



United Nations Framework Convention on Climate Change (UNFCCC)  
Climate Change Secretariat  
PO Box 260 124  
BONN GERMANY D-53153

**RE: UNFCCC consideration of transboundary projects and a global reserve**

Dear Sir/Madam

I am writing to you in my capacity as the General Manager at the Global Carbon Capture and Storage Institute, which became an accredited observer to the UNFCCC in late 2011.

The Institute is pleased to submit its views relating to the issues raised in Decision -CMP.7: Modalities and procedures for carbon dioxide capture and storage in geological formations as clean development mechanism project activities (paragraphs 4 to 6) concerning further consideration on the eligibility of transboundary CCS projects; and the establishment of a global reserve of certified emission reduction units for CCS projects (refer to Item 9 in UNFCCC document ODEA/COP 17/11).

The Institute brings together the public and private sectors to build and share the know-how and expertise necessary to ensure that carbon capture and storage (CCS) can make a significant impact on reducing the world's greenhouse gas emissions.

The Institute would welcome participating in the 2012 work programme (including workshops) to further discuss and explore related matters, and how they may apply to and affect the deployment of a major mitigation technology such as CCS.

Please do not hesitate to contact Mr. Mark Bonner, Principal Manager of Policy and Regulations at [mark.bonner@globalccsinstitute.com](mailto:mark.bonner@globalccsinstitute.com) or on +61 439 343 117 should you have any questions or additional requirements.

Yours sincerely

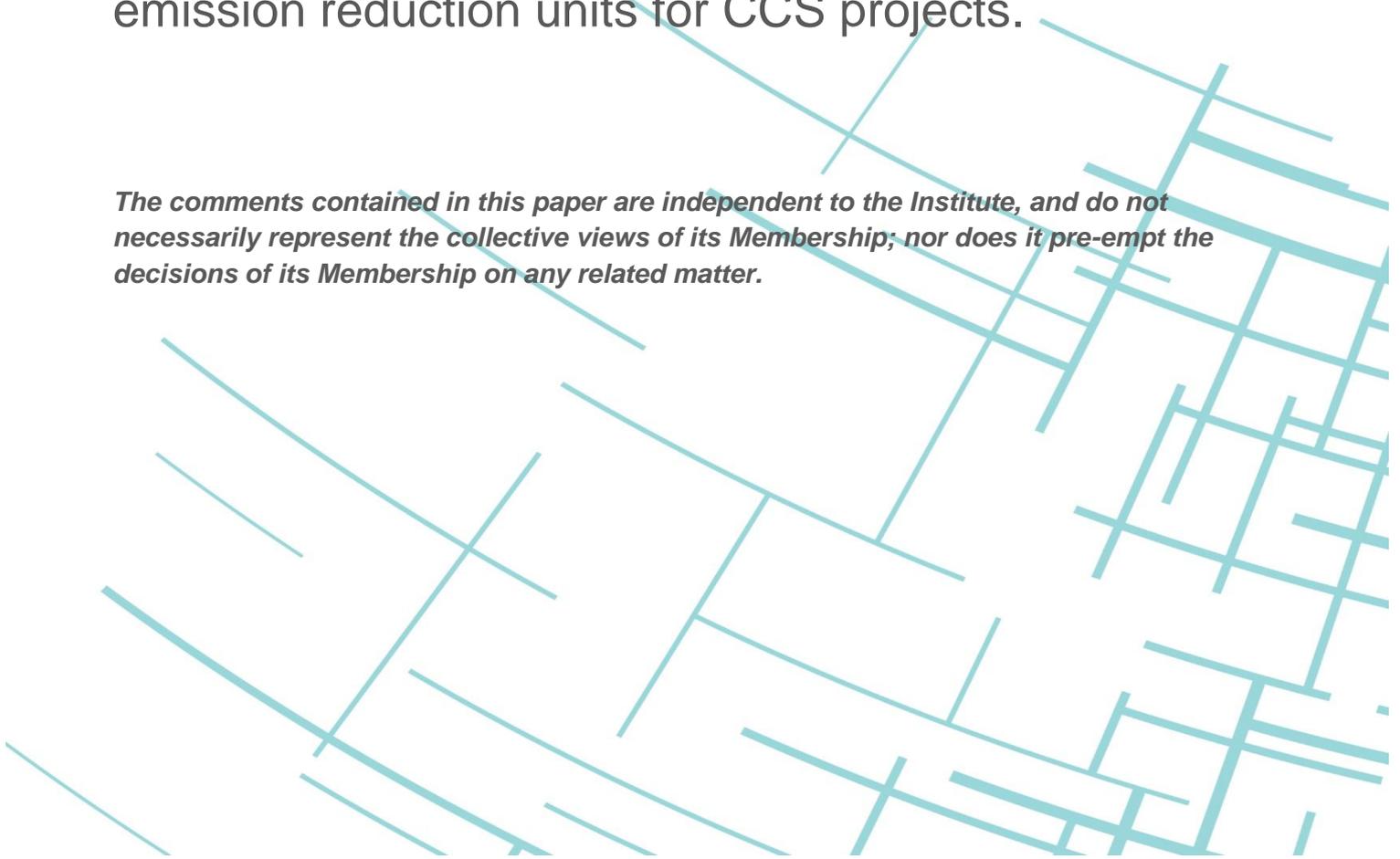
A handwritten signature in dark ink, appearing to read "Barry Jones", written in a cursive style.

Barry Jones  
General Manager  
Policy and Membership  
4 March 2012

# SUBMISSION TO THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC) SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNICAL ADVICE (SBSTA)

Draft decision -/CMP.7: Modalities and procedures for carbon dioxide capture and storage in geological formations as clean development mechanism project activities (paragraphs 4 to 6) concerning further consideration on the eligibility of transboundary CCS projects; and the establishment of a global reserve of certified emission reduction units for CCS projects.

*The comments contained in this paper are independent to the Institute, and do not necessarily represent the collective views of its Membership; nor does it pre-empt the decisions of its Membership on any related matter.*



## Introduction

Announced by the Australian Government in September 2008, the Global CCS Institute was formally launched in April 2009. It became a legal entity in June 2009 when it was incorporated under the Australian Corporations Act 2001 as a public company and began operating independently and as a not-for-profit entity from July 2009. The Institute works collaboratively to build and share the expertise necessary to ensure that carbon capture and storage (CCS) can make a significant impact on reducing the world's greenhouse gas emissions. Please refer to the following website for further information on the Institute (<http://www.globalccsinstitute.com/Institute>).

As an accredited observer, the Institute welcomes the opportