collection and sharing

There is no specific policy or legislation in this area, but the Norwegian Government is committed to sharing information and experience internationally and maintains close contact and co-operation with the EU and its member states in this regard (Stig Oyvind Uhr Svenningsen, 2009).

On 28 May 2009, the Norwegian and UK Governments signed an agreement to commit to developing the North Sea as a site for CO₂ storage. Together, the two Governments have commissioned a new

study to analyse the North Sea bed, to identify suitable areas for CO₂ storage and to predict the volumes and origin of the CO₂ that may be stored in future decades.

4.4.2 Research, development and commercialisation

The Norwegian Government, through the State owned entity Gassnova, plans to build a full-scale CCS (retrofit) plant at the gas fired power plant at Karsto. The aim is to capture CO₂ from the exhaust gas and transport it by pipeline for storage in geological formations under the sea bed.

4.4.3 Technology demonstration and early deployment incentives

CCS EQUIPMENT INSTALLATION

There is no integrated legislation or formal scheme, but the Government is committed to providing public funding to projects, currently on a case-by-case basis, creating incentives and developing a clear regulatory framework.

4.5 Taxation incentives

4.5.1 Research and development

Under the SkatteFUNN scheme, all enterprises that are subject to Norwegian tax are eligible for tax deductions for expenditure on research and development in approved projects. Approval by the Norwegian Research Council is subject to conditions (these are set out in the regulations for sections 16-40 of the Taxation Act of 26 March 1999). For example, the project must aim to generate new knowledge, information or experience for developing new or improved products, services or manufacturing methods. There is also an upper limit for expenses of 4 million NOK (US\$600,000), or 8 million NOK (US\$1.2 million) when research and development services are bought from public research institutions.

4.5.2 CCS-specific taxation incentives

The Sleipner project, which involves the capture of CO₂ from natural gas and injection into a saline formation 1000 meters below the sea bed, is operated by Statoil, the Norwegian oil and gas company. Many commentators have identified Statoil's main motivation to capture and store the CO₂ emitted at its Sleipner plant as being the Norwegian tax on CO₂ emissions. The injection facility is estimated to have cost \$80 million (US\$12.5 million) to construct and saves Statoil approximately \$55 million (US\$8.6 million) each year (Walter, 2007).

4.6 Liability for failure to capture

Any leakage which causes or may cause damage to the local environment could be covered by the EU Environmental Liability Directive, which has recently been extended (by the CCS Directive) to include CO₂ storage sites. The Directive has limited scope but could be further extended to cover other CCS-related activities in certain circumstances. The Directive was incorporated into the EEA Agreement on 5 February 2009 and should therefore be transposed into Norwegian law in the future (see the EU country study section for further information).

4.7 Other incentives

A high CO₂ tax would incentivise organisations to avoid emitting CO₂ through use of capture and storage, provided the tax rate is set at a level that makes it cost-effective to deploy CCS technology in order to make tax savings.⁹

4.8 Evaluation

The Government has a strong interest in CCS and is supporting research, development and deployment both domestically and internationally. However, there is a clear lack of integrated legislation and outside of Government support and the commercial attractions of CCS, there are few other direct incentives to research and develop technology.

⁹ Christopherson (2008) has suggested that in the case of Sleipner a CO₂ tax had made storage profitable.

5. Capture of CO₂

5.1 Introduction

The current regime in Norway is complex and is based around existing general legislation. There is no integrated regime and CCS projects are addressed on a case-by-case basis by reference to existing environmental legislation, particularly the Pollution Control Act 1981 (Pollution Control Act) and petroleum-sector legislation, particularly the Petroleum Act 1996 (Petroleum Act).

The Norwegian Pollution Control Act has been applied to offshore CCS despite the fact that it was not drafted with CCS in mind. The Pollution Control Act is an enabling Act such that the exact requirements are contained in individual pollution permits and regulations issued under the Act. Most CCS activities are covered by the Pollution Control Act and require a pollution permit.

When the CCS activity is connected with hydrocarbon extraction, the Petroleum Act also applies, resulting in a dual regime and the potential for overlap. The Petroleum Act regulates, inter alia, exploration, development and management of the installation, coordination with competing rights, third party access, decommissioning and safety measures.

