



Strategic Analysis of the Global Status of Carbon Capture and Storage

Report 3: Country Studies
Papua New Guinea

Final Report



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Contents

| | | |
|-----------|--|-----------|
| 1. | Executive summary | 1 |
| 2. | Glossary..... | 2 |
| 3. | CO₂ pricing | 3 |
| 3.1 | Non-mandatory emission reduction schemes | 3 |
| 3.2 | CO ₂ taxation schemes | 3 |
| 3.3 | Indirect cost imposition: renewable energy schemes..... | 3 |
| 3.4 | Greenhouse gas emission and energy use reporting schemes | 3 |
| 4. | Existing CCS initiatives..... | 4 |
| 4.1 | Introduction | 4 |
| 4.2 | Acreage releases..... | 4 |
| 4.3 | Government or government-business research facilities | 4 |
| 4.4 | Evaluation | 4 |
| 5. | Capture of CO₂ | 5 |
| 5.1 | Introduction | 5 |
| 5.2 | General policy and legislation with applicability to CO ₂ capture..... | 5 |
| 5.3 | Liability for failure to capture..... | 5 |
| 5.4 | Taxation of CO ₂ capture | 5 |
| 6. | Transport of CO₂..... | 6 |
| 6.1 | Introduction | 6 |
| 6.2 | General policy and legislation specific to transport of CO ₂ | 6 |
| 6.3 | Taxation of CO ₂ transport..... | 9 |
| 7. | Exploration of potential CO₂ storage sites..... | 10 |
| 7.1 | Introduction | 10 |
| 7.2 | General policy and legislation with application to exploration of potential CO ₂ sequestration sites..... | 10 |
| 7.3 | Taxation of CO ₂ sequestration exploration activities..... | 12 |
| 7.4 | Evaluation | 12 |
| 8. | Injection and pre-closure of CO₂ storage formations | 13 |
| 8.1 | Taxation of injection and pre-closure of CO ₂ sequestration facilities | 13 |
| 8.2 | Evaluation | 13 |
| 9. | Post-closure and long-term storage of CO₂..... | 14 |

| | | |
|------------|--|-----------|
| 10. | Summary | 15 |
| 10.1 | Priority areas for future policy and legislative development | 15 |
| 11. | References | 16 |
| 11.1 | Legislation | 16 |
| 11.2 | Other sources | 16 |

1. Executive summary

Papua New Guinea has not introduced any dedicated policies or legislation to provide incentives for the development of CCS technologies or to govern the CCS project cycle.

However, the Government of Papua New Guinea is currently developing policies of relevance to CCS. The Government is developing a climate change policy which could provide a policy framework for CCS in Papua New Guinea. In addition, Papua New Guinea is working with international partners (including through its membership of the Global CCS Institute) to develop energy policies.

In addition, Papua New Guinea already possesses relatively well-developed mining, pipeline and oil and gas legislative regimes which could be adapted to allow the regulation of CCS activities in the country.

2. Glossary

| | |
|--------------------------------|---|
| CCS | Carbon capture and storage |
| Environment Act | Environment Act 2000 |
| Environmental Contaminants Act | Environmental Contaminants Act 1978 |
| Environmental Planning Act | Environmental Planning Act 1978 |
| Mining Act | Mining Act 1992 |
| Oil and Gas Act | Oil and Gas Act 1998 |
| PIEPSAP | Pacific Islands Energy Policy and Strategic Action Plan |
| PNG | Papua New Guinea |

3. CO₂ pricing

3.1 Non-mandatory emission reduction schemes

Papua New Guinea has not introduced any non-mandatory emission reduction schemes. However, a number of emission reduction projects have been undertaken in the country, mainly aimed at generating forestry offset credits.

3.2 CO₂ taxation schemes

No CO₂ taxation scheme currently exists in Papua New Guinea.

3.3 Indirect cost imposition: renewable energy schemes

No legislation or policy exists in Papua New Guinea that requires an increased production of energy from renewable energy sources. However, the Energy Division of the Papua New Guinea Department of Petroleum and Energy is involved in a renewable energy program that promotes the use of local energy resources such as solar, hydro and wind. Recent energy sector activities involving international donor agencies include:

- a World Bank Energy Sector Review;
- a review of the energy sector programs funded by the Australian Government;
- a World Bank project on strategies for rural electrification;
- Papua New Guinea Power Ltd rural electrification program; and
- private sector rural electrification program e.g. Rural Energy Supplies Ltd on renewable projects and the Sustainable Development Program Ltd on rural power supply.

