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INTERNATIONAL EMISSIONS TRADING ASSOCIATION

Submission to the UNFCCC Secretariat by the International Emissions Trading Association (IETA)

In response to COP Draft Decision -/CMP.16 Paragraph 3, the International Emissions Trading Association (IETA) welcomes the opportunity to submit to the Secretariat our views on CO_2 capture and storage (CCS) projects as Clean Development Mechanism (CDM) project activities. As requested, this submission addresses issues to be considered at the 35th Session of the Subsidiary Body for Scientific and Technological Advice (SBSTA35) as the modalities and procedures (M&P) are elaborated for the inclusion of CCS in geological formations as project activities under the CDM.

IETA applauds the call for a technical workshop on CCS at SBSTA35. We note that the meeting should focus on the formation of modalities and procedures for the inclusion of CCS in geological formations as project activities under the CDM. The meeting should therefore focus on M&P issues, not necessarily methodological issues. Many of the issues discussed at the workshop have been tackled within the UNFCCC system since 2006, so the subject matter should not be generic and there should be adequate time allotted to address each topic. Government representatives and private sector constituents should be present in order to create an atmosphere of meaningful exchange. IETA believes that the most challenging issue in this regard will be the establishment of a suitable liability regime to encapsulate CO2 permanence in geological formations, which would assure the long-term fungibility of generated credits while also ensuring environmental integrity.

SUMMARY OF IETA'S VIEWS

It is widely accepted that CCS is one of several important mitigation options for reducing emissions in the energy sector in the 2025-2050 timeframe. Its inclusion in the CDM would reconcile the dual aims of emissions reduction and economic development, serving as a catalyst for its early deployment in developing countries.

Below is a summary of our main arguments for the inclusion of CCS in the CDM:

1. Site selection criteria and monitoring plans should not be detailed in modalities and procedures. High-level guidance is all that is necessary. An abundance of material is readily available on defining and selecting an adequate storage site.

2. As we feel that risk and safety assessments as well as the socio-environmental impact assessments and should be carried out on a case-by-case basis, IETA believes a detailed methodology set out in the modalities and procedures is unnecessary.

3. Any storage site should meet basic geological criteria that allow for it to be monitored sufficiently.

4. IETA considers modeling as a fundamental aspect of CCS projects. Without modeling, projects would commence without pertinent risk and safety information for Project Proponents and regulators.

5. We believe that the CDM project boundary for a CCS project should accommodate components across the full CCS life cycle. In the unlikely event of CO2 migration outside of the project boundary defined within the Project Design Document (PDD), IETA believes that a request for deviation of the monitoring plan could be submitted, allowing necessary revisions to be made to the monitoring plan that would account for a newly dimensioned project boundary and associated monitoring requirements.

6. Project emissions should include the calculation of emissions resulting from fossil fuel or electricity usage. Similar accounting approaches are already being used for CCS projects in the EU and Australia. IETA believes that it is therefore unnecessary to create an entirely new accounting structure for CCS projects under the CDM.

7. While IETA recognizes that it may take some time before domestic regulators are interested and capable to collaborate on a CCS project, we feel that it is important for an enabling environment to be put in place for bilateral or multilateral cooperation to commence across boundaries.

8. IETA believes that it is optimal for the ultimate liability for any long-term seepage emission to lie with the host country. We believe that host countries should be able to define the specific details of liability arrangements suitable to each specific project and national circumstance, in the same way that sustainable development criteria are currently prescribed by host countries for CDM project activities, agreed upon prior to host country approval.

9. Financial liability for monitoring, remediation and corrective measures pre liability transfer can be met by a mutually acceptable financial mechanism. The financial mechanism should depend on the credit standing of the Project Proponent and be capped to manage liability exposure.

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Introduction

In IETA's view, CCS meets the objectives and criteria of the CDM and supports the ability of developing countries to contribute towards the Convention's central objective of stabilizing atmospheric GHG concentrations to no more than a 2-degree Celsius change in average global temperatures relative to pre-industrial levels.

According to the International Energy Agency (IEA), CCS is the only technology available to mitigate GHG emissions from large-scale fossil fuel usage, particularly power generation but also in a number of industrial processes like cement, iron&steel and refineries, where it is actually the only option to largely reduce CO2 emissions.. The mitigation potential through CCS could account for 19% of the total mitigation effort needed by 2050, and more than 50% by 2100. IEA recently concluded that, in line with making reductions along a 450ppm scenario, the utilization of CCS will reduce GHG mitigation costs up to 70 percent[1].

