TRUST

High resolution monitoring, real time visualization and reliable modeling of highly controlled, intermediate and up-scalable size pilot injection tests of underground storage of CO_2

Contract #309067

Deliverable Number	**D8.5**
Title	**Legal Aspects of Geological CO_2 Storage**
Work-Package	**8**
Lead Participant	**GKH**
Contributors	EWRE
Version:	**1**
Revision level:	**01**
Date:	**Month 36**
Reviewed by:	
Status:	**FINAL**
Dissemination level	**PU**

Legal Aspects of Geological CO2 Storage

Sharon Artzy-Madel

GKH - Gross, Kleinhendler, Hodak, Halevy, Greenberg & Co

One Azrieli Center, Round Building, Tel Aviv 6701101, Israel

Executive summary

This document aims to present an overview of the environmental law implications of CCS activities in Israel, including the relevant liability issues. The TRUST Project is a pioneer initiative in Israel and currently there is no particular law addressing specifically CCS activities in the country. However, it is important to analyze the existing legal framework since most of the Israeli environmental and the related legislation address the uses of the land and natural resources and the permits that are required in order to carry out all sorts of activities. In this memo we point out the possible applicability of the Water Act, the Land Reclamation Bill, the Environment Protection Act (emission and transfers to the environment – reporting and registration obligations), the Mining Ordinance, the Planning and Zoning Act, the Oil Act, and the Land Act. Given that the Israeli Government is most likely to adopt international standards to regulate the activity, in addition to the current relevant Israeli legislation, the present memorandum also discusses the European Union Directive on Geological Storage of Carbon Dioxide, which provides the most comprehensive guidelines for the implementation and operation of CCS activities. Additionally, the memo also address liability issues arising from CCS activities both under the Israeli legal framework and under the EU Directive on Environmental Liability. This memo is concluded recommending a close legal and technical review during the licensing and operation of the TRUST Project in order to minimize the risks of obstructions and delays during the implementation, as well as the risks of liability.

The above simulations provide a good basis to decide which injection strategy to use at Heletz to achieve enhanced trapping. The final decision will be made once the first field results from the first set of simulations with 'conventional strategies' are available and can be used to calibrate the simulation models.

Keywords	Carbon – Geological – Storage – Environmental - Law - Liability

Content

TRUST aims at carrying out activities related to Carbon Capture and Geological Storage (CCS) especially in Israel Heletz site ("the Trust Project").

CCS is a technique for trapping carbon dioxide emitted from large point sources such as power plants, compressing it, and transporting it to a suitable storage site where it is injected into the ground. According to the European Commission, this technology has significant potential to help mitigate climate change both in Europe and internationally, particularly in countries with large reserves of fossil fuels and a fast-increasing energy demand[1].

Nevertheless, CCS is a potentially pollutant activity and thus several environmental laws may apply to such operation of CCS sites in Israel. The purpose of this memo is to present you an overview of such laws, addressing the respective main legal requirements and liabilities.

It is important to notice that the Project is a pioneer initiative in Israel and currently there is no particular law addressing specifically CCS activities in the country. We understand that the Israeli Government may adopt international standards to regulate such activity, as it has already done in similar circumstances of lack of domestic regulations. Therefore, the present memorandum also discusses the European Union Directive on Geological Storage of Carbon Dioxide.

1. The EU Directive on Geological Storage of Carbon Dioxide

As mentioned above, no specific reference is currently made in the Israeli legislation to CO_2 Geological Storage activities. Most of the recent environmental legislation in Israel was enacted based on international standards, specially EU Directives (for example the 2011 Israeli Packaging Act[2] is based on the EU Directive 94/62/EC of 20 December 1994 on Packaging and Packaging Waste[3]). Hence, in addition to general domestic environmental laws, it is also important to review the international legislation addressing the issue, in order to sketch the obligations that are likely to be imposed on CCS activities, such as the TRUST project.

As described by Roggenkamp and Woerdman4, The European Union Directive on Geological Storage of Carbon Dioxide ("Directive" or "CSS Directive")5, adopted in April/2009 is the main comprehensive international legislation specifically addressing the issue. It *establishes a legal framework for the environmentally safe geological storage of carbon dioxide (CO_2)* in the Member States[6], in order to *contribute to the fight against climate change*[7]. It also amends a number of existing EU Directives and regulations affecting CCS, such as the Directive 2008/1/EC concerning integrated pollution prevention and control ("IPPC Directive") and the Directive 2004/35/CE on environmental liability with regards to the prevention and remedying of environmental damage ("Liability Directive").

