



Strategic Analysis of the Global Status of Carbon Capture and Storage

Report 3: Country Studies
Mexico

Final Report



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1. Executive summary

Mexico, as a Non-Annex 1 country to the *United Nations Convention on Climate Change*, does not have legally binding GHG emission reduction targets. Nonetheless, the Mexican government has developed a National Climate Change Strategy (National Strategy) to reduce the emission of GHGs. Several new laws have been enacted and a specific budget has been appropriated by the Mexican Congress in the 2009 budget to fund this Climate Change Strategy. However there are several measures, such as the issuance of regulations and specific guidelines, that are necessary to complete the enactment process in order to have all the tools available for the implementation of this goal.

The National Strategy issued in 2007 considers CCS projects as priority field of research, due to their utility for CO₂ capture potential, as well as the opportunity they present the state owned oil producing company, PEMEX. CCS projects may be feasible for the oil field of Cantarell and other declining oil fields to increase oil recovery.

Nonetheless, the National Strategy concludes that these projects are very costly. This may, however, be compensated by financing from CDM projects. The National Strategy also considers that further research is required regarding long-term environmental effects.

While there are is no CCS specific legislation or regulation, existing laws may be applicable to particular CCS activities. These laws may also provide guidance on the future approach taken by the Government in implementing a regulatory framework for CCS activities.

2. Glossary

CDM	Clean Development Mechanism
CESSD	Commission of Environmental Studies for Sustainable Development
CFE	Federal Commission for Electricity
CRE	Regulatory Energy Commission
CRIT	Corrosive, reactive, inflammable or toxic
General Environmental Law	General Law on Ecological Balance and Environmental Protection 2008
General Waste Law	General Law for the Prevention and Integral Management of Waste 2003
GHG	Greenhouse gas
Kyoto Protocol	Kyoto Protocol to the <i>United Nations Framework Convention on Climate Change</i> , opened for signature 11 September 1997 2303 UNTS 148 (entered into force 16 February 2005)
LyFC	Central Electricity Company
NAAEC	North American Agreement on Environmental Cooperation
NAFTA	North American Free Trade Agreement
National Strategy	National Climate Change Strategy
NGO	Non-governmental organisation
PEMEX	Mexican Oils
PRTR	Pollutant Release and Transfer Registry
SEMARNAT	Ministry of Environment and Sustainable Development
SENER	Ministry of Energy
SIE	System of Energy Information
UNFCCC	<i>United Nations Framework Convention on Climate Change</i> , opened for signature 9 May 1992, 1771 UNTS 107 (entered into force 21 March 1994)
Voluntary Market	Mexican Voluntary Carbon Market
WBCSD	World Business Council for Sustainable Development
WRI	World Resources Institute

3. CO₂ pricing

3.1 Mandatory cap and trade schemes

Currently, as a Non-Annex 1 Country to the UNFCCC, Mexico has no mandatory cap and trade schemes. CCS projects are being reviewed by the Inter-ministerial Commission on Climate Change, with regard to policies and legislation to be adopted, as well obstacles that the current legislation poses to these projects.

3.2 Non-mandatory emission reduction schemes

3.2.1 Acceptance into mandatory cap and trade schemes

The National Strategy and the Law for the Promotion of Renewable Energy and Energy Transition 2008 provides that the Regulatory Energy Commission (CRE) and the Ministry of Energy may impose specific targets for the reduction of GHG to PEMEX and the state owned power generation and distribution companies (Federal Commission for Electricity; CFE, and Central Electricity Company; LyFC). PEMEX will be authorised to develop those technologies, which may allow it to continue its operation and reduce its emissions. As such CCS would be of immediate utility to PEMEX, CFE and LyFC, in that these companies will have a mandate to reduce their emissions from 2010.

3.2.2 Sectoral coverage; inclusion of CCS

The National Strategy considers the potential of CCS, especially for the oil, electricity and cement production sectors.

3.3 CO₂ taxation schemes

Amongst the objectives established by the National Strategy is a reform to Mexican tax legislation in order to establish financial and tax incentives to allow the development of sustainable energy projects. The Law for Renewable Energy Usage and Energy Transition Financing 2008 establishes an energy transition fund that will provide financial incentives for the implementation of “clean technology”, GHG reduction technology, Renewable Energy and Energy Efficiency projects. In addition this law calls for the implementation of a consolidation strategy of public funds for Research and Development of the projects previously referred in the 2009 and in the subsequent budgets. CCS projects may fall within such incentives.