In the EU, CO₂ capture is regulated by the Directive on integrated pollution, prevention and control and the Directive on the assessment of the effects of certain public and private projects on the environment. These directives were both incorporated into the EEA Agreement on 27 January 2006. The key provisions of the two directives have largely been incorporated into Norwegian legislation.

5.2 General policy and legislation with applicability to CO₂ capture

5.2.1 Planning requirements

The Planning and Building Act 1985 (Planning and Building Act) facilitates the coordination of building activity in Norway and provides the basis for decisions concerning the use and protection of resources and development. At a basic level, the Act requires that permission be obtained to erect, extend, position, alter, etc., buildings, structures or installations. The Act applies to the whole of Norway including watercourses. However the Act does not apply to marine pipelines for the transport of petroleum. Moreover, the Ministry of Petroleum and Energy has indicated that the Act does not apply to the building and operation of pipelines for CCS activities (Agerup, 2008). Where capture activities fall within the scope of the Act (generally onshore sites), permission is required to build the infrastructure. Planning and construction must then comply with the provisions of the Act.

Offshore sites related to hydrocarbon extraction activities are generally regulated by the Petroleum Act. Organisations with licences to produce hydrocarbons must submit their plans for the development and operation of the petroleum deposit to the Ministry and then wait for approval before commencing works. The plan should include information such as the economic, environmental, technical and safety aspects of the proposed project.

5.2.2 Relevant pollution laws and policies

Most CCS activities are covered by the Pollution Control Act. Pollution is defined in the Act as being, inter alia, the "introduction to air, water, or into the ground of solid matter, fluid or gas ... which is or

may be harmful or detrimental to the environment". CCS activities are therefore likely to require a pollution permit and will need to comply with general provisions regarding inspection and control and the specific provisions of the particular permit (Pollution Control Act, Chapter 7).

5.3 Liability for failure to capture

Any leakage which causes or may cause damage to the local environment could be covered by the EU Environmental Liability Directive 2004/35/EC. The Environmental Liability Directive has recently been extended (by the CCS Directive) to include CO₂ storage sites. The Directive has limited scope but could be further extended to cover other CCS-related activities in certain circumstances. The Directive was incorporated into the EEA Agreement on 5 February 2009 and should therefore be transposed into Norwegian law in the future (see the EU Country Study for further information).

5.4 Evaluation

The Pollution Control Act, Petroleum Act and Planning and Building Act have been to an extent, and can be further, extended to cover certain aspects of CO₂ capture activities, for example, planning and pollution. However, there is currently no specific integrated legislation and outside of the government support schemes, there is currently limited incentive to capture.

6. Transport of CO₂

6.1 Introduction

With no specific integrated legislation, CCS projects have been addressed on a case-by-case basis and supported by existing environmental legislation (particularly the Pollution Control Act) and legislation applicable to the petroleum sector (particularly the Petroleum Act). Most CCS activities are covered by the Pollution Control Act and require a pollution permit. When the activity involves hydrocarbon extraction (e.g. injection of CO₂ in connection with enhanced recovery) the Petroleum Act also applies, resulting in potential overlap. The Petroleum Act regulates, inter alia, exploration, development and management of the installation, coordination with competing rights, third party access, decommissioning and safety measures.

6.2 General policy and legislation specific to transport of CO₂

6.2.1 Licencing of transportation activities

PIPELINES

The Ministry of Petroleum and Energy has indicated that there is currently no specific integrated legislation which applies to the operation of CCS pipelines (Agerup, 2008). There is nothing to ensure that users are able to gain access to the CO₂ transport network in a non-discriminatory manner and nothing giving preferential rights for a pipeline owner to its transport network. The regulatory system established for petroleum could be used as a model or could possibly be adapted to cover CO₂ transport in the future. This regulatory regime for petroleum provides for third party access to petroleum installations and upstream pipeline gas networks (Petroleum Act, ss 4-8).

ROAD AND RAIL TRANSPORT

There is no legislation governing the transportation of CO₂.

General commercial transportation activities are governed by the Professional Transport Act 2004, which provides for the licencing of hauliers, and the Railway Act 1993 in respect of railway operations.

TRANSPORTATION BY SHIP

The Professional Transport Act 2004 does not require a transporter of goods by vessel to have a licence.