[1] http://ec.europa.eu/clima/policies/lowcarbon/ccs/index_en.htm
[2] 2011 Israeli Packing Act: http://www.sviva.gov.il/subjectsenv/waste/beverage/documents/containers%20law.pdf
[3] Directive 94/62/EC of 20 December 1994 on Packing and Packing Waste: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31994L0062
[4] Roggenkamp, M. and Woerdman, E.,Legal Design of Carbon Capture and Storage – Developments in the Netherlands from an International and EU Perspective. Intersentia. Antwerp – Oxford – Portland, 2009.
[5] DIRECTIVE 2009/…/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of on the geological storage of carbon dioxide: http://register.consilium.europa.eu/doc/srv?l=EN&f=ST%203739%202008%20INIT
[6] Countries that are members of the European Union and therefore must implement the Directive's orders.
[7] Article 1.

The Directive considers the aspects related to: (i) the selection of proper storage sites; (ii) awarding storage permits; (iii) operation of storage sites; and (iv) closure and abandonment of the storage site.

Additionally, a set of provisions facilitate third party access to storage sites and transportation networks. The main provision regarding such elements are discussed below.

1.1 Selecting the Storage Sites

The CCS Directive limits CO_2 storage to 'geological storage', which means that CO_2 only can be injected into and stored in an underground geological formation, as defined by Article 3 under (1) and (4) of the CCS Directive.

Each Member State shall also make an assessment of the storage capacity before allowing CCS activities and deciding which areas can be used according to the criteria listed in Annex I of the Directive, in order to avoid significant risk of leakage and/or any significant negative environmental or health impacts[8].

In order to assess the suitability of a potential site, it may be necessary to carry out geological surveys and/or drilling activities. A party shall previously obtain an exploration permit before carrying out such survey, which shall be granted for a limited volume area and may not extend the period necessary for exploration.[9]

The holder of an exploration permit shall have the sole right to explore the potential CCS complex. Hence, Member States are required to ensure that no conflicting uses will be allowed in the area during the period of validity of the permit[10].

We have no information of a comprehensive work being carried out thus far in order to map the relevant CO_2 storage sites in Israel. Nevertheless, a preliminary assessment of potential CO_2 storage sites was made in 2010[11] by the Geological Survey of Israel[12]. The report stated that relevant CO_2 storage sites are more common in the south of Israel and that the total amount of CO_2 that can be stored across the country is considered significant.

1.2 Awarding Storage Permits

Once a suitable site has been found, according to the Directive, a storage permit is required before injecting and storing CO_2. Such a permit has to be awarded on a non-discriminatory basis, i.e., has to be awarded on the basis of objective, published criteria and via a procedure that is open to all entities having the required capacities[13]. Consequently, the Directive also clearly indicates which information has to be included in an application for a storage permit. It involves information about the applicant and the potential operator (including proof of technical and financial competence), the storage site and the prospective sources, transportation methods, quantities and composition of CO_2 streams to be injected, the injection and storage activities (injection facilities injection rates, monitoring plans and proposed

[8] Article 4 of the CCS Directive
[9] Article 5 of the CCS Directive
[10] Article 5 of the CCS Directive
[11] **Preliminary assessment of CO_2 storage opportunities in Israel**, Ran Calvo, Zohar Gvirtzman, Geological Survey of Israel, 2010.
[12] The Geological Survey of Israelis a government institute operating under the Earth Science Research Administration within the Ministry of National Infrastructures.
[13] Article 6 of the CCS Directive

corrective measures) and a proposal for a provisional post-closure plan as well as proof of financial security[14].

In summary, according to the Directive, a party that intends to carry out a CCS project shall expose all of the relevant details for storage and post storage activities, in order to obtain the applicable permit.

The competent authority has to be assured that the operator of the storage site is financially sound and technically competent and reliable to manage the site. The storage operator and his staff will be given the necessary professional and technical development and training[15]. When awarded, a storage permit shall at least contain:

- the name and address of the operator;
- the precise location and delimitation of the storage site and installations;
- the requirements for storage operation, including the quality and total quantity of CO_2 to be stored and the maximum injection rates;
- the approved monitoring plan, the obligation to implement and update the plan and to notify the competent authority in case of significant irregularities or leakages;
- the conditions for closure and the approved provisional post-closure plan; and
- The requirement to maintain a financial security or any other equivalent to ensure that all obligations arising under the permit, including closure procedures and post-closure provisions, can be met.[16]

In addition, the operator will be required to inform the authorities of any changes in the operations, and the authorities may update the storage permit conditions. For this purpose, the competent authority shall also review the permit on a regular basis. If a permit has been withdrawn, the competent authority shall either issue a new storage permit or close the storage site. Until a new storage permit has been issued, the competent authority shall take over the responsibility for the storage site, including all legal obligations. The competent authority shall recover any costs incurred from the former operator, including the possibility to make use of the permit holder's financial security[17].