The National Strategy also establishes as an objective the cancellation of subsidies to the consumption of fossil fuels as well as the calculation of externalities for the use of hydrocarbon and the determination of the emissions of State owned companies.

3.4 Indirect cost imposition: renewable energy schemes

The enactment of the Law for Renewable Energy Usage and Energy Transition Financing 2008, as well as the amendment to the Law of the Regulatory Energy Commission have created the foundations for new rules for the future issuance of feed-in tariffs and the set up of mandatory purchasing schemes for renewable energy.

3.4.1 Portfolio energy standards

Electricity generation in Mexico is dominated by two State-run generators: CFE, which generates the majority of Mexico's electricity and manages the national electricity grid; and LyFC, which generates a smaller proportion of electricity for the Metropolitan area near Mexico City.

The Law for Renewable Energy Usage and Energy Transition Financing 2008 will authorise the Regulatory Energy Commission (*Comision Reguladora de Energia*; CRE) to set up a differentiated interconnection scheme and different pricing for Renewable energy. Furthermore, SENER will establish the minimal amount of Renewable Energy to be acquired by CFE and LyFC. The Ministry of Energy will be authorised to establish the methodology to calculate the externalities associated with the use of hydrocarbon and the CO₂ footprint of the state owned power and oil companies. CCS projects would allow power generation of projects that use fossil fuels to comply with the externalities analysis for new facilities or for future retrofitting or supplemental investment in current power generation facilities by CFE and LyFC.

3.4.2 Feed-in tariffs

No specific feed-in tariffs for renewable energy currently exist in Mexico.

3.5 Greenhouse gas emission and energy use reporting schemes

Industrial facilities subject to the Federal Jurisdiction in Mexico can be required to report their GHG emissions in limited circumstances.

To implement its obligations under the North American Free Trade Agreement (NAFTA) and its side-agreement, the North American Agreement on Environmental Cooperation (NAAEC), the Federal government has implemented a Pollutant Release and Transfer Registry (PRTR) (*Registro de Emisiones y Transferencia de Contaminantes*) scheme for air, water, soil and subsoil pollutants and materials and waste (PRTR Regulations 2004).

The PRTR is managed by the Ministry of the Environment and Natural Resources (SEMARNAT) and it aims to develop a database for the disclosure of pollutants and regulated substances that could potentially include a nation-wide GHG emissions inventory. Currently only certain pollutants are reported at the Federal level from certain Federal regulated sources. In the future, information from registries managed by local governments would be incorporated as well. At this time companies that fall under the Federal jurisdiction and that exceed the thresholds listed in Table 3-1 should include their GHG in the annual operating report. Other facilities not exceeding this threshold or falling outside the Federal jurisdiction may voluntarily provide this information.

Table 3-1 – Reporting thresholds

GHG	Reporting Threshold for Production, Processing or Use (Kg/year)	Reporting Threshold for Emission (Kg/year)
Carbon Dioxide (CO ₂)	N/A	100,000
Methane (CH ₄)	N/A	100,000
Nitrous Oxide (N ₂ O)	N/A	100,000
Perfluorocarbons (PFCs)	100	1,000
Hydrofluorocarbons (HFCs)	100	1,000
Sulphur Hexafluoride (SF ₆)	5,000	Any volume emitted

Besides the PRTR, estimates of GHG emissions derived from power use and generation are obtained from the System of Energy Information (*Sistema de Información Energética*; SIE), which is administered by the Ministry of Energy (Secretaría de Energía; SENER).

The SIE includes estimates of emissions arising from the following:

- production of primary energy;
- energy imports;
- energy exports;
- primary energy for transformation;
- secondary production of energy;
- energy consumption in the residential, commercial and public sectors;
- energy consumption in transportation;
- energy consumption by industry; and
- energy consumption for the generation of electricity.

In addition, the Commission of Environmental Studies for Sustainable Development (CESPEDES), the World Business Council for Sustainable Development (WBCSD), the World Resources Institute (WRI) and SEMARNAT have collaborated to institute a program for the voluntary disclosure of GHGs, the Mexico GHG Program.

