IETA
INTERNATIONAL EMISSIONS TRADING ASSOCIATION

Geneva, February 7th, 2006

UNFCCC Secretariat
Ms. Christine Zumkeller
UNFCCC Cooperative Mechanisms Programme
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Dear Ms. Zumkeller,

I am writing to you on behalf of the International Emissions Trading Association (IETA) to provide in accordance with decision FCCC/KP/CMP/2005/L.7, input on the inclusion of Carbon Capture Storage (CCS) as a CDM project activity. We would like to highlight however that this submission considers only geological storage of CO_2, and is not relevant to consideration of oceanic storage i.e. injection of CO_2 into the water column or onto the seabed.

1. Background

At its 22nd meeting, the CDM Executive Board (EB) considered the issue of carbon dioxide capture and storage (CCS) as CDM project activities without reaching agreement. The EB agreed to request guidance from the COP/MOP on whether CCS projects can be considered as CDM project activities taking into account issues relating to **project boundary, leakage and permanence**. In response, the COP/MOP invited Parties to provide to the Secretariat, by 13 February 2006, submissions on the consideration of CCS as CDM project activities, taking into account issues relating to project boundary, leakage and permanence, and on issues to be considered at a workshop on CCS as CDM project activities to be arranged at the Subsidiary Body on Scientific and Technical Advice (SBSTA) 24th Session in May 2006 (Para. 6, FCCC/KP/CMP/2005/L.7).

With respect to this request, a range of companies and organisations considered it important to put forward views on how CCS could operate as a CDM project activity, taking into account the modalities and procedures for a CDM (Decision 17/CP.7), and the issues highlighted by the EB for consideration. The paper presented has evolved

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through discussions amongst members of the European *ad hoc* group of experts on CCS (made up of around 20 CCS and CDM experts from private and public sector organisations) and with more than 20 member companies of IETA.

2. Key issues to consider for CCS as a CDM project activity

When considering CCS projects as CDM activities, the following issues should be considered:

- CCS is one of the range of options that have the potential to reduce overall mitigation costs and increase flexibility in achieving significant reductions in global GHG emissions;
- CCS projects are large in nature and offer the potential to mitigate millions of tonnes of CO_2 emissions;
- CCS projects are long-term in nature, requiring high upfront investments, and potentially long periods of operation (10-50 years);
- The CDM can be an important pathway for incentivising potential investments in CCS, and to achieve additional emission reductions from such activities;
- In the absence of the incentive offered by the CDM, realisation of the economic potential[1] of CCS may be significantly reduced;
- Industry is a prime mover in potentially financing, developing and operating CCS projects; industry manages similar engineering, regulatory and administrative challenges as those posed by CCS projects on a daily basis;
- Local and global risks must be fully taken into account during project development, approval, operation, decommissioning and longer-term stewardship;
- With appropriate site selection based on available subsurface information, a monitoring programme to detect problems, a regulatory system and the appropriate use of remediation methods to stop or control CO_2 releases if they arise, the local health, safety and environment risks of geological storage

(1) "Economic potential" is the amount of GHG emissions reductions from a specific option that could be achieved cost-effectively, given prevailing circumstances (i.e. a market value of CO_2 reductions and costs of other options). IPCC Special Report on Carbon Capture and Storage (SRCCS) Summary for Policy Makers, pg. 11.

would be comparable to the risks of current activities such as natural gas storage, enhanced oil recovery (EOR) and deep underground disposal of acid gas[2];

- Observations of engineered and natural analogues as well as models suggest that the fraction [of stored CO_2] retained in appropriately selected and managed geological reservoirs is very likely to exceed 99% over 100 years and is also likely to exceed 99% over 1000 years[2];
- CCS project approval must take into account provisions of, and developments in, relevant international agreements e.g. the London Convention, local environment, health and safety regulations and approvals requirements, the role of government bodies with regulatory functions, and other forms of support available from international bodies;
- An approval mechanism for CCS projects must incorporate the necessary assurances over site selection, permanence, monitoring, remediation and allocation of liability for any third party damage and remediation in the event of seepage emissions. Such a process can be developed within the context of the current framework for CDM project approvals (host country approval, validation, EB approval etc.);
- Any potential methodology for CCS project accounting in the CDM will need to take into consideration of the forthcoming 2006 IPCC Guidelines for National GHG Inventories, which will include guidance for governments on accounting for CCS operations in national GHG inventories;
- Issues related to project boundaries, leakage and permanence can be resolved such that CCS projects could be realised within the CDM framework (as discussed below).