6.2.2 Planning

ZONING FOR TRANSPORT FACILITIES

Under the Planning and Building Act zoning plans must be prepared and adopted at municipal level. These zoning plans specify land use, including areas for public transport and building, and once approved they are binding on, inter alia, all projects requiring permission in the designated area (including the erection or positioning of transport facilities). Landowners and other interested parties in the area have appeal rights.

Landowners, holders of rights or other interested parties may also submit zoning plans for approval.

CONSTRUCTION AND BUILDING CODES

The Planning and Building Act enables the coordination of building activity in Norway and forms the basis for decisions concerning the use and protection of resources and development. At a basic level the Act requires that permission be granted to erect, extend, position, alter etc buildings, structures or installations and for the construction of roads. The Act applies to the whole of Norway including watercourses. However the Act does not apply to marine pipelines for the transport of petroleum. The Ministry of Petroleum and Energy has indicated that the Act does not apply to the building and operation of pipelines for CCS activities (Agerup, 2008).

PIPELINE LICENCING REGIMES – NEW PIPELINES

ONSHORE PIPELINES

See the information above on the Planning and Building Act.

OFFSHORE PIPELINES

Although there is no legislation specific to the planning and operation of facilities for transportation of CO₂, the transport from offshore sites which are related to petroleum activities could be regulated by the Petroleum Act. The Act requires that a licence for installation and operation of facilities for transport of petroleum should be obtained by submitting appropriate plans to the Ministry (Petroleum Act, s 4.4).

ENVIRONMENTAL IMPACT ASSESSMENT

There is nothing in the Planning and Building Act requiring environmental impact assessments for private applicants and environmental impact assessments are only needed for county and municipal master plans and zoning plans (section 16).

There is nothing in the Petroleum Act that requires an environmental impact assessment be undertaken to support a transport facility licence application.

6.2.3 Access / tenure

NATURE OF PROPERTY INTERESTS CONFERRED

The interest conferred under the Petroleum Act is a licence to install and operate transport facilities pursuant to the submitted plan. The licence is granted for a fixed time which may only be extended on application to the Ministry.

6.2.4 Environmental and other risks

LEAKAGE OF TRANSPORTED CO₂

Any leakage which causes or may cause damage to the local environment could be covered by the EU Environmental Liability Directive. The Environmental Liability Directive has recently been extended (by the CCS Directive) to include CO₂ storage sites. The Directive has limited scope but could be further extended to cover other CCS-related activities in certain circumstances. The Directive

was incorporated into the EEA Agreement on 5 February 2009 and should therefore be transposed into Norwegian law in the future (see EU Country Study for further information).

POLLUTION – NOISE, AIR AND WATER

Most CCS activities are covered by the Pollution Control Act. Pollution is defined in the Act as being, inter alia, the “introduction to air, water, or into the ground of solid matter, fluid or gas ... which is or may be harmful or detrimental to the environment”. The transportation of CO₂ may therefore require a pollution permit (Pollution Control Act, Chapter 3). If the conditions of the permit (or provisions of the Act) are contravened a fine may be imposed (Pollution Control Act, Chapter 9).

6.3 Taxation of CO₂ transport

Although not directly relevant to CCS, but possibly being indirectly relevant, in Norway there is CO₂ tax on the use of petrol and auto diesel oil and also an annual weight-based tax on heavy vehicles.

6.4 Evaluation

There is a substantial amount of existing legislation on transport, planning and associated activities and, although this is not CCS-specific, it could potentially be modified accordingly. However, the lack of integrated legislation and relatively little legislation on third party access to transport and storage networks are clear weaknesses.

7. Exploration of potential CO₂ storage sites

7.1 Introduction

There is currently no integrated Norwegian legislation that applies to the exploration of offshore reservoirs for permanent storage of CO₂. However, the Norwegian Ministry of Petroleum and Energy has identified a need to regulate the exploration for, and use of, subsea geological structures for permanent storage, primarily through use of permitting regimes (Birkeland, 2009: s 4.3). This need is reiterated in the recommendations made in a recent Bellona report (Birkeland, 2009: s 3.2.2.1).

Some commentators have suggested that the Petroleum Act could be used as an acceptable framework to regulate CCS related-exploration in connection with petroleum activities.¹⁰ This section therefore contains reference to certain relevant provisions of the Petroleum Act to identify possible options for the regulation of exploration activities for CCS storage sites.

7.2 General policy and legislation with application to exploration of potential CO₂ sequestration sites

7.2.1 Exploration licencing

RIGHTS CONFERRED BY EXPLORATION LICENCE

There is no directly applicable legislation or policy, but the Petroleum Act provides that the Ministry may grant an exploration permit to explore for petroleum within defined areas of the subsea or subsoil.

LICENCE TERM

There is no directly applicable legislation or policy, but the petroleum exploration permit is granted for a period of three years.

7.2.2 Access / tenure

NATURE OF PROPERTY INTERESTS CONFERRED

There is no directly applicable legislation or policy, but the petroleum exploration permit confers a licence only. It does not confer an exclusive right to explore the prescribed area (Petroleum Act, s 2.1).

ESTABLISHING PRIORITY BETWEEN EXPLORATION AND EXISTING USES AND RIGHTS

PETROLEUM AND RESOURCE EXPLORATION AND EXTRACTION

There is no directly applicable legislation or policy, but the petroleum exploration permit does not give exclusive right to exploration, nor preferential right when production permits are granted.

¹⁰

FISHING

There is no directly applicable legislation or policy, but the Petroleum Act provides that reasonable precautions should be taken to prevent damage by petroleum activities to animal life in the sea.

FAUNA AND FLORA, INCLUDING ENDANGERED SPECIES

There is no directly applicable legislation or policy, but the Petroleum Act provides that reasonable precautions should be taken to prevent damage by petroleum activities to animal life and vegetation in the sea.

MINING

There is no directly applicable legislation or policy, but the petroleum exploration permit does not give exclusive right to exploration, nor preferential rights when production permits are granted.

SUBSEQUENT USES

There is no directly applicable legislation or policy, but the petroleum exploration permit does not give exclusive right to exploration, nor preferential rights when production permits are granted.

COMPULSORY ACQUISITION AND COMPENSATION REGIMES

There is no directly applicable legislation or policy, but the Petroleum Act provides that the State has a right to take over the licensee's fixed facility when a licence expires, is surrendered or revoked, or when the use of such facility has been terminated permanently. Where a facility subject to private property rights is taken over, the Act provides that compensation should be paid 'to the extent this follows from otherwise applicable rules'.

7.2.3 Planning and construction regulation applicable to CO₂ sequestration facilities

ZONING

The Planning and Building Act applies to sea areas out to the base lines or to limits fixed by the King.

ENVIRONMENTAL IMPACT ASSESSMENT

No directly applicable legislation or policy exists, but the Petroleum Act requires an account of the environmental aspects of the planned project to be included in applications for the development and operation of petroleum deposits. The Act also states that the Ministry may require detailed accounts of the environmental impacts and possible risks of pollution.

CONSTRUCTION AND BUILDING CODES

The Planning and Building Act applies a limited distance offshore.

The Petroleum Act requires (for petroleum activities) that plans for facilities be approved by the Ministry and any significant deviations from the plan be similarly approved.

7.3 Evaluation

There is no integrated or directly applicable legislation, however, the existing law relating to petroleum activities could be amended or used as a framework or model for CO₂ sequestration exploration legislation.

8. Injection and pre-closure of CO₂ storage formations

8.1 Introduction

The European Directive on Geological Storage of CO₂ (CCS Directive) was adopted by the European Parliament in December 2008 and comes into force in the EU on 25 June 2009. If, as is expected, the CCS Directive is incorporated into the EEA Agreement, Norway will be required to implement the CCS Directive. The CCS Directive constitutes a legal framework which manages environmental risk associated with CCS and removes barriers to CCS in certain existing EU legislation. The CCS Directive does not, however, make CCS mandatory. See the EU Country Study for further information regarding the CCS Directive.

There is currently no integrated CCS legislation that relates to injection and pre-closure of CO₂ sequestration sites. However, the Petroleum Act may be applicable to the injection of CO₂ into petroleum reservoirs (Birkeland, 2009). This section therefore makes reference to relevant provisions of the Petroleum Act to demonstrate the possible relevance of this Act to CCS.