Further, the National Strategy provides for the development of a voluntary reduction program between the different state owned companies, PEMEX, CFE and LyFC, in the oil, gas, refinery, petrochemical production and electricity sectors.

4. Existing CCS initiatives

4.1 Introduction

Mexico, as a non-Annex 1 Country to the UNFCCC, does not have legally binding GHG emission reduction targets. However, the current Federal administration is committed to achieving GHG reductions, for which CCS may prove to be a useful tool, especially in sectors such as oil, electricity and cement production.

The National Strategy, issued in 2007, has considered CCS as an option to be considered depending on the benefits it can bring to sectors such as oil, electricity and cement production. Nonetheless, it is considered to also have disadvantages which require further research, such as costs and long-term leakages.

The Inter-ministerial Commission on Climate Change, along with the several policy development institutes are working on the implementation of policies and legislation for CCS.

4.2 Government or government-business research facilities

The Inter-ministerial Commission on Climate Change, in charge of coordinating public efforts to reduce the levels of emissions of GHGs, is aided by several policy development institutes experts and institutions which together constitute its Advisory Council, working on the research of climate change related matters.

There is particular interest in working on CCS projects for depleted oil fields, such as Cantarell, along with PEMEX and the Mexican Petroleum Institute. Several universities are considering research projects for future development of CCS technology. No projects have been patented or made publicly available.

4.3 Government funding

4.3.1 Mapping and data collection and sharing

The Mexican Geological Service has developed general information on the geological conditions in Mexico. That information may assist in the identification of suitable areas for future CCS projects.

4.4 Government-business joint ventures

There are no current CCS projects. Several projects are being evaluated and are in the pre-design phases.

4.5 Taxation incentives

To date, there are no specific taxation incentives related to CCS, however, other general taxation incentives may apply to CCS.

4.5.1 Research and development

The Federal Government has approved a minimum percentage of the Federal budget to be applied to research and development in those areas considered by the National Strategy. As such, projects like CCS may receive specific grants for their development.

4.6 Liability for failure to capture

There are no existing laws imposing liability for the failure to capture CO₂ with CCS technology. In the case of release, general provisions would apply, obliging the person or entity in charge of the project to remedy any environmental damages caused, as well as any other applicable administrative, civil or criminal liability that could arise from the effects of the release.

4.7 Evaluation

This area has not been developed in Mexico, however the Inter-ministerial Commission on Climate Change is working on the development of such policies and legislation. The National Strategy calls for the evaluation of different technologies that may provide a cost efficient solution to the reduction of GHG. As these projects may be primarily used by the State owned companies, the reductions generated may be recognized in the Mexican Voluntary Carbon Market (Voluntary Market), regardless of their treatment in other carbon markets.

5. Capture of CO₂

5.1 Introduction

The UNFCCC came into force in Mexico on 21 March 1994, and the Kyoto Protocol on 16 February 2005. Ratified Treaties are automatically incorporated into Mexico's legal system (implementing legislation is not necessary).

No specific provisions regarding the capture of CO₂ have been issued, though some have indirect effects, such as provisions relating to deforestation. Although CCS projects are yet to be recognized under the CDM, there are no restrictions on the usage of CCS for the reduction of GHG emissions. Therefore these projects could generate emission reduction units that could be traded in the Voluntary Market or in other regional markets in the future. As previously mentioned, the National Strategy already considers CCS as one of many options that should be studied in order to reduce the total GHG emissions of Mexico.

5.2 Integrated policy and legislation

5.2.1 Stakeholder consultation mechanisms

The Environmental Impact Assessment process will require that a summary of every CCS project is provided to the public. Any interested person may make a request to the Environmental Agency for specific information on a project, or request a stakeholder consultation process. Only confidential information (an ambiguous concept) may be protected from such disclosure.

5.2.2 Planning requirements

The zoning requirements in most municipalities would consider CCS projects in a similar way to natural gas drilling or mining activities.

5.2.3 Relevant pollution laws and policies

Although CO₂ capture would be consistent with the overall National Strategy, there are no specific laws, regulations or standards that mandate the implementation of CCS projects. Even if CCS technology would allow State owned companies to reach their GHG reduction targets in a more cost effective way, these projects would have no additional incentives or preferential treatment.