As suitable storage sites may be rare to find and require specific technical and financial competence to operate, storage sites can be considered a natural monopoly. The Directive therefore requires Member States to take the necessary measures to ensure that potential users are able to obtain access to the storage sites (and the transportation networks).

Member States are free to decide about the details of such access regime as long as it provides for fair and open access and is applied in a transparent and non-discriminatory manner[18].

1.3 Operating a Storage Site

According to the Directive, Member States shall ensure that the operator monitors the injection facilities and the storage complex in order to detect migration and/or leakage of CO_2 and any harmful effects on the environment. The monitoring shall be based on a monitoring plan, which is approved by the competent authority and updated every five years in order to take account of technical developments. On the basis

[14] Article 7 of the CCS Directive
[15] Article 8 of the CCS Directive
[16] Article 9 of the CCS Directive
[17] Article 11 of the CCS Directive
[18] Article 20 of the CCS Directive

of such monitoring plan the competent authorities may assess the effectiveness of any corrective measures in of leakage and whether the stored CO_2 will be completely contained for the indefinite future[19].

The operator shall submit to the competent authority, at least once a year, all results of the monitoring, the quantities and characteristics of the CO_2 streams delivered/injected in the reporting period, proof of the maintenance of the 'financial security' and any other information relevant for the purposes of assessing compliance with permit conditions and increasing the knowledge of CO_2 behavior in the storage site[20].

Member States shall organize a system of routine and non-routine inspections of all storage sites, which may include visits of the storage complex and the injection facilities, assessments of the injection and monitoring operations carried out by the operator, and a check of all relevant records of the storage site kept by the operator. Whereas routine inspections shall be carried out at least every year and include an examination of the relevant injection and monitoring facilities, non-routine inspections shall be carried out if the competent authority has been notified of leakages or significant irregularities and/or the reports show insufficient compliance with the permit conditions, if necessary to investigate serious environmental complaints and any other situations where the competent authority considers this appropriate[21].

1.4 Closing a Storage Site

A sensitive phase in the process of CCS projects is the closure of the storage site. According to the CCS Directive, a storage site or part of it shall be closed:

- if the relevant conditions stated in the permit have been met;
- at the request of the operator, after authorization of the competent authority;
- if the competent authority so decides after the withdrawal of a storage permit.

The operator shall be responsible for sealing the storage site and removing the injection facilities. If a storage site is closed following a withdrawal of a permit, the competent authority shall remain responsible for maintenance, monitoring, control and applicable corrective measures as well as for all ensuing obligations under other relevant provisions of Community legislation.

The Directive therefore requires that closure of a storage site needs to be based on a post-closure plan approved by the competent authorities on the basis of best practice. The operator's responsibility involves maintenance, monitoring, control, reporting and applicable corrective measures[22].

2. The Current Environmental Regulatory Framework in Israel

The Israeli environmental legislation is divided into several statutes, each one of them dealing with specific issues such as water management, waste, air pollution, hazardous materials, mining, among others.

In addition to that, the Business Licensing Law lists the activities that need to have a business license in order to operate, and also allow the environmental authorities to establish specific terms and conditions in additional to the ones provided by the environmental laws.

[19] Article 13 of the CCS Directive
[20] Article 14 of the CCS Directive
[21] Article 15 of the CCS Directive
[22] Articles 17-18 of the CSS Directive

In this memo we will review the relevant environmental statues that may be potentially applicable to the TRUST activities. We will also review the provisions of the Planning and Zoning Law, that regulates construction and land uses and, although it is not considered as an environmental statute, it may directly influence the TRUST activities[23].

2.1 The Water Act

The Israeli Water Act[24] of 1959 is the statutory instrument that regulates all aspects of water resources management.

Article 20(b) of the Water Act prohibits any action that will lead or may lead (directly or indirectly) to water contamination. The term "may lead" was interpreted by the courts as a "reasonable possibility" for water contamination – therefore there is no need to proof that an actual contamination has occurred or will necessarily occur.

It should be emphasized that the prohibition to contaminate water applies even if the water source was previously polluted[25].

The definition of water contamination

In order to assess the applicability of the Water Act's provisions to a CCS project it is necessary to determine whether the project's activities may lead to water contamination in view of the definition established by the Water Act.

Article 20(א) defines water contamination as:

"Changing the characteristics of water (that is in a water source) physically, chemically, organolepticly, biologically, bacteriologically, radioactively or in any other way, or making the water dangerous to public health, or in a way that may damage the flora or fauna, or making the water less worthy to the purpose to which they are used or intended for use".

According to such definition, one can be accounted for water contamination merely by changing the water characteristics – even if such change does not affect the potential uses of the water or even if no harm was caused to the water itself.

It is reasonable to assume that, although the risk is small, CCS activities could impact groundwater if CO_2 leaks from the storage location. The impacts may include increased salinity, increased acidity and mobilization of metals or other impurities.