Demand for coal (primarily for electricity generation) is expected to increase the most of all fossil fuels, out to 2030. Fossil fuelled power plants have a lifetime of 25 years to 50 years. To avoid a technology lock-in for new power plants, particularly in rapidly growing developing countries, commercial-scale CCS needs rapid global deployment if its mitigation potential is to be met.

As the required domestic policy frameworks to incentivize the level and scale of mitigation necessary is often absent or insufficient in many developing countries, the CDM has become one of the few mechanisms which can incentivize investment in technologies such as CCS.

The CDM is an important contribution to incentivize cost-effective CCS opportunities in developing countries. It will provide a critical income stream. This is the case not only for the power sector but all large-scale uses of fossil fuels including industrial processes such as: ammonia, cement production, gas processing - including liquefied natural gas production for export markets. In other words, CCS in the CDM can help to reconcile the dual aims of emissions reductions and development.

Furthermore, inclusion of CCS in CDM will send an important signal to the market that CCS is fully accepted as a much-needed technology in order to face the climate change challenge in developing countries.

Inclusion of CCS in CDM will also pave the way for continuous, wider inclusion in a post-2012 policy regime, reformed CDM or new market mechanism.

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[1] IEA 2009 CCS Technology Roadmap

There are real and cost-effective opportunities available now in developing countries in need of financing. The CDM provides an opportunity to establish a framework for funding using the power of the carbon market to achieve effective cost reduction and drive early CCS deployment. Such projects can help facilitate the critical pathway towards the wider deployment of CCS needed in the long term while facilitating the transfer of clean technology to developing countries. We strongly believe that incentivizing low-cost early opportunities in developing countries will position them with the required technology know how, infrastructure and sub-surface knowledge (e.g. capture technologies, pipelines and storage potential mapping) needed for wider deployment in the future. This view is supported in the SRCCS which concludes that: "early opportunities […] could provide valuable early experience with CCS deployment, and create parts of the infrastructure and knowledge base needed for the future large-scale deployment of CCS systems" (2).

IETA believes that, depending on the development of a post-2012 international policy framework, mechanisms in addition to the CDM will likely be required to promote CCS on a significant scale. However, in the short term the CDM can act as a much-needed catalyst in developing countries to help build technical understanding of CCS applications, reduce technology costs and develop the confidence needed for deployment. Critically, the CDM represents the main means available for allowing CCS to become commercially available in those developing countries where CO2 emissions will rise most rapidly in future years. We believe that the policy framework and financial mechanisms must and can be developed to encourage companies and governments to gain the experience needed to build momentum towards widespread global industrial scale operations.

Further, if the decision from the Conference of Parties was to disallow the inclusion of CCS in the CDM, the negative message sent by such a decision could adversely impact the widespread deployment of this important mitigation option. We therefore view CCS inclusion in the CDM as a critical bridging opportunity towards a low-carbon future in which CCS is deployed on a large scale as part of a portfolio of mitigation options. The CDM is one of these necessary mechanisms. We believe that process of identifying, approving and regulating CCS projects would fit efficiently into the CDM's regulatory framework (see Chart 1).