The General Law on Ecological Balance and Environmental Protection 1988 (General Environmental Law) and its Regulations on Prevention and Control of Atmospheric Pollution broadly prohibit the emission of pollutants that hinder air quality or damage the environment, but they do not apply specifically to climate change.

Point sources of air pollution require a Federal or State authorisation for the emission of pollutants and must establish control equipment to ensure that its emissions fall within the maximum allowable limit. Point sources of air pollution are mandated to measure and report the pollutants discharged into the atmosphere. Currently there is no prohibition of the discharge GHGs into the atmosphere and only those companies that exceed the threshold referred to in section 3.5 above, would be required to report emissions in their yearly report. Nevertheless, no particular standards have been issued restricting the volume of CO₂ that can be discharged into the atmosphere.

5.3 General policy and legislation with applicability to CO₂ capture

5.3.1 Planning requirements

The Municipal authorities are responsible for the planning requirements and restrictions for the implementation of projects. However, most of these projects would be implemented outside of more densely populated areas; as such, it would be advisable to consider that more than 15 percent of the Mexican territory consists of Natural Preservation Areas and that there are several restrictions on the change of a forest or desert area (for preservation purposes). The General Law for Sustainable Forestry 2003 requires a prior evaluation of any plans to change the zoning classification in forestry areas.

5.3.2 Retrofitting

The modification of previously authorised industrial facilities or retrofitting of abandoned mines will require an Environmental Impact Assessment and the issuance of the applicable authorisation by the competent environmental agency.

5.3.3 Relevant pollution laws and policies

The General Environmental Law and its Regulations on Prevention and Control of Atmospheric Pollution establish a broad prohibition on emitting pollutants that hinder air quality or that may produce damages to the environment.

5.4 Liability for failure to capture

Due to the fact that there is no express prohibition on the potential failure to capture CO₂, the environmental agencies would have limited grounds to impose a penalty on a project developer for failure to capture CO₂. Further, it will be necessary to vary the terms and conditions of the applicable Environmental Impact Authorisation for each CCS project, so that the Environmental Agency may establish specific conditions to avoid unmonitored discharge of CO₂ into the atmosphere. The leakage of CO₂ may have additional impacts on the surrounding flora and fauna and if serious damage is caused the developer may incur criminal, civil and administrative liability.

5.5 Taxation of CO₂ capture

No specific taxation rules have been issued for CO₂ capture projects. As such, the general requirements would be applicable for CCS projects.

6. Transport of CO₂

6.1 Introduction

Liquefied CO₂ is considered to be a hazardous substance, pursuant to Official Standard NOM-002-SCT/2003, list of the hazardous substances and materials most commonly transported. The Federal Ministry of Communications and Transport has jurisdiction regarding the transport of these substances through general roads.

6.2 General policy and legislation specific to transport of CO₂

6.2.1 Licencing of transportation activities

PIPELINES

The installation of pipelines would have to secure an environmental impact authorisation, besides meeting several Federal and local legal requirements, depending on the areas where the same would pass (General Environmental Law). Restrictions or prohibitions may be established by land-use regulations, which commonly are of municipal jurisdiction. If the same pass through Federal land, a prior concession may be required from the government, as well as a construction permit and payment of fees for use of the Federal land. Even when SENER has already published several official Mexican Standards for the construction of pipelines, the transportation of CO₂ rules have yet to be issued. General requirements for the hermetic conditions and corrosiveness could be inferred from the existing standards, however, it would be advisable to confirm with the Ministry of Energy if such rules will be issued for CCS projects.

In some instances it would only be required to secure an Environmental Impact Authorisation for the use in the transportation of CO₂ in existing pipelines.

ROAD AND RAIL TRANSPORT

Road and rail transport require an authorisation from the Ministry of Communications and Transport, and will have to comply with the corresponding provisions set forth by the standards issued by such authority, as well as with the Regulations for Land Transportation of Hazardous Materials and Waste.

TRANSPORTATION BY SHIP

Water transportation of hazardous materials and waste is governed by the general provisions of the Navigation and Maritime Commerce Law 2006, being of Federal jurisdiction, and will have to comply with several standards issued by the Ministry of Communications and Transportation.