Thus, considering that the Israeli Water Act introduces a strict threshold for liability regarding water contamination, minimal alterations that may occur in a water source in the procedure of CO_2 capture transport or storage may lead to criminal sanctions.

The Water Act also gives to the Director of Water and Sewage Administration the authority to take the necessary actions to prevent water pollution. The Director may order the entity that is causing pollution

[23] The Ports Regulation (waste disposal from vessels) - 2010 is one of the few Israeli legislation that specifically addresses CO2 emissions from capturing activities. Nevertheless, it addresses the disposal of waste in the open sea and not specifically CCS activities. According to this regulation, disposal of any kind from vessels, of CO2 streams - as part of a CO2 capture procedure is allowed.

[24] 1959 Israeli Water Act: http://www.nevo.co.il/law_html/law01/235_001.htm

[25] Article 20(b) of the Water Act.

to do whatever is necessary to stop the contamination, repair the damage and prevent recurrence, by issuing an administrative order.

In general, a breach of the provisions of the Water Act that deal with the prevention of water pollution is a criminal offense[26], which may lead to penalties varying from imprisonment and fines. Section 20 of the Water Act stipulates a maximum penalty of one year in prison or a fine of NIS 392,000 for an offense under this Law.

2.2 The Land Reclamation Bill

The Land Reclamation bill was drafted and has been discussed in the Knesset in the past years, aiming to address soil contamination and lead to restoration of contaminated land. If approved, the proposed bill can impose significant liability regarding CCS projects.

Until now, the Israeli legislation did not deal with soil pollution and land reclamation issues in a comprehensive manner.

The Land Reclamation bill basic stipulations are:

- Prohibits soil pollution directly or indirectly – in an immediate or gradual way. According to the bill, any dumping, penetrating or scattering of contaminant matter may be considered as a cause for soil pollution.

- Imposes obligations on the entity that caused pollution the soil, such as stopping the contaminating activity, collecting the contaminating material, etc.

Given the early stage of the legislative process of the Land Reclamation bill, as well as the scientific uncertainty about the influence of CCS activities as a source of soil contamination, it is still not possible to determine whether any liability may arise from the approval of the Land Reclamation bill.

Nevertheless, it is important to emphasize that if significant soil pollution is caused during CO_2 storage activity process, liability may arise from the Land Reclamation bill (if approved), with significant implications to the operators of the CCS project.

2.3 Environment Protection Act (emission and transfers to the environment – reporting and registration obligations)

Another statute that may affect a CCS project is the Environment Protection Act (emission and transfers to the environment – reporting and registration obligations) - 2012[27].

Such law, which was enacted in accordance with the Pollutant Release and Transfer Register[28] obligates CO_2 capture activity that is been made in order to conduct a geological storage to be reported publicly.

[26] Article 20(כא) of the water act

[27] 2012 Israeli Protection Act (emission and transfers to the environment – reporting and registration obligations). http://sviva.gov.il/InfoServices/ReservoirInfo/DocLib/כללי/klali69.pdf

[28] http://www.sviva.gov.il/infoservices/reservoirinfo/doclib/%D7%9B%D7%9C%D7%9C%D7%99/klali69.pdf

2.4 The Mining Ordinance

CCS projects have common aspects with oil and gas drilling and mining activities, which are expressly regulated by Israeli legislation. It is important to analyze the regulation of such activities since they may be used to regulate CCS activities as well.

As mentioned above, one of the key elements of the European CSS Directive is that the closure of a storage site needs to be based on a post-closure plan approved by the competent authorities.

Within the current Israeli legal framework, the Mining Ordinance[29] offers a comprehensive approach regarding the rehabilitation measures that need to be taken upon the termination of mining activities. Therefore, such Ordinance may serve as a basis for determining the requirements applicable to the closure of a CO_2 Geological Storage site, in the absence of other specific legislation addressing the issue.

The Ordinance regulates not only the mining activity itself, but also aims to ensure that proper post-activity restoration will performed.

Chapter 13 of the Mining Ordinance regulates the rehabilitation measures that need to be taken upon termination of mining activities. According to its provisions, the competent authority shall notify[30]the quarry's owner that his quarry needs rehabilitation. After receiving this order, the quarry's owner must inform the competent authority whether he intends to restore the quarry himself or not[31]. If the quarry's owner fails to inform his intention to restore the quarry, the competent authority itself will take the necessary measures for the rehabilitation.

In order to establish the financial viability for quarry rehabilitation, the Mining Regulation (Quarry Rehabilitation Fund) – 1978[32] orders quarry's owners to devote certain percentage of their sales, by the material been mined, to a special fund that is in charge of quarry rehabilitation.