(2) IPCC Special Report on Carbon Dioxide Capture (SRCCS) and Storage, page 341

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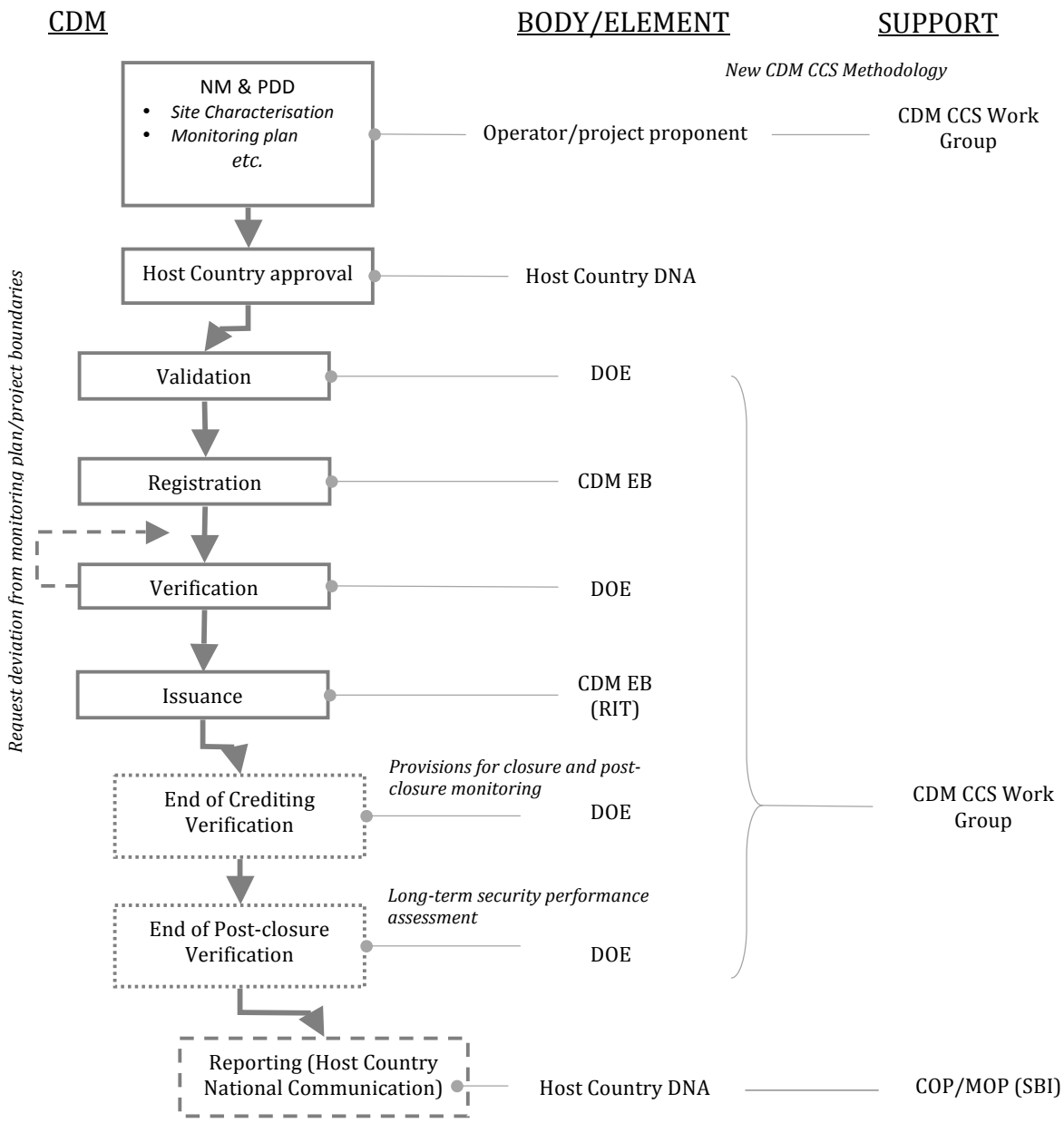
Chart 1



1. Site selection and characterization

Draft Decision Paragraph 3:

I. **Subsection (a):** The selection of the storage site for carbon dioxide capture and storage in geological formations shall be based on stringent and robust criteria in order to seek to ensure the long-term permanence of the storage of carbon dioxide and the long-term integrity of the storage site;

II. **Subsection (d):** The criteria for site selection and monitoring plans shall be decided upon by the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol and may draw upon relevant guidelines by international bodies, such as the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*;

IETA Response:

The importance of site selection and characterization in order to ensure the safe operations of CCS and the long-term permanence of CO2 storage is widely recognized and is addressed by a variety of guidance documents. The 2006 IPCC Guidelines (3) state that site characterization should identify and characterize potential seepage pathways and quantify properties of the storage system. The SRCCS provides a framework for safe and appropriate site selection. In addition, DNV and various industry partners have developed guidelines for the selection and qualification of sites for CO2 Geological Storage, known as the CO2QUALSTORE Guidelines. These have harmonized the implementation of CO2 Geological Storage with regulations, international standards and EU directives. The EU's CCS Directive provides a sound example of how site selection requirements can be defined at high level, yet allow for storage site variability to be managed appropriately by Project Proponents. Current CCS regulations and guidelines are considered to be a source of best practices for the identification and assessment of adequate storage site.

Due to large variability in the characteristics of prospective sites for geological storage of carbon dioxide it is important to apply procedures for site selection that can be tailored to the unique characteristics of each site. Therefore, one should avoid introducing a prescriptive set of minimum physical parameters (depth, lithology, etc) when it comes to validation and verification within the CDM. We recommend a performance-based approach with specification of activities that a project shall carry out as part of the site selection process (process oriented requirements). Such an approach ensures that the burden of

(3) 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2, Chapter 5. Available at http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html

proof resides with Project Proponents in the presence of large natural variations in storage site geology and is comparable with the requirement in, for example, the North Sea, for operators to submit detailed field development plans and demonstrate the safety of their operations through performance related measures such as a risk-based safety case. Even with such differences, sound characterization of reservoirs and good site selection procedures are viable and needed to ensure long-term integrity of storage sites.