Since 2004 the role of the Energy Division has been reduced to policy and planning and rural electrification. These activities are not directly related to CCS but are relevant to CO₂ cost imposition in Papua New Guinea.

3.4 Greenhouse gas emission and energy use reporting schemes

No greenhouse gas emission and energy use reporting schemes currently exist in Papua New Guinea.

4. Existing CCS initiatives

4.1 Introduction

No integrated policy or legislation currently exists in Papua New Guinea specifically dealing with CCS. However, Papua New Guinea has been moving towards adopting a climate change policy and CCS should be integrated within that policy. The Government of Papua New Guinea formally requested the support of the Pacific Islands Energy Policy and Strategic Action Plan (PIEPSAP) in developing their national energy policy in 2005. It is not clear how far this policy development process has evolved, however, it is understood that the Government of Papua New Guinea intends to release its climate change policy later in 2009.

4.2 Acreage releases

No areas have been released specifically for CCS exploration or storage activities. However, the Government of Papua New Guinea is understood to have engaged a private consultant to undertake initial mapping of potential sequestration sites in Papua New Guinea.

4.3 Government or government-business research facilities

While the Government of Papua New Guinea is not involved in any CCS specific research, it is involved in various renewable energy projects, as discussed in section 3.3 above. Papua New Guinea is a foundation member of the Global CCS Institute and hopes to use its membership to expand contacts with potential international partners.

4.4 Evaluation

In order to build incentives for CCS technology CCS legislation development and application in Papua New Guinea, the Government of Papua New Guinea could consider expanding its cooperation with foreign partners to encompass CCS activities. It could also consider releasing its acreages for CCS exploration activities.

5. Capture of CO₂

5.1 Introduction

The current regime in Papua New Guinea is based around existing legislation. There is no integrated regime and CCS projects must adhere to existing environmental legislation, particularly the *Environment Act 2000* (Environment Act) and the *Environmental Contaminants Act 1978* (Environmental Contaminants Act), and mining and petroleum-sector legislation, particularly the *Mining Act 1992* (Mining Act) and the *Oil and Gas Act 1998* (Oil and Gas Act). This legislation provides insights into how Papua New Guinea might deal with CCS.

5.2 General policy and legislation with applicability to CO₂ capture

5.2.1 Planning requirements

There are no CCS specific planning requirements in Papua New Guinea. General planning requirements are contained in the *Environmental Planning Act 1978* (Environmental Planning Act) and associated regulations.

5.2.2 Retrofitting

There is no specific legislation or policy governing retrofitting of CO₂ capture capability to existing facilities, but under the Oil and Gas Act a petroleum processing facility licence must be granted in order to make major modifications to a petroleum processing facility. The application procedure for such a licence is contained in Part III of the Act.

5.2.3 Relevant pollution laws and policies

General pollution laws that may be relevant to CO₂ capture are contained in the Environment Act, the Environmental Contaminants Act and associated regulations.

5.3 Liability for failure to capture

There are no CCS specific laws relating to a liability for failure to capture. Some liability may arise under the general pollution laws, however this is not clear.

5.4 Taxation of CO₂ capture

There are no specific laws relating to taxation of CO₂ capture.

6. Transport of CO₂

6.1 Introduction

There is no integrated regime governing the transport of CO₂. CCS projects must adhere to existing environmental legislation (particularly the Environmental Planning Act, the Environmental Contaminants Act, the Environment Act and related regulations) and mining and petroleum-sector legislation (particularly the Mining Act and the Oil and Gas Act).

6.2 General policy and legislation specific to transport of CO₂

6.2.1 Licencing of transportation activities

PIPELINES

There is no specific integrated legislation that applies to the transportation of CO₂. 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 system is contained in the Mining Act and the Oil and Gas Act.

NEW PIPELINES

Under the Mining Act a mining easement may be granted for the purpose of constructing or operating a pipeline in relation to a tenement granted under the Act.

The Oil and Gas Act contains provisions relating to the grant of a pipeline licence (Oil and Gas Act, Division 9).

EXISTING PIPELINES

The Oil and Gas Act contains provisions for varying an existing pipeline licence in order to convert a pipeline to transport a different form of petroleum or petroleum product (Oil and Gas Act, Division 9).