Two aspects of the Mining Act deserve special attention. First, in most of the modern master plans that are subject to approval by the Zoning and Planning Act, provisions regarding rehabilitation of the quarry are an integral part of the master plan's instructions, and a part of the obligations imposed on an owner of a quarrying license – even before the quarrying activities begin.

Moreover, it can be assumed that the competent authority will order the operator/quarry's owner that in a case he fails to fulfill his duties, the competent authority will take his obligation to rehabilitate the CO_2 site, and later will charge the respective expenses from the operator/quarry's owner. (A similar procedure is found in the Maintenance of Clean Act[33] that allows the authorities to take corrections actions and then impose the expenses on wrongdoer). Hence, and in accordance with the European CCS Directive, a CCS project would most likely not be authorized at all, neither could be accomplished successfully unless the applicable satisfactory rehabilitation program, that is a part of the project as a whole, was presented to and approved by the competent authority and such program could also address the financial aspect of the rehabilitation process.

[29] Israeli Mining Ordinance: http://www.nevo.co.il/law_html/law01/241_001.htm
[30] Article 113 of the Mining Ordinance
[31] Article 116 of the Mining Ordinance
[32] 1978 Israeli mining Regulation (Quarry Rehabilitation Fund): http://www.kasham.org.il/content.php?id=1010
[33] 2008 Israeli clean Act: http://www.sviva.gov.il/InfoServices/ReservoirInfo/DocLib/אוויר/avir25.pdf

Secondly, in the Mining Act it is expressly declared[34] that any rehabilitation measures are subject to a master plan that must be approved under the Zoning and Planning Act. Therefore, a specific approval of a plan that deals with the actions needed for a proper closure of a storage site is needed even if all capture, transfer and storage activities are properly approved[35] in the scope of the Zoning and Planning Act all,.

Selecting Storage Sites via the mining Ordinance

As mentioned above, of the issues that are regulated in the CSS Directive is the need to explore the relevant locations for CO_2 storage in order to determine the suitable locations, what may be done through geological surveys.

According to Article 16 of the Mining Ordinance, an exploration permit is required in order to conduct a "survey", which is defined by the ordinance as, inter alia, "information about the soil structure". As detailed below, the Oil Act[36] also requires exploration permits.

It should be noted that according to the **Planning and Zoning Regulations[37] (works that need a construction permit),** works made according to a permission that was granted by the mining ordinance do not need to acquire a construction permits granted by virtue of the Planning and Zoning Act. Hence, it can be argued that exploration works (that include only mining actions in order to conduct a geological survey) that take place in order to choose the right storage location do not need to acquire a construction permit.

2.5 The Planning and Zoning Act

As detailed by the Ministry of Foreign Affairs website[38], the Israeli Planning and Zoning Act[39] was enacted in 1965, regulates all building and land use management in Israel, and establishes a framework for environmental planning.

By the virtue of this Act, national, regional and local bodies are established to provide for land use planning on all levels.

A National Board, chaired by the minister of the interior is responsible for overall planning in Israel. The Board consists of government representatives, city representatives, scientists, engineers and representatives of environmental interest groups.

Six District Commissions, consisting of Government representatives and representatives of local authorities, serve as a link between the national planning and local implementation.

Planning Schemes

A National Outline Scheme ("תמ"א") lays down the planning structure for the whole country and assigns purposes for various areas; for example, setting aside industrial zones, laying out highways, railroad lines and electricity grids, enacting provisions as to recreation areas, nature reserves and holy places, and forecasting demographic changes in Israel. Not surprisingly, there is no specific National Outline Scheme

[34] Article 116 of the Mining Act
[35] See page 19 for the zoning and planning act and CO2 activity
[36] 1952 Israeli Oil Act: http://www.nevo.co.il/law_html/law01/315_001.htm
[37] 1965 Israeli Planning and Zoning Regulation (works that need a construction permit: http://www.nevo.co.il/law_html/law01/044_046.htm
[38] http://mfa.gov.il/MFA/PressRoom/1998/Pages/Planning%20and%20Building%20Law-%201965.aspx
[39] 1965 Israeli Planning and Zoning Regulation: http://www.nevo.co.il/law_html/law01/044_001.htm

that deals with CO_2 capture, transfer or storage. Therefore, a proper legal arrangement, at least in the context of planning and zoning at the national level regarding CO_2 storage – is not available.

District Outline Schemes are in a lower level in relation to the National Outline Scheme. They were enacted in order to characterize and determine the necessary details, land uses (such as industrial, commercial, public, etc.), building rights, instructions, terms, limitations (including environmental issues) and prohibitions that are needed to be implemented by the District Outline Schemes policy. District Outline Schemes are approved by one of the six district planning and zoning committees.

Local Outline Schemes are in la lower level in relation to the District Outline Schemes. They regulate planning matters in a local perspective. Local Outline Schemes are approved by the local planning and zoning committee.