IETA therefore feels that site selection criteria and monitoring plans should not be detailed in modalities and procedures. Any guidance on these matters should be kept at high-level in modalities and procedures. Site selection and monitoring plans should be approved based on approaches taken within a methodology.

2. Risk Assessment

Draft Decision Paragraph 3:

I. **Subsection (j)**: A thorough risk and safety assessment using a methodology specified in the modalities and procedures, as well as a comprehensive socio-environmental impacts assessment, shall be undertaken by independent entity(ies) prior to the deployment of carbon dioxide capture and storage in geological formations;

II. **Subsection (k)**: The risk and safety assessment referred to above shall include, inter alia, the assessment of risk and proposal of mitigation actions related to emissions from injection points, emissions from above-ground and underground installations and reservoirs, seepage, lateral flows, migrating plumes, including carbon dioxide dissolved in aqueous medium migrating outside the project boundary, massive and catastrophic release of stored carbon dioxide, and impacts on human health and ecosystems, as well as an assessment of the consequences of such a release for the climate;

III. **Subsection (l):** The results of the risk and safety assessment, as well as the socio-environmental impacts assessment, referred to above shall be considered when assessing the technical and environmental viability of carbon dioxide capture and storage in geological formations;

IETA Response:

Risk assessments need to be integrated throughout all CCS project work streams and should be wide in scope. Risk assessments should commence at a very high level during the first stages of screening for sites and should include safety, social, environmental and economic factors. DNV's CO2QUALSTORE guideline proposes a useful methodology for regulators to determine what is acceptable and un-acceptable risk levels of the geological storage site. Risk assessments should be further refined as the site selection process progresses, ultimately resulting in site-specific performance-assessment-based frameworks that quantify adverse consequences and event likelihood while keeping track of key uncertainties. Besides shaping the ultimate storage site selection, the final risk assessment will form the basis of the monitoring and measurement program as well as shape the corrective measures strategy.

Risks associated with CCS projects pertain to the potential for CO2 leakage from a storage site. Analysis shows that the likelihood for real leakage is very low. The IPCC has stated that CO2 leakage rates of less than 1% are likely over 1000 years for appropriately selected and managed storage sites, and further that the environmental impact risks from CCS activities are comparable with those of natural gas storage. In the event of a CO2 release, technologies are available to monitor CO2 levels and provide appropriate warnings (Section 5.6 for the SRCCS describes in detail a range of direct and indirect monitoring techniques available for this purpose).

Environmental impact assessments (EIAs) are an assessment of the possible positive or negative impact that a proposed project may have on the environment, together consisting of the natural, social and economic aspects. For CCS projects, EIAs should be a matter for host countries to determine and evaluate, thereby done on a case-by-case basis, due to local social and environmental circumstances. Risk and safety assessment could be undertaken by the project proponent considering that for instance some strategic information specific of oil and gas industry. As a minimum standard, project proponents could adopt local law requirements and best practice EIA as the standard for CCS CDM projects. CCS EIA guidance could be based on CCS requirements already adopted in EU Directives or in countries such as Australia. The risk and safety assessment reports should be validated by an independent entity.

We also believe that CCS can contribute towards sustainable development and that host countries are best placed to judge whether a particular project meets its sustainability criteria on a case-by-case basis. Countries with high CO2 emissions and geological structures that allow for CO2 storage can, through the deployment of CCS, enhance their capability to manage their emissions. We support the view expressed that climate change is linked with efforts in development and poverty reduction and that current patterns of energy supply and demand threaten to cause severe climate change, and that CCS is one of the technologies that could facilitate the required change towards the low-carbon economy.

As we feel that risk and safety assessments as well as the socio-environmental impact assessments and should be carried out on a case-by-case basis, IETA believes a detailed methodology set out in the modalities and procedures is unnecessary.

3. Monitoring:

Draft Decision Paragraph 3:

Subsection (b): Stringent monitoring plans shall be in place and be applied during and beyond the crediting period in order to reduce the risk to the environmental integrity of carbon dioxide capture and storage in geological formations;

IETA Response:

There is broad support across industry and government that storage sites require a monitoring programme in order to verify whether the site is performing safely and as predicted. Any storage site should meet basic geological criteria that allow for it to be monitored sufficiently. The monitoring plan should also identify potential leakage pathways and measure leakage. The results of continuous monitoring should be used to recalibrate any models applied and to identify any potential seepage. Besides monitoring for performance related assessments, monitoring is a key tool in all phases of a CCS project including site selection and risk assessment where it serves to reduce risk.