ROAD AND RAIL TRANSPORT

There is no specific legislation or policy governing the transportation of CO₂.

6.2.2 Planning

ZONING FOR TRANSPORT FACILITIES

No directly applicable legislation or policy exists in relation to zoning for transport facilities.

CONSTRUCTION AND BUILDING CODES

No directly applicable legislation or policy exists.

PIPELINE LICENCING REGIMES – NEW PIPELINES

ONSHORE PIPELINES

Under the Mining Act a mining easement may be granted for the purpose of constructing or operating a pipeline in relation to a tenement granted under the Act.

The Oil and Gas Act contains provisions relating to the grant of a pipeline licence (Oil and Gas Act, Division 9).

OFFSHORE PIPELINES

The grant of a pipeline licence under the Oil and Gas Act and a mining easement under the Mining Act may include offshore area. See section 6.2.1.

PIPELINE LICENCING REGIMES – EXISTING PIPELINES

ONSHORE PIPELINES

The Oil and Gas Act contains provisions for varying an existing pipeline licence in order to convert a pipeline to transport a different form of petroleum or petroleum product (Oil and Gas Act, Division 9).

Offshore pipelines

The grant of a pipeline licence under the Oil and Gas Act and a mining easement under the Mining Act may include an offshore area. This would be subject to the regulatory provisions discussed in section 6.2.1.

ENVIRONMENTAL IMPACT ASSESSMENT

No directly applicable legislation or policy exists, but the Oil and Gas Act requires the applicant of a licence under the Act to submit a socio-economic impact study as part of an environmental plan required under the Environmental Planning Act (Oil and Gas Act, s 49).

6.2.3 Access / tenure

NATURE OF PROPERTY INTERESTS CONFERRED

The interest conferred under the Oil and Gas Act is a licence to construct and operate a pipeline of the design, construction, size and capacity specified in the licence and to carry on all operations that are necessary for or incidental to the construction and operation of the pipeline. The licence is granted for six years with an option to apply for an extension of five years.

The interest conferred under the Mining Act is an easement for the purpose of constructing and operating a pipeline in connection with mining, treatment or ancillary operations. The easement is granted for a term identical to that of the tenement in relation to which the mining easement was granted.

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

PETROLEUM AND RESOURCE EXTRACTION

A licence under the Oil and Gas Act does not entitle the licensee to interfere with the recovery of or conveyance or processing of petroleum or petroleum products, or the construction of a pipeline or petroleum processing facility. The Mining Act does not contain similar provisions, however provisions are contained in Part VII that provide for compensation for any loss of a right suffered by the landholder.

FISHING

It is an offence to interfere with the existing use of the land to any greater extent than is reasonably necessary under a licence granted under the Oil and Gas Act. The provisions of the Act specifically make it an offence to take any action that interferes with fishing. The Mining Act does not contain similar provisions, however provisions are contained in Part VII that provide for compensation for any loss of a right suffered by the landholder.

FAUNA AND FLORA, INCLUDING ENDANGERED SPECIES

No directly applicable legislation or policy exists, but the Oil and Gas Act provides that a compensation shall be paid for damage to trees and animals. Part VII of the Mining Act sets out its compensation provisions which includes compensation for damage to the natural surface of the land.

NAVIGATION

It is an offence to interfere with the existing use of the land to any greater extent than is reasonably necessary under a licence granted under the Oil and Gas Act. The provisions of the Act specifically make it an offence to take any action that interferes with navigation.

MINING

The Oil and Gas Act creates an offence for the interference of a licensee with the existing lawful operations in relation to the prospecting for, recovery of, conveyance or processing of minerals or gold. The Mining Act provides for exploration licences to be granted over land that is subject to an alluvial mining lease due to the different depths of the activities. Despite the grant of an alluvial mining lease, the exploration licence will have full force and effect below the depth to which the alluvial mining lease was granted and the licensee is permitted to enter land for the purposes of conducting exploration.

SUBSEQUENT USES

No directly applicable legislation or policy exists to manage subsequent uses.

RIGHTS OF INDIGENOUS PEOPLES AND OTHER CUSTOMARY RIGHTS

Approximately 97 percent of land in Papua New Guinea is held by indigenous land owners under customary land title. Consent of landowners is required for most development activities.