2.6 Construction permit

In order to implement and execute activities foreseen in Planning Schemes (for example, building an industrial plant in an area that was designated for an industrial land use in a planning scheme) – it is mandatory to obtain a construction permit. The construction permit is usually granted by the local planning and zoning committee, as long as the construction permit application matches the relevant Planning Scheme orders.

It is important to emphasize that even if a relevant Planning Scheme applies in the designated area – it is obligatory to acquire a construction permit.

According to the **Planning and Zoning Regulations (works that need a construction permit) 1967**[40], construction permits are required for all quarrying, excavation, mining or filling that alter the ground, its stability or safety.

One can argue that CO_2 storage does not affect the ground in any of the ways listed above – but as detailed below, we understand that a purposive interpretation of the law leads to a conclusion that a construction permit will be needed to majority of the CCS activities.

This conclusion will be even clearer if, in the relevant time, no specific legislation regarding CCS projects (in light of the CSS Directive) will require a specific permit in order to conduct CCS activities.

Several terms of the construction permits may be consistent with the principles of the European CSS Directive, for instance:

- The use of technically safe pipelines: conditions relating to the material used, thickness of the pipes etc.
- Listing actions that need to be taken in order to monitor the injection facilities, and establishing a report regime in case of an incident.
- Making sure that the site is operated in a safe manner.
- Defining the total quantity of CO_2 authorized to be geologically stored, the maximum injection rates and pressures and other technical requirements.

[40] 1967 Israeli Planning and Zoning Regulations (works that need a construction permit): https://view.officeapps.live.com/op/view.aspx?src=http%3A%2F%2Fwww.nevo.co.il%2FLaw_word%2Flaw01%2F044_038.doc

Other requirements, such as the obligation to implement the corrective measures plan in the event of leakages or the conditions for closure of the CO_2 storage site can be established through a commitment that will have to be signed by the CCS project operator in order to obtain the construction permit.

2.7 The planning and zoning act and CCS projects

We understand that most of the activities related to CCS projects are subject to the Planning and Zoning Act and its regulations.

A proper application of the Planning and Zoning Act provisions require that all land uses and building activities made by a CCS project must be compatible with the Planning Schemes that applies on the relevant land.

It is important to conduct a preliminary research in order to identify all the relevant planning schemes and determine if their listed land uses match the characteristics required for a CCS project. It shall be carefully assessed that no specific uses - that matches precisely the activities needed for the project - is available in a valid planning scheme, and therefore can raise a difficulty obtaining a construction permit.

In many cases, especially when the relevant planning scheme is old and phrased in a general way, it is possible to argue that several different activities can be approved under such plan. For example, in some cases it is possible to obtain a construction permit for a shopping center to be located in the heart of an industrial zone, simply because the plan uses a broad definition for the approved land uses and allows building a commercial building next to an industrial one.

If a certain planning scheme allows, for example, all kinds of mining activities and oil drilling in a certain area, it can be argued that CCS projects should also be allowed, and it would be possible to obtain construction permits.

In this context, it would be necessary to explore the relevant Planning Schemes that apply to the "HELETZ" drill area in order to determine whether the activities of the TRUST project are similar in nature to the activities already approved and carried out in the "HELETZ" site.

Nevertheless, we believe that under the current Israeli environmental and planning policies, the competent authorities would unlikely grant construction permits for CCS activities without a specific approved planning scheme for that matter.

Alternatively, it can be argued that, in case the specific plan of the relevant area where the CCS project is intended does not grant all of the uses that are necessary for the project – strict terms in the construction permit can be made in order to regulate and allow the activity.

2.8 Environmental Impact Assessment

If the competent authorities determine that a new Planning Scheme is needed, a prior Environmental Impact Assessment will likely be also required in order to allow the authorities to better evaluate the impacts of the purposed Planning Scheme.

The Environmental Impact Assessment examines, inter alia, alternatives to the project proposed location, alternatives to the proposed project planning and the necessary measures needed to be taken in order to prevent risks to the environment.

The Environmental Impact Assessment is made by the plan entrepreneur according to professional instructions received by the Israeli Ministry of Environmental Protection.

It can be argued that the obligation to conduct an Environmental Impact Assessment for CCS projects is based on Article 2 of the Planning and Zoning regulation (Environmental Impact Assessments) - 2003.

According to the regulation, an Environmental Impact Assessments is required in cases where substantial impacts on the environment are expected. Indeed, it can be argued that no *substantial* impact on the environment will occur as a result of a CCS project, and therefore there is no need to complete an Environmental Impact Assessment. Nevertheless, the very fact that CCS enterprises are new in the world in general, and in Israel in particular, it would be reasonable to assume that the competent authority will require conducting an Environmental Impact Assessment.

2.9 The Oil Act

The **Oil Act** – 1952[41], regulates the rights and obligations related to the production of oil, natural gas and other fuels.