The 2006 IPCC Guidelines (4) offer insights on adequate monitoring techniques. It identifies the use of selected suitable methods for monitoring content as well as possible fluxes. These include:

- Seismic surveys
- Microseismic monitoring
- Wellhead pressure monitoring during injection, formation pressure testing
- Gravity surveys
- Sonar
- Electrical methods
- Gas analysis
- Groundwater and surface gas analysis

(4) 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2, Chapter 5. Available at http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html

- Soil gas analysis
- Satellite or airborne hyperspectral analysis
- Satellite interferometry

Regular monitoring is also fundamental to determining accurate levels of offset crediting. Emissions data that flows from the monitoring process on a periodic basis will make sure that offset credits from CCS projects are based on real reductions that have been measured and verified accordingly. Therefore, monitoring plans need to be efficient enough to accurately credit the project.

Monitoring is also used to cross check that stored CO2 is behaving as was foreseen in the Project Proponent's model. This should verify that risk and safety levels would be met in conjunction with details set out in the project methodology.

4. Modeling

Draft Decision Paragraph 3:

Subsection (c): Further consideration is required as regards the suitability of the use of modeling, taking into account the scientific uncertainties surrounding existing models, in meeting the stringency requirements of such monitoring plans, in particular taking into account the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*;

IETA Response:

Modeling forms the framework for site selection and CO2 monitoring, enabling critical decisions to be made regarding offset crediting and site handover. It is an essential part of any risk based site characterization and selection process and is routinely used in oil and gas field management and decision-making. While there can be uncertainties with such models, these uncertainties can and are regularly dealt with through a variety of techniques including sensitivity analysis.

Models used should be built on site characterization, which is informed by a range of suitable monitoring techniques. These models will in turn be recalibrated by monitoring throughout the CCS project life-cycle to ensure the best possible predictability and understanding of the stored CO2. Modeling and monitoring should be tightly intertwined throughout each project.

Due to the various methods available for monitoring CO_2 content as well the potential for unique site criteria, there is plainly no one model that would suit the monitoring needs of every CCS project. It is however noteworthy that CERs should be credited based on emissions reductions that are real, measured and

verified, not necessarily the results of modeling alone, but also requiring monitoring and regular review.

IETA considers modeling as a fundamental aspect of CCS projects. As modeling is used in most energy and large-scale construction projects around the world today, we view modeling as an imperative aspect of CCS development. Without modeling, projects would commence without pertinent risk and safety information for Project Proponents and regulators.

5. Project Boundaries

Draft Decision Paragraph 3:

I. **Subsection (e):** The boundaries of carbon dioxide capture and storage in geological formations shall include all above-ground and underground installations and storage sites, as well as all potential sources of carbon dioxide that can be released into the atmosphere, involved in the capture, treatment, transportation, injection and storage of carbon dioxide, and any potential migratory pathways of the carbon dioxide plume, including a pathway resulting from dissolution of the carbon dioxide in underground water;

II. **Subsection (f):** The boundaries referred to above shall be clearly identified;

III. **Subsection (g):** Any release of carbon dioxide from the boundaries referred to above must be measured and accounted for in the monitoring plans and the reservoir pressure shall be continuously measured and these data must be independently verifiable;

IETA Response:

We believe that the CDM project boundary for a CCS project should accommodate components across the full CCS life cycle. Each above- and below-ground component of the CCS chain, including the emission source, mode of CO2 transport and storage, can be connected within one boundary. It is important for the emission source to be linked with the CO2 storage site operator via the project boundary so that emission accounting and thereby crediting are accurate.

An approach to below-ground project boundaries that is flexible is considered to be consistent with views of Parties and organizations as expressed in the

UNFCCC Secretariat's Synthesis report of views on CCS as a CDM project activity, where it is concluded that: "project boundaries would be defined by the emissions sources, as described in the context of emissions sources and potential leakage pathways" and "that project boundaries should be flexible enough to accommodate a range of storage types and different geological conditions"(UNFCCC 2008a). These views suggest that the approach to setting project boundaries that are flexible can be coherent with current policy perspectives on these matters.

Projects Proponent should also design a monitoring plan to provide early signs of significant irregularities within and outside of the storage site defined during site characterization, including recognized migration & seepage pathways. If significant irregularities in the storage site are detected, injection operations should cease and further investigations (monitoring and modeling) should be carried out to provide details of the irregularity and the reasons for it occurring. If any seepage is detected which took place during the crediting period, CER issuance should be paused until corrective measures to stop further seepage and reconcile CERs already attained have been carried out.