COMPULSORY ACQUISITION AND COMPENSATION REGIMES

The Mining Act sets out landholder compensation provisions in Part VII of the Act and the Oil and Gas Act contains compensation provisions in Division 12 of Part III. Furthermore, under the Oil and Gas Act the traditional landowner is entitled to a proportion of fees payable annually by the licensee (Oil and Gas Act, Division 14 of Part III).

6.2.4 Environmental and other risks

No directly applicable legislation or policy exists. The general environmental laws in Papua New Guinea are contained in the Environment Act, the Environmental Contaminants Act and associated regulations.

6.3 Taxation of CO₂ transport

There are no CCS-specific taxation regimes Papua New Guinea which relate to transportation of CO₂.

7. Exploration of potential CO₂ storage sites

7.1 Introduction

There is currently no integrated Papua New Guinea legislation that applies to the exploration of offshore reservoirs for permanent storage of CO₂, however, the Mining Act or the Oil and Gas Act could be used as an acceptable framework to regulate CCS related exploration in connection with petroleum activities. This section therefore contains reference to certain relevant provisions of the Mining Act and the Oil and Gas 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

Papua New Guinea does not have a CCS-specific exploration regime but its mining and oil and gas regimes could be adapted to govern CCS exploration.

7.2.1 Exploration licencing

APPLICATION CRITERIA

No directly applicable legislation or policy exists for the licencing of exploration of potential CO₂ sequestration sites however, under the Mining Act all land is available for exploration and mining and the grant of tenements over it. "Land" is defined in the Act to include any interest in land, the ground beneath the surface of land, and the offshore area being the seabed underlying the territorial sea to such a depth as admits of exploration for or mining of minerals. The Mining Act contains provisions for the application and grant of an exploration licence.

Similarly, the Oil and Gas Act contains provisions for the application and grant of a petroleum prospecting licence.

RIGHTS CONFERRED BY EXPLORATION LICENCE

The provisions of the Mining Act grants a wide discretion to the holder of an exploration licence to do all things necessary or expedient for the undertaking of exploration on the land.

A petroleum prospecting licence granted under the Oil and Gas Act authorises the licensee to explore for petroleum in the licence area, carry on field studies to obtain information to ensure timely economic development of the gas field in the licence area, complete wells, carry out drill stem tests or extended production tests for appraisal of a petroleum pool (including the construction and the operation of pipes and facilities to gather and transport petroleum to a point of testing or treatment or disposal), and to recover and sell or otherwise dispose of all petroleum produced.

LICENCE TERM

An exploration licence granted under the Mining Act is for a term of two years with an option for an extension under the Act.

A petroleum prospecting licence granted under the Oil and Gas Act is for a term of six years with an option for extension under the Act.

7.2.2 Access / tenure

NATURE OF PROPERTY INTERESTS CONFERRED

An exploration licence granted under the Mining Act entitles the licensee exclusive occupancy for exploration purposes of the land in respect of which the exploration licence was granted.

ESTABLISHING PRIORITY BETWEEN EXPLORATION AND EXISTING USES AND RIGHTS

PETROLEUM AND RESOURCE EXPLORATION AND EXTRACTION

The Oil and Gas Act establishes priority for other petroleum operations over that of a petroleum prospecting licence. An exploration licence does not entitle the licensee to interfere with the recovery of, conveyance or processing of petroleum or petroleum products, or the construction of a pipeline or petroleum processing facility.

FISHING

It is an offence to interfere with the existing use of the land to any greater extent than is reasonably necessary under a petroleum prospecting licence granted under the Oil and Gas Act. The provisions of the Act specifically make it an offence to take any action that interferes with fishing. The Mining Act does not contain similar provisions, however provisions are contained in Part VII that provide for compensation for any loss of a right suffered by the landholder.

FAUNA AND FLORA, INCLUDING ENDANGERED SPECIES

No directly applicable legislation or policy exists, but the Oil and Gas Act provides that compensation shall be paid for damage to trees and animals. The Mining Act sets out compensation provisions which includes compensation for damage to the natural surface of the land.

NAVIGATION

Under a petroleum prospecting licence, granted under the Oil and Gas Act, it is an offence to interfere with the existing use of the land to any greater extent than is reasonably necessary. The provisions of the Act specifically make it an offence to take any action that interferes with navigation (Oil and Gas Act, s 114).

MINING

The Mining Act provides for exploration licences to be granted over land that is subject to an alluvial mining lease due to the different depths of the activities. Despite the grant of an alluvial mining lease, the exploration licence will have full force and effect below the depth to which the alluvial mining lease was granted and the licensee is permitted to enter land for the purposes of conducting exploration.