6.2.2 Planning

The transportation of CO₂ is not part of any existing governmental program or planning scheme. Nonetheless, if a pipeline were to be installed, the project would be subject to substantial scrutiny involving both federal and local approvals, as well as consultations with stakeholders.

The latter may ultimately prove the most difficult to obtain, due to difficulties of installing projects which attend to substances regarded as hazardous in communities, due to the opposition of the same. Offshore pipelines would be of Federal competence; nonetheless, opposition may still arise, especially from groups such as fishermen, environmental NGOs and tourist resorts.

ZONING FOR TRANSPORT FACILITIES

If the pipelines pass through Federal land, a concession may be required, as well as a construction permit and payment of fees for the use of the zone. Some areas may be restricted, such as natural preservation areas, or land which has other local restrictions

Construction and building codes. Due to the fact that no official Mexican standards have been issued for the transportation of CO₂, developers may use, as reference, internationally accepted standards and the authorities will have a greater authority to approve or reject the projects submitted by the developer.

ENVIRONMENTAL IMPACT ASSESSMENT

The pipelines will require a prior environmental impact authorisation, after the competent authority analyses the corresponding environmental impact assessment provided by the developer, generally following consultation with other authorities and other stakeholders, if open to public consultation.

The criteria used to verify if a project falls under Federal or local jurisdiction is Article 28 of the General Environmental Law, which establishes a list of activities that require an authorisation issued by SEMARNAT. The list is further developed by the Regulations on Environmental Impact Assessment.

Pipelines used for CO₂ transportation could fall under the definition of pipelines which transport hazardous substances and therefore it would be considered of Federal jurisdiction.

STAKEHOLDER ENGAGEMENT

PUBLIC CONSULTATION

Public consultation may be required by SEMARNAT during the environmental impact authorisation procedure.

LEGAL CHALLENGE

In Mexico, legal standing has several limits unless there is a direct affectation to the potential claimant. Nonetheless, with the North American Free Trade Agreement, and its side agreement on environmental cooperation (NAAEC), new doors are open for claimants to oppose projects which the same consider not to be in compliance with applicable environmental provisions. Other challenges may arise as well, especially with local authorities regarding potential nuisances or risks to the community, and land use restrictions.

6.2.3 Access / tenure

NATURE OF PROPERTY INTERESTS CONFERRED

If pipelines pass through Federal zones, the area would be granted in concession for a certain term, after which the same may be extended. If the developer builds within a Federal zone and fails to

secure a concession, or the concession expires, the pipelines may become national property, or the authorities may require their removal from Federal land.

ESTABLISHING PRIORITY BETWEEN TRANSPORT AND EXISTING USES AND RIGHTS

PETROLEUM AND RESOURCE EXTRACTION

Oil is considered as a priority sector by Mexican legislation, and would be given preference over transport projects (Oil Law 1958, Article 10).

FISHING

Fishing is considered a priority sector and national security matter (General Law of Fisheries and Aquaculture 2007). Therefore, it may be given priority over transport projects.

FAUNA AND FLORA, INCLUDING ENDANGERED SPECIES

The General Law of Wildlife 2000 establishes stringent standards regarding the preservation of endangered species and, to some extent, their habitat. Protection of mangrove is particularly important, since removal is forbidden (General Law of Wildlife 2000, Article 60).

NAVIGATION

In the case of offshore pipelines, there may be holders of concessions or permits regarding ports or recreational navigation activities which may be granted preference due to existing rights.

MINING

Mining is considered as a priority sector, and will have preference over other activities (Mining Law 1992).

SUBSEQUENT USES

The duration of sequestration and the impact of sequestration on subsequent land uses for years to come must be taken into account, since opposition may be faced from different groups and governments with jurisdiction over the respective lands. Nevertheless, may be treated similar to that of the disposal of hazardous waste in geologically stable saline domes (Official Standard NOM-145-SEMARNAT-2003, Confinement of waste in cavities constructed by dissolution in geologically stable saline domes).

RIGHTS OF INDIGENOUS PEOPLES AND OTHER CUSTOMARY RIGHTS

Vast tracts of land in Mexico are under a community property regime, either Ejidos or indigenous communities. Ejidos have an independent “agrarian” regime that establish the rules for the use of communal and individual tracts of land within the Ejidos (Agrarian Law 1992). The Mexican Constitution recognizes the rights of indigenous people to follow and be governed by their own set of rules, which in practice often has complications due to the internal organizations, customs and tradition of the different indigenous groups (Political Constitution of the United Mexican States 1917, Article 2).