8.2 General policy and legislation

8.2.1 Injection licencing

RIGHTS CONFERRED BY INJECTION LICENCE

The State owns the property rights to all natural underground resources located on the Norwegian continental shelf and land territory. The State therefore has control over underground storage of CO₂. A permit is required in order to use a reservoir and these permits are issued pursuant to the Petroleum Act and/or the Continental Shelf Act 1963 depending on the activity and type of reservoir. The rights conferred are solely those stated in the licence.

LICENCE TERM

This is likely to be fixed on a case-by-case basis, but under the Petroleum Act production licences are granted for up to ten years.

8.2.2 Access / tenure

EXISTING USES AND RIGHTS

PETROLEUM AND RESOURCE EXPLORATION AND EXTRACTION

Under the Petroleum Act, a production licence grants exclusive rights to explore for and produce petroleum in areas covered by the licence.

A production licence granted under the Petroleum Act does not preclude the granting of rights to others to undertake exploration and production of other natural resources in the area (i.e. not petroleum). Where disruption or inconvenience is caused to licence holders the State may decide which activities could be postponed.

8.2.3 Planning and construction regulation applicable to CO₂ sequestration facilities

ZONING

The Planning and Building Act applies a limited distance offshore.

8.2.4 Leakage liability

LIABILITY CAPS

Under the CCS Directive (which is expected to be incorporated into the EEA Agreement) the operator is liable for any damage caused by leakage during the operation of a storage site before responsibility is transferred to the relevant competent authority.

Any leakage which causes or may cause damage to the local environment could be covered by the EU Environmental Liability Directive. The Environmental Liability Directive has recently been extended (by the CCS Directive) to include CO₂ storage sites. The Directive has limited scope but could be further extended to cover other CCS-related activities in certain circumstances. The EU Environmental Liability Directive was incorporated into the EEA Agreement on 5 February 2009 and should therefore be transposed into Norwegian law in the future.

8.3 Evaluation

There is no current integrated legislation for injection and pre-closure; however, it is likely that the CCS Directive will be incorporated into the EEA Agreement and subsequently transposed into Norwegian law.

9. Post-closure and long-term storage of CO₂

9.1 Introduction

Norwegian law does not deal with long term monitoring and liabilities in connection with CCS projects.

9.2 General policy and legislation

9.2.1 Leakage liability

FRAMEWORK FOR POST-CLOSURE LIABILITY

Under the CCS Directive (which is expected to be incorporated into the EEA Agreement) the operator is liable for any damage caused by leakage during the operation of a storage site before responsibility is transferred to the competent authority.

Any leakage which causes or may cause damage to the local environment could be covered by the EU Environmental Liability Directive. The Environmental Liability Directive has recently been extended (by the CCS Directive) to include CO₂ storage sites. The Directive has limited scope but could be further extended to cover other CCS-related activities in certain circumstances. The Directive was incorporated into the EEA Agreement on 5 February 2009 and should therefore be transposed into Norwegian law in the future.

9.3 Evaluation

There is no current integrated legislation for long term storage, however, it is likely that the CCS Directive will be incorporated into the EEA Agreement and subsequently transposed into Norwegian law.

10. Summary

10.1 CCS policy and legislation 'best practice'

Although Norway is active in the CCS sector, there is a lack of specific integrated policy and legislation. It appears that individual projects are dealt with on a case-by-case basis and in this interim period, government involvement facilitates a degree of control over the operations.

10.2 Gaps in CCS policy and legislation

Norway has no integrated CCS legislation and has so far approached projects on a case-by-case basis, amending and interpreting some existing legislation to create a basic regulatory framework. However, the existing legislation is not sufficient to address all legal aspects of CCS activities, for example long term monitoring and liabilities are not covered in this way. CCS related to petroleum activities has so far been regulated through applicable petroleum legislation which was not originally drafted with CCS in mind. Other pre-existing regulation which has been deployed for CCS includes the Pollution Control Act and the Planning and Building Act.

10.3 Priority areas for future policy and legislative development

After the CCS Directive has been incorporated into the EEA Agreement, it should be transposed into Norwegian law. This will provide a legal framework for the regulation of CO₂ storage and the management of associated environmental risk and it should also remove certain barriers that arise in existing general legislation. Norway may also seek to establish integrated legislation that regulates the other stages of the CCS chain i.e. exploration, capture and transport. Norway may benefit from developing integrated CCS legislation rather than amending and adding to the already complex existing laws, although it is not yet clear whether Norway intends to do this.

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