The Oil and Gas Act creates an offence for the interference of a licensee with the existing lawful operations in relation to the prospecting for, recovery of or conveyance or processing of minerals or gold.

SUBSEQUENT USES

No directly applicable legislation or policy exists.

RIGHTS OF INDIGENOUS PEOPLES AND OTHER CUSTOMARY RIGHTS

See section 6.2.3 above. In addition, under the Mining Act an owner of customary land is entitled to compensation for all loss or damage suffered, or foreseen to be suffered by them, from the exploration.

COMPULSORY ACQUISITION AND COMPENSATION REGIMES

No directly applicable legislation or policy exists, however, the Mining Act sets out landholder compensation provisions applicable to an exploration licence and the Oil and Gas Act contains compensation provisions. Furthermore, under the Oil and Gas Act the traditional landowner is entitled to a proportion of fees payable annually by the licensee.

7.2.3 Planning and construction regulation applicable to CO₂ sequestration facilities

ZONING

General planning laws are contained in the Environmental Planning Act. These laws could potentially apply to the injection and sequestration of CO₂.

ENVIRONMENTAL IMPACT ASSESSMENT

No directly applicable legislation or policy exists, but the Oil and Gas Act requires the applicant of a licence under the Act to submit a socio-economic impact study as part of the environmental plan required under the Environmental Planning Act.

PIPELINE LICENCING REGIMES

Pipeline licencing regimes are discussed in section 6.2.1.

7.3 Taxation of CO₂ sequestration exploration activities

There are no CCS-specific taxation regimes in Papua New Guinea which relate to exploration activities.

7.4 Evaluation

Existing mining and oil and gas legislation in Papua New Guinea could be adapted to CCS regulation.

8. Injection and pre-closure of CO₂ storage formations

There is currently no integrated CCS legislation in Papua New Guinea that relates to injection and pre-closure of CO₂ sequestration sites. However, the Mining Act may be applicable to the injection of CO₂ as it has a system in place for allocating property rights for land where the definition of land may be adapted to underground formations. Under the Mining Act all land is available for exploration, mining and the grant of tenements over it. Under the Act land includes the offshore area, which includes the seabed underlying the territorial sea to such a depth as allows for the exploration for, or mining of, minerals, and any other interest in land. The Oil and Gas Act may be potentially applicable to the injection of CO₂ into petroleum reservoirs.

8.1 Taxation of injection and pre-closure of CO₂ sequestration facilities

Injection and pre-closure of CO₂ are not subject to any CCS-specific taxation.

8.2 Evaluation

The Mining Act provides some guidance in dealing with CO₂ injection but more legislative work would need to be done to develop this further.

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

Papua New Guinea legislation does not deal with long term monitoring and liabilities in connection with CCS projects. This would require new policy development.

10. Summary

No current integrated CCS legislation or policy exists in Papua New Guinea. Certain laws that are currently in force may cover certain aspects of CCS, or could possibly be extended to cover CCS, however, the application of such laws to CCS is uncertain and untested. The Government of Papua New Guinea has indicated that if it were to legislate for CCS projects it would amend existing legislation, principally mining and petroleum legislation. Alternatively, it is possible that Papua New Guinea may choose to adopt integrated legislation and policy for CCS.

10.1 Priority areas for future policy and legislative development

Further research will be required to establish a policy on CCS and to ensure that effective legislation is enacted. The Government of Papua New Guinea has indicated that it will aim to integrate CCS policy into the government's climate change framework in the short to medium term.

11. References

11.1 Legislation

Environment Act 2000.

Environmental Contaminants Act 1978.

Environment Planning Act 1978.

Mining Act 1992.

Oil and Gas Act 1998.

Oil and Gas Regulations 2002.

Oil and Gas Regulations 1999.

Petroleum and Submerged Lands Act 1967.

11.2 Other sources

South Pacific Regional Environment Program 2009, *SPREP Projects*, accessed 18 June 2009, available at: [http://www.sprep.org/climate_change/pigPapua New Guinea.htm](http://www.sprep.org/climate_change/pigPapua%20New%20Guinea.htm)

Pacific Islands Applied Geoscience Commission 2009, *SOPAC*, accessed 18 June 2009, available at: <http://www.sopac.org>