COMPULSORY ACQUISITION AND COMPENSATION REGIMES

Land may be expropriated following a legally specified procedure, if it is determined to be for a common good and following compensation (Law of Expropriation 1936).

6.2.4 Environmental and other risks

Pursuant to the National Strategy, further research needs to be undertaken to adequately assess the environmental effects and risks of CCS.

LEAKAGE OF TRANSPORTED CO₂

Leakage of transported CO₂ may attract sanctions just as any other release of a hazardous substance. Remediation is required both by the National Waters Law 1992 and the General Law for the Prevention and Integral Management of Waste 2003 (General Waste Law). Civil and criminal liability may also arise, depending on the effects to human health, the environment, or to property. If the leakage occurs in a natural protected area, sanctions will be more severe.

POLLUTION – NOISE, AIR AND WATER

While there is no specific regulatory scheme, the transport of CO₂ would have to comply with general regulations and standards regarding pollution.

WASTE

The nature of the CO₂ is controversial, and open to interpretation. Given the broad and ambiguous definition of “waste” in Mexican legislation, environmental authorities may decide CO₂ to be a waste. If it is determined to be a waste, it would then still need to be classified as either hazardous, special or solid waste.

To be determined a hazardous waste, CO₂ must fall within the CRIT (corrosive, reactive, inflammable or toxic) criteria, or be classified as such by a regulation (Regulations to the General Waste Law 2006) or standard (Official Standard NOM-052-SEMARNAT-2005, 2006). Hazardous waste is under Federal jurisdiction.

Special management waste is of State jurisdiction. Until the applicable standards are issued, it is unclear whether the States will list CO₂ as a waste that falls within this category.

Solid urban waste is of municipal jurisdiction.

Depending on classification of waste CO₂ falls within (if it is at all considered to be waste) it would have to meet the applicable requirements set forth by the General Waste Law, its regulations and relative standards, as well as local provisions regarding management and disposal of waste.

OCCUPATIONAL HEALTH AND SAFETY

Carbon dioxide transportation activities would have to fulfil the requirements of occupational health and safety standards, especially those related to exposure to hazardous substances (Official Standard NOM-005-STPS-1998, Regarding health and safety conditions at workplaces for the management, transportation and storage of hazardous substances, and Official Standard NOM-010-STPS-1999, Regarding health and safety conditions at workplaces where chemical substances able to pollute the labor environment are managed, transported, processed or stored).

THREATENED/ENDANGERED SPECIES

Mexico is considered a very diverse country holding ten percent of all living species in the planet. Therefore, several stringent standards have been issued for the protection of threatened or endangered species.

6.3 Evaluation

Further development of policies and legislation, especially for pipeline transport, is required. Many general provisions may be applicable, however there is uncertainty as to their application to CO₂ transportation activities.

7. Exploration of potential CO₂ storage sites

There are no specific policies or provisions regarding exploration of potential carbon sequestration sites. It remains unclear and open for interpretation whether general laws will apply to exploration of potential carbon sequestration sites.

The Mining Law 1992, its Regulations and related standards, contain several provisions regarding exploration for mining. But it is uncertain whether CCS projects would be considered an extension to mining activities. The Mining Law 1992 regulates the extraction of materials and not the use of geological sites for CCS and a ruling request may be necessary to confirm whether the Mining Law would be applicable at all.

A CCS project would require an environmental impact authorisation, however, under current legislation, it is unclear if it would fall under Federal or State jurisdiction, since this is determined on whether such projects are regarded as exploration for mining.

8. Injection and pre-closure of CO₂ storage formations

8.1 Introduction

There are no current policies or legislation with regard to the injection and pre-closure of CO₂ sequestration formations.

8.2 General policy and legislation

Existing policies and legislation remain open to interpretation in their applicability to injection and pre-closure of CO₂ sequestration formations.

As a certainty, these projects would have to meet requirements such as environmental impact authorisations (for which jurisdiction would remain to be determined), as well as concessions for any occupied Federal lands.