It is also important to note that dynamic conditions should only arise in the event of significant irregularities, which a methodology should sets out to minimise through the principle of avoidance, coupled to appropriate storage site selection and management. However, project boundaries with flexibility would allow for CO2 to migrate in to and out of the predefined project boundary over time.

In the unlikely event of CO2 migration outside of the project boundary defined within the Project Design Document (PDD), IETA believes that a request for deviation of the monitoring plan could be submitted, allowing necessary revisions to be made to the monitoring plan that would account for a newly dimensioned project boundary and associated monitoring requirements. This approach would sufficiently create a project boundary with some flexibility, which may be necessary in some CCS projects.

Any leakage raises two situations. The first is leakage of CO2 as a safety issue. This is a matter that should be dealt with by the appropriate national regulations. Material leakage is highly unlikely: the IEA GHG Programme has recently produced a document 'Geologic Storage of Carbon Dioxide: Staying Safely Underground' (5) detailing the levels of risk from seepage. This document concludes that "Geological storage projects have already successfully stored millions of tonnes of CO2, some for many years, with no detectable leakage via geological formations". The second issue is that under the CDM leaks negatively impact net CO2reductions and therefore must be reflected in the number of CERs generated and should be addressed via the transactional arrangements by which the storage is funded, and it is perfectly feasible for this to be designed into the arrangements whereby CCS would be included under the CDM.

(5) IEA, Geological Storage of Carbon Dioxide – Staying Safely Underground (2008). Available at http://www.cslforum.org/documents/geostoragesafe.pdf

Accounting options for any long-term seepage should be considered in conjunction with issues presented by long-term responsibility for monitoring and remediation. IETA believes that CERs resulting from CCS project activities should be considered permanent and fungible. We uphold the view that the guiding principle for accounting rules for CCS project activities under the CDM should be consistency with current approaches under the Kyoto Protocol which ensure that the actual effect of a project on the atmosphere is reflected in the number of Kyoto units issued and accounted for over time. We therefore do not support the use of temporary or long-term CERs which have been designed to address the issue of non-permanence by afforestation and reforestation projects. The time period over which emission reductions are achieved through use of CCS is thousands of years, whereas for bio-sequestration it is decades. In the context of climate change, this difference in time scale of permanence suggests that it is inappropriate to compare CCS with afforestation and reforestation. We believe that the lower market value associated with temporary or long-term CERs would also serve to limit the potential for CCS project investment and therefore the potential for building capacity and experience needed ahead of wider, more large-scale, deployment.

A mechanism needs to be put in place to manage exposure on emission seepage, which would keep project risk levels down. Such a mechanism might simply be an agreement between the Project Proponent and the relevant national authority, prior to the start of injection, of a set allowance price or quantity to quantify such risk of seepage. Contracts would be agreed upon on a case-by-case basis for negotiating the necessary provision to cover future potential and very unlikely leakage exposure.

6. Accounting for project emissions leakage

Draft Decision Paragraph 3:

Subsection (i): Any project emissions associated with the deployment of carbon dioxide capture and storage in geological formations shall be accounted for as project or leakage emissions and shall be included in the monitoring plans, including an ex-ante estimation of project emissions;

IETA Response:

Project emissions should include the calculation of emissions resulting from fossil fuel or electricity usage. Such emissions can be calculated with the help of tools that have already been developed by the CDM Executive Board, such as the "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" and the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption". Any fugitive project emissions would thereby be the net balance between any emissions from fossil fuel combustion and stored

emission levels via CCS that have been monitored and verified. Similar accounting approaches are already being used for CCS projects in the EU and Australia. IETA believes that it is therefore unnecessary to create an entirely new accounting structure for CCS projects under the CDM.

7. Transboundary projects

Draft Decision Paragraph 3:

Subsection (h): The appropriateness of the development of transboundary carbon dioxide capture and storage project activities in geological formations and their implications shall be addressed;

IETA Response:

IETA believes that CCS projects crossing national boundaries can be adequately accommodated within the project boundary definition of the CDM process. The 2006 IPCC Guidelines provide robust guidance on accounting for emissions involving more than one country and these can be applied to CDM project activities. The London Protocol has also recently been amended to allow for legal jurisdiction over sub-surface geological formations.

While IETA recognizes that it may take some time before domestic regulators are interested and capable to collaborate on a CCS project, we feel that it is important for an enabling environment to be put in place for bilateral or multilateral cooperation to commence across boundaries. Bilateral and multilateral cooperation may benefit some CDM Host countries significantly, allowing for synergies to be exploited and transferring knowledge across borders. Cross-border arrangements might especially work well for some countries that aim to collaborate on storage site regulation in the near future.