3. PROJECT BOUNDARY

CCS operations would not present any particular issues in respect of the system boundaries for CDM project activities. Project boundaries for a CCS project in the CDM should include the full range of operations taking place across the CCS chain (capture>transport>injection>storage).

(2) The IPCC SRCCS Summary for Policymakers, pg. 11.

Project boundaries should extend to the edge of the injected CO_2 plume in the subsurface, and also the region around the plume for the purpose of monitoring. Characterisation of the lateral spread of the plume of stored CO_2 should form a critical part of the site selection, monitoring and performance assessment process.

Emission Reductions from a CCS project should represent CO_2 emissions "avoided", not CO_2 "captured" or "stored", taking into account the most appropriate *Baseline* relevant to project-specific situations. *Project Emissions* should include fugitive and indirect emissions (from imported grid electricity) across the full CCS chain, and any seepage back to the atmosphere from the storage site during the crediting period[3].

4. LEAKAGE

No new issues in relation to leakage (in the context of the *Modalities and Procedures for a CDM*) are presented by CCS as a CDM project activity. Physical leakage from storage sites is considered under *Permanence* below. Where CO_2 is being stored as part of an EOR operation, this will lead to incremental oil production to be used outside the project boundary. Any incremental oil production from EOR in conjunction with CCS is considered to be too small to create additional demand for oil and petroleum products. Similar issues are raised by gas flaring projects, which have been successfully handled within the CDM.

5. PERMANENCE

The handling of permanence in CCS operations is a critical factor in maintaining the environmental integrity of the CDM and international emissions trading. If seepage of CO_2 occurs during the crediting period, these emissions can be monitored and reported as *Project Emissions*, and accounted for by deducting the amount from the project *Baseline* for that year. If seepage from the storage reservoir occurs after the crediting period, then liability for the emissions needs to be effectively managed in order to maintain the environmental integrity of the CDM.

Seepage emissions beyond the crediting period could be managed within the CDM by either:

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(3) Including "breakthrough" CO_2 in CCS EOR operations. Seepage emissions is used to describe physical leakage from CO_2 storage sites

i) Creating longer-term liability for project developers/operators to buy GHG compliance units such as CERs in the event of seepage emissions as part of a CCS project approvals process (e.g. a permitting/licensing regime for CO_2 storage operations);
ii) Flagging CCS-specific CERs or issuing temporary CERs etc which would be cancelled and require replacement, *pro rata*, in the event that seepage occurred. This would pass liability for seepage emissions on to the buyer of the CERs ("buyer liability"); or,
iii) Applying a default or discount factor to account for future seepage emissions so that either a portion of CERs are not issued, a portion are set aside in a credit reserve, or a portion of the revenue from CERs sales is set aside in a contingency fund. This could serve to essentially cap liability for all actors in the market at the chosen default or discount rate.

Whatever the approach, the most important consideration is that the structure of liability provisions need to be practical and predictable for both project developers and the wider GHG market.

Approach *i)* is considered to be most appropriate as it decouples the liability for any seepage emissions from the CERs issued from any project, meaning that CERs from CCS projects would be fungible with other commodities in the GHG market. Moreover, liability for any seepage emissions would lie in the hands of those most able to take actions to rectify the seepage i.e. the project developer/operator.

Approaches *ii)* and *iii)* could create difficulties for inclusion of CCS in the CDM: creating flagged or temporary CERs will affect their fungibility in GHG markets, creating marketability issues, whilst; applying generic discount or default factors is likely to be a highly complex and contentious process as there is no scientific basis for setting such factors. Furthermore, approach *ii)* could also create integrity problems for the CDM, as liability would essentially be capped at the discount rate selected, and it is unclear how any seepage emissions greater than discount/default factor applied would be handled.

In the context of approach *i)*, the evolution of a robust permitting/licensing process for CO_2 storage sites should be a critical factor in ensuring appropriate site selection, as well as site operation, decommissioning, remediation, liability and longer-term stewardship arrangements etc. for all CCS projects across any jurisdiction, regardless of whether the project is a CDM project or not. However, recognising the need to maintain the environmental integrity of the CDM, it is suggested that a CO_2 storage site permit/license for a CCS CDM project, and the associated monitoring and remediation plan, include a commitment for the operator to make up the level of any seepage emissions calculated to have occurred at that time i.e. the operator would be liable (subject to *force majeure* qualifications) to purchase CER equivalent compliance units equal to the amount of seepage emissions determined to have occurred. In order for this approach to work, the operator would need to manage contingent liability for any seepage. This could be achieved through establishment of *inter alia*: insurance, indemnities, escrow or contingency funds, and/or credit reserves.