It is important to review the Oil Act provisions since, like CCS activities, oil exploration activities also deal with the management of underground resources.

As provided in the Mining Ordinance, in the Oil Act also requires a party to obtain a preliminary permit[42] in order to make the necessary examinations to determine the chances of oil discovery. This permit is granted by the supervisor of implementation of the Oil Act in the Ministry of Energy.

Once the preliminary permit is issued, the party is granted the right to enter the relevant soil (as long as it not a building or a yard) and to conducts the necessary surveys[43]. The permit holder is obligated to give a guaranty ensuring a compensation for third parties in case of damages[44].

Similar to the Mining Ordinance, the permit holder is obligated to restore the original condition of the environment as they were before the beginning of his activities[45]

As long as no other specific legislation addressing CCS activities is enacted, it is reasonable to assume that, in order to explore the soil for finding a suitable site for CO_2 storage activities, an exploration permit by virtue of the Oil Act and\or the Mining Ordinance will be required.

It should be emphasized that the Oil Act orders cannot contradict or substitute the Planning and Zoning Act orders, so any oil related activity (exploring or drilling) shall only be conducted upon the issuing of the relevant permit also by the virtue of the Planning and Zoning act, as discussed above.

Nevertheless, the Oil Regulations[46] (Permission to deviate from the provisions of the Planning and Zoning act) were approved in 2012, allowing a relatively quick way for approval of limited

[41] 1952 Israeli Oil Act: http://www.nevo.co.il/law_html/law01/315_001.htm
[42] Article 7 of the oil act
[43] Article 8 of the oil act
[44] Article 10 of the oil act
[45] Article 9 of the oil act
[46] 2012 Israeli Oil Regulation (permission to deviate from the provisions of the Planning and Zoning Act): http://www.nevo.co.il/law_html/law01/500_679.htm

oil drilling activities necessary to assess the feasibility of oil production - without having the need to relay on the Planning and Zoning Act complex orders. Under such regulations, it is possible to conduct drilling activities even if the relevant planning scheme has not been approved and even if a construction permit has not been granted.

The actions that can be carried out according to these regulations include: making roads to the relevant site, oil production tests, heating the subsoil, making arrangement for the establishment of temporary facilities etc[47].

Although these regulations do not expressly apply to projects related to CCS activities, they are a good example of a statute that can provide legal requirements in case the very essence of a given activity has not yet been determined or finalized – such as in surveys for CO_2 storage. On the other hand, it can be argued that because we are dealing with an experimental project – it is important not to deviate from the regular orders of the law in order to ensure the maximum review and examination level.

2.10 Land Property Rights

Another issue that shall be taken into account concerning CCS activities relates to land property rights. According to article 11 of the Land Act – 1969[48], "ownership of a land area spreads **throughout the depth** **below the surface of the ground**, subject to laws regarding water, oil, mining, minerals, etc."

Given the possibility that a CO_2 storage site can be deployed in a large area below the surface of the ground, and since there is no specific legislation that deals with CO_2 storage, there is a possibility that storage of CO_2 can be considered as a violation of the right of property of the owners of the land that is located above the CO_2 storage location.

Having said that, we believe that a purposeful examination of the Land Act, based on the fact that CO_2 storage area, located hundreds or more meters below the ground surface, far from any possible effect on the property above, without the ability to harm or influence in any way the property rights of the land owners above - cannot be considered as a negative influence on the right to property of the land owners above.

3. Liability and CCS Activities

3.1 Liability under the Israeli Law

Liability issues follow events causing or threatening to cause damage. The operation of a CCS facility may be associated with several risks. Unanticipated migration, leakage, and changes in

[47] Article 5 of the Oil regulations
[48] Article 11 of the 1969 Israeli Land Act: http://www.nevo.co.il/law_html/law01/286_001.htm

subsurface pressure could potentially cause adverse impacts to human health and welfare, the atmosphere, ecosystems, groundwater and surface water.

Adverse health effects caused by high levels of CO_2 can range from minor, reversible effects to mortality, depending on the concentration of CO_2 and the length of the exposure.

Some of the effects have a more general nature, incidental to the handling of potentially dangerous substances (gas, oil) and/or on the use of equipment (e.g. pipelines, injection equipment). Other events may be regarded as more typical for CO_2 storage, such as CO_2 leakage (although, as mention above, such risk is minor).

In practice, the liability of the operator of a CCS site will probably depend on the compliance level of the operator regarding the terms and limitations that were listed in the different permits, plans and regulations. As long as the operator carefully obeys his duties and acts in a reasonable manner, we can assume that his degree of liability will be relative minor.

As for civil proceedings, the Prevention of Environmental Nuisances Act (Civil Claims) – 1992 enables civilian plaintiffs to file claims regarding environmental harms, including air pollution, requesting the court to issue a warrant that will stop the harmful activity.

As for tortious liability, the Torts Ordinance [49] provides the foundations of tort law in Israel. In order to impose tort liability, the plaintiff must prove these three requirements:

1. The existence of wrongdoing – usually an act or omission deemed as negligence;
2. A causal connection between the wrongdoing and the damage;
3. The existence of a damage to the plaintiff.

A negligence wrongdoing will occur if an individual breeches his duty of care. This duty requires that the individual will act in a certain standard of reasonable care while doing acts that may harm others.

In case a claim is filled regarding damages (which are not minor damages)to third parties as a result of CSS activities, the court will examine if the activity was carried out with the reasonable care and precautions, not only in accordance to the terms of the environmental permits.

3.2 The CCS Directive and the EU Directive on Environmental Liability

In the European Union, liability for environmental damages (damage to protected species and natural habitats, water and land) is regulated by Directive 2004/35/EC of the European Parliament ("Environmental Liability Directive").

The Environmental Liability Directive establishes a framework for environmental liability based on the "polluter pays" principle, with a view for preventing and remedying environmental damage.

Under the terms of the Directive, environmental damage is defined as:

a) "damage to protected species and natural habitats, which is any damage that has significant adverse effects on reaching or maintaining the favorable conservation status of such habitats or species;

[49] Israeli Torts Ordinance http://www.nevo.co.il/law_html/Law01/306_001.htm

b) water damage, which is any damage that significantly adversely affects the ecological, chemical and/or quantitative status and/or ecological potential, as defined in Directive 2000/60/EC, of the waters concerned;

c) land damage, which is any land contamination that creates a significant risk of human health being adversely affected as a result of the direct or indirect introduction, in, on or under land, of substances, preparations, organisms or micro-organisms."

3.2.1 Scope of the principle of liability

The Environmental Liability Directive distinguishes between two complementary situations, each one governed by a different liability scheme: occupational activities specifically mentioned in the Directive and other occupational activities.

The first liability scheme applies to the dangerous or potentially dangerous occupational activities listed in Annex III of the Environmental Liability Directive. These are mainly agricultural or industrial activities requiring a license under the Directive on integrated pollution prevention and control, activities which discharge heavy metals into water or the air, installations producing dangerous chemical substances, waste management activities (including landfills and incinerators) etc. According to the CSS Directive, CO_2 activity should be added to Annex III of the Environmental Liability Directive.

Under this first scheme, the operator may be held responsible even if he is not at fault.

The second liability scheme applies to all occupational activities other than those listed in Annex III of the Directive, but only where there is damage, or imminent threat of damage, to species or natural habitats protected by Community legislation. In this case, the operator will be held liable only if he is at fault or negligent.

The Environmental Liability Directive provides for a certain number of exemptions from environmental liability: The liability scheme does not apply in case of damage or imminent damage resulting from armed conflict, natural disaster, activities covered by the treaty establishing the European Atomic Energy Community, national defense or international security activities etc.

3.2.2 Liability and the CSS Directive

In order to determine the scope of liability issues in CCS projects, we shall first determine the identity of the responsible parties, based on the CSS Directive.

According to Article 3 (10) of the CCS Directive 'operator' means 'any natural or legal, private or public person who operates or controls the storage site or to whom decisive economic power over the technical functioning of the storage site has been delegated according to national legislation'. Hence, and given that the operator is subject to the majority of obligations and limitations according to the directive, he is also subject to most of the liability issues.

As mentioned above, the CCS directive aims to establish a legal framework for the safe storage of CO_2. To that end, a permit is required to operate a storage site. Under the applicable rules, the operator is obliged to monitor the storage site (Article 13), to report all results of the monitoring and any other relevant information to the competent authority (Article 14), to take and pay for corrective measures in the event of leakage or significant irregularities (Article 16), to eventually close the storage site and remain responsible after closure (Article 17), to establish financial security to ensure that the operator will be able to meet its obligations (Article 19), and to make a financial contribution available to the competent authority prior to abandonment the site (Article 20).

According to Article 18, when certain conditions are met, all legal obligations relating to monitoring and corrective measures shall be transferred to the competent authority on its own initiative or upon request from the operator. In general, the authorities shall establish a minimum period no shorter than 20 years, unless all available evidence indicates that the stored CO_2 will be completely and permanently contained.

In the light of the above, considering that CCS activities have not yet been carried out nor regulated in Israel in a significant or direct manner, it is important to take into consideration that during the licensing and operation of the activities of the TRUST Project several new issues may arise and the environmental authorities will be inexperienced with the applicable legal framework and its implementation. Therefore, a close legal and technical review is recommended in order to minimize the risks of obstructions and delays during the implementation, as well as the risks of liability arising from the TRUST Project.