8. Liability

Draft Decision Paragraph 3:

I. **Subsection (m):** Short-, medium- and long-term liability for potential physical leakage or seepage of stored carbon dioxide, potential induced seismicity or geological instability or any other potential damage to the environment, property or public health attributable to the clean development mechanism project activity during and beyond the crediting period, including the clear identification of liable entities, shall;
   i. Be defined prior to the approval of carbon dioxide capture and storage in geological formations as clean development mechanism project activities;
   ii. Be applied during and beyond the crediting period;
   iii. Be consistent with the Kyoto Protocol;

II. **Subsection (n):** When determining the liability provisions referred to above, the following issues shall be considered:
   i. A means of redress for Parties, communities, private-sector entities and individuals affected by the release of stored carbon dioxide from carbon dioxide capture and storage project activities under the clean development mechanism;
   ii. Provisions to allocate liability among entities that share the same reservoir, including if disagreements arise;
   iii. Possible transfer of liability at the end of the crediting period or at any other time;
   iv. State liability, recognizing the need to afford redress taking into account the longevity of liabilities surrounding potential physical leakage or seepage of stored carbon dioxide, potential induced seismicity or geological instability or any other potential damage to the environment, property or public health attributable to the clean development mechanism project activity during and beyond the crediting period;

IETA Response:

Liability for maintaining storage integrity, remediation, implementation of corrective measures and any environmental, human or property damages should change throughout the life of a CCS project. In the first period, throughout project development, injection, closure and post injection phases, liability is best

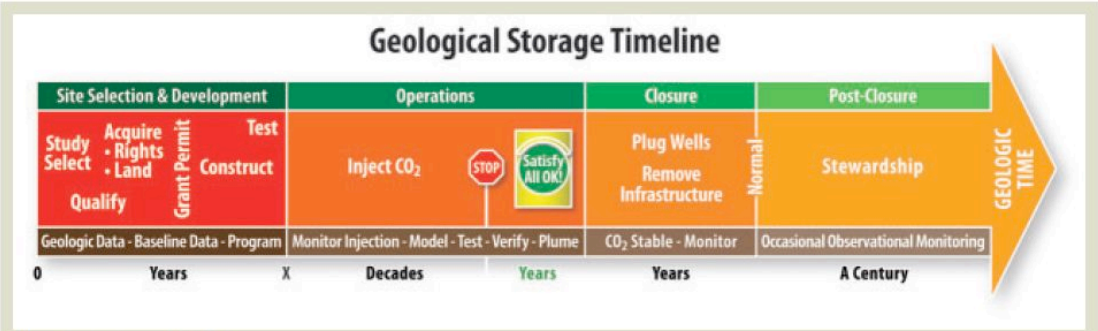
managed by the project operator. Because private entities may not remain solvent in the long term, full liability should ultimately needs to be transferred to the Host Country. This transfer should be based on pre-agreed, realistic and measurable storage site performance criteria and closed in ample time.

Furthermore, reasonable contribution for monitoring costs post-liability transfer could be provided by the project proponent to the host government if and as agreed prior to delivery of the injection permit.

For the sake of actually achieving commercial investment decisions any such contribution should be based on probabilistic risk assessments as per industry best practice at the time of project commencement and will ultimately have to be capped in terms of amounts and duration.

IETA believes that it is optimal for the ultimate liability for any long-term seepage emission to lie with the host country. The host country is most able to ensure the operating conditions of any seepage emissions while the storage reservoir lies within its jurisdiction and control post closure. Project Proponents are unaccustomed with keeping liabilities on investment balance sheets for multigenerational projects. Liability needs to eventually be handed over in a period defined within the permitting process and in accordance with domestic regulatory conditions. Furthermore, considering the long-term nature of CCS, post-project closure monitoring and remediation liability could only be practically assumed by the host country. See Chart 2 below for a geological storage timeline on the main phases for CCS projects.

Chart 2



The four phases of CCS projects.

Reference: CO2 Capture Project

We believe that host countries should be able to define the specific details of liability arrangements suitable to each specific project and national circumstance, in the same way that sustainable development criteria are currently prescribed by host countries for CDM project activities, agreed upon prior to host country approval. Project proponents may be able to extend or share liabilities over dissimilar periods of time, depending on unique, project specific arrangements. Therefore sufficient flexibility will be required in implementing liability regimes, for example in defining the timing and terms of any liability transfer to the host country and any residual monitoring

requirements, and should be defined on a case-by-case basis. It is important to note in this context that the leakage risks from the transfer of liability to the host country over the long-term will be extremely low because the risk of CO2 seepage is greatest during project operations and immediately following storage site closure.

IETA believes that permitting arrangements containing specific provisions regarding liability requirements can be accommodated alongside the CDM process, for example through the use of minimum standard setting in the environmental impact assessment or via the introduction of a new section to the CDM PDD. In addition to the proposals brought forward by European Commission in the CCS Directive which outline such requirement within permit authorization conditions, there are several legal approaches in place worldwide providing useful examples of handling long-term liability; these include for example the approach taken by the Australian federal government where liability passes to the government not less than 15 years after injection the site has been closed and monitoring results demonstrate that the site is behaving as predicted in an approved site plan. Ideally, regulators should plan for a convergence of liability regimes and the adoption of minimum standards over time.

In IETA's view, if the injection and operation of the CO2 storage site continues after the termination of the crediting period, this should be addressed by the host country regulations and the permitting conditions incumbent upon the project operator. Provisions for make up of CERs that have been issued for CO2 volumes emitted from the storage within a defined time period can be built into the host country permitting provisions. Such liabilities can be covered by guarantees, insurance, or by other financial assurance mechanism as well as a combination of these. Provisions make up of CERs could also be determined by the CDM EB and administered by the EB Secretariat.

9. Financial mechanisms to compensate environmental or human damages

Draft Decision Paragraph 3:

Subsection (o): Adequate provision for restoration of damaged ecosystems and full compensation for affected communities in the event of a release of carbon dioxide from the deployment of carbon dioxide capture and storage in geological formations must be established prior to any deployment of related activities;

IETA Response:

Financial liability for monitoring, remediation and corrective measures pre liability transfer can be met by a mutually acceptable financial mechanism. The financial mechanism should depend on the credit standing of the Project Proponent and be capped to manage liability exposure.

Financial arrangements to compensate for potential damages during the project activity or as a result of leakage prior to liability transfer are best defined under existing national legislation regarding industrial activity, which can be amended to include provisions for CCS where necessary. Such arrangements could form part of the project's domestic approval procedure with respective DNAs, which may have to lodge performance and rehabilitation bonds with local regulators.

Financial liability mechanisms can also be distributed throughout the project value chain. Lessons might be taken from from the "buffer" approach to REDD crediting under the Voluntary Carbon Standard (VCS) or the current CDM EB discussion on a DOE liability regime for projects that may have been over-credited.

Conclusion

IETA's view is that reconciling increasing world energy demand with the transition to a low-carbon future will require an unprecedented effort by the global community to develop the appropriate policy and technology responses. The effects of climate change are being felt now and a delay in achieving significant cuts in emissions will lead to increasingly severe consequences. Furthermore, the costs of deferring action will significantly outweigh the costs of taking action sooner as suggested by the economic analysis of the Stern Review (6). IETA believes that CCS represents one of several important mitigation options needed to achieve the significant emissions cuts needed this century.

Although CCS deployment potential may vary across countries and regions, its use will allow for more stringent and cost-effective global emissions reductions to be available. If the deep emissions reduction required are to be achieved then all mitigation options must be enabled to be used to their full potential regardless of whether all options can be deployed in all countries. Whereas for some countries, protecting their bio-sequestration capability may be the largest contribution they can make in combating climate change, for other countries with less significant bio-production, it may be their potential to permanently store large volumes of CO_2 which offers the most promising option. Our view is that all countries should take the responsibility to allow an enabling framework to develop which enhances the fullest abatement potential to be realised within the different individual countries, and not to discourage important mitigation options which may not be readily available to themselves. International regulations and mechanisms should encourage this to happen.

(6) N.Stern "Stern Review: The Economics of Climate Change" (2007) Cambridge University Press. Available at http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm

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The technologies used for CCS projects are well known and used within thousands of projects around the world today. The regulatory framework needed to deploy CCS in developing countries is similar to the structures need for other such projects, such as those in the energy commodity and heavy construction industries.

IETA believes that the future financing needed for large-scale future deployment of CCS will not be achievable through deploying CCS projects in developed countries alone. And it is crucial to finance and deploy CCS in developing countries as soon as possible in accordance with the IEA's 450ppm reduction scenario. We believe that CCS will be needed along with other appropriate mitigation actions to help developing countries accomplish goals sent out in the Cancun agreements. The incentives provided by the CDM to finance early opportunities can provide the critical first steps along the pathway to meeting this challenge.

We hope that the above comments will provide valuable input to your further work.

Yours sincerely,

Henry Derwent
President