In CCS projects involving the ocean, a permit for depositing substances would probably have to be secured from the Ministry of Navy (Regulations for Preventing Sea Water Pollution 1979).

8.2.1 Approval processes for sequestration facility closure

It remains unclear whether current legislation would be applicable to approval processes for sequestration facility closure. The conditions set forth in an environmental impact authorisation would be compulsory, since such an authorisation commonly attends to projects on a “cradle-to-grave” basis.

8.2.2 Access / tenure

LEGAL ACCESS TO AND USE OF DEEP GEOLOGICAL FORMATIONS FOR SEQUESTRATION

A concession would be required for the use of areas considered as Federal zones. Damages to the environment, and in particular to aquifers, are to be avoided. It is unclear how existing legal provisions would be applied in practice. Provisions commonly regulating use of the subsoil, such as those for mining, oil, gas and groundwater exploitation would be difficult to be applied to CCS activities.

8.2.3 Planning and construction regulation applicable to CO₂ sequestration facilities

ZONING

Some areas may have limitations regarding land use, such as natural protected areas, or regions where competent authorities have established restrictions to land use.

ENVIRONMENTAL IMPACT ASSESSMENT

As for transportation of CO₂, an environmental impact authorisation would be required for the injection of CO₂. Difficulties may arise regarding jurisdiction in this area.

8.2.4 Leakage liability

VICARIOUS LIABILITY

Officers within a company may be held liable for the orders or authorisations issued that may cause soil or groundwater contamination or a negative impact to the environment. The liability of parent companies regarding the actions taken by their subsidiaries is very limited in Mexican legislation due to the fact that there are very limited provisions that may allow the piercing of the corporate veil.

LIABILITY OF APPROVAL AUTHORITIES

Public servants at the Federal and local levels have potential administrative and criminal liability for the infringement of applicable laws and regulations.

STANDING TO ENFORCE STORAGE OBLIGATIONS

In Mexico, legal standing has several limits unless there is a direct affectation to the potential claimant. Nonetheless, with the NAFTA and the NAAEC new doors are open for claimants to oppose projects which are considered not to be in compliance with applicable environmental provisions. This leaves the door open to claims from NGOs, which otherwise would have virtually no legal standing.

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

Policies and legislation regarding this matter are yet to be implemented. This section, therefore, is only a limited analysis of potentially applicable legislation.

9.1 General policy and legislation

9.1.1 Obligations of approval authorities

Authorities must strictly apply the Law. Failure to do so, and especially in cases where third parties are affected, will result in liability not only to the officers but also to the State, pursuant to both Federal and local laws. Nevertheless, in cases such as CCS activities, where currently there are no clear rules, authorities have to some extent discretionary faculties and it may be a complex task to prove if they have followed the law or not.

9.1.2 Leakage liability

FRAMEWORK FOR POST-CLOSURE LIABILITY

Administrative liability prescribes after five years, and criminal liability prescribes depending on the sanction established by the Law. Civil liability varies depending on the specific case. Nevertheless, there is some controversy regarding prescription in cases implying continuing effects.

CONTRACTUAL ASSIGNMENT OF RESPONSIBILITY

This may be applicable to civil liability, but not to administrative and criminal liability.

10. Summary

10.1 Priority areas for future policy and legislative development

CCS could prove to be extremely useful for the oil and power generation sector. Furthermore, the coal producing associations have pushed for the incorporation of CCS in the National Strategy. It is important that other policies and laws, such as those regulating management and disposal of waste, do not pose a threat to CCS projects, since these currently leave open space for interpretation by the authorities. This can be remedied by issuing specific laws regarding CCS.

11. References

11.1 Federal Laws, regulation and international materials

11.1.1 International and regional agreements

Kyoto Protocol to the *United Nations Framework Convention on Climate Change*, opened for signature 11 September 1997 2303 UNTS 148 (entered into force 16 February 2005).

North American Free Trade Agreement. D.O.F. 20 December 1993.

North American Agreement on Environmental Cooperation. D.O.F. 21 December 1993.

United Nations Framework Convention on Climate Change, opened for signature 9 May 1992, 1771 UNTS 107 (entered into force 21 March 1994).

11.1.2 Federal Laws

Agrarian Law. D.O.F. 26 February 1992.

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