The process for establishing the mechanism for managing contingent liability could either be:

- established multilaterally via a standardised CDM approach for all projects within an approved CDM methodology. This may need to be in the form of guiding principle rather than prescriptive approaches, taking into consideration the difficulties in developing generic factors (e.g. the scientific challenges presented in trying to establish generic discount or default factors for CCS projects[4]); or,
- negotiated bilaterally with the host country regulator prior to project approval via the Environmental Impact Assessment part of a CDM Project Design Document, which should form part of the overall storage site permitting/licensing requirements. In practice, this could take the form of an agreed *de facto* default factor where CERs are set aside in a credit reserve, a share of the proceeds of CER sales are placed in a ring-fenced contingency fund, or by insurance providers pooling risk across a portfolio of projects.

For either process, in the absence of certainty over future CER prices, there is a critical need to cap the contingent liability on the requirement to purchase any CERs in the event of seepage emissions. Without a cap on liability, investment decision-

(4) The IPCC SRCCS highlights that: "Today, no standard methodology prescribes how a site must be characterized. Instead, selections about site characterization data will be made on a site-specific basis, choosing those data sets that will be most valuable in the particular geological setting." IPCC SRCCS, Chapter 5, Section 5.4.1.1, pg. 225.

making would be impossible as the project would involve the taking-on of unquantifiable contingent liabilities, which would be commercially unworkable.

In the context of the bilateral negotiation process, national governments may adopt a mandatory requirement for the undertaking of an EIA for CCS projects - including CCS projects in the CDM. The EIA would include full consideration of site selection and characterisation (permanence), monitoring, remediation, decommissioning and longer-term stewardship[5]. In order to ensure robustness of such a process, the EB should develop guiding principles for undertaking EIAs for CCS projects within the CDM, with reference to best practice principles for site selection, operation, monitoring, decommissioning, longer-term stewardship and remediation[6]. In this respect, there is likely to be capacity building needs to ensure that an effective arrangement is in place in host countries. For example, the establishment of a CCS Expert Panel (either independent from or within the EB process) setting out and disseminating industry best practices to support capacity-building in countries that need the expertise, would serve to enhance the robustness of CCS project development around the world.

Host country approval of the EIA, coupled with validation of the PDD and EIA by a DOE accredited specifically to validate CCS projects, could provide an approvals mechanism to ensure appropriate CO_2 storage site selection consistent with the modalities and procedures of the CDM.

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(5) Currently a precedent for CO_2 storage site approval is that of the Gorgon Project in Western Australia, where an environmental impact assessment (EIA) and an environmental impact statement (EIS) have been produced. The Gorgon EIS outlines a range of issues relevant to the proposed CCS part of the project, including site selection criteria, site characterisation, permanence, stewardship and liability. See www.gorgon.com.au

(6) An EIA would require project developers to outline how they would manage any environmental impacts associated with a CCS projects. One of these impacts would include 'global environmental impacts' of seepage emissions, to which the developer could commit to remediate this damage by purchasing GHG compliance units such as CERs. Also in this context, a useful guide to the types of principles that could be developed have been produced for CCS in the EU ETS. See UK DTI Report R277: Developing Monitoring Reporting and Verification Guidelines for CO_2 Capture and Storage in the EU ETS.

6. ISSUES TO BE CONSIDERED AT THE 24TH SBSTA SESSION AND WORKSHOP

The SBSTA workshop should address *inter alia*:

- Potential modalities and procedures to ensure that an effective and robust CCS project approvals mechanism has been applied as a condition for registration as a CDM project.
- Capacity needs in respect of host country approvals of CCS projects, including licensing/permitting, taking into account international best practice standards, e.g. the scope for designation of a CCS Expert Panel;
- The impact of adopting "buyer liability" based approaches to managing permanence on international GHG markets, and the effects this would have on the capacity to deploy CCS projects;
- The role of an international contingency fund for managing permanence and liability in CCS projects.

We hope that you will consider our comments positively and look forward to hearing from you.

Andrei Marcu
President and CEO

Cc: Ms. S. Gera – Chair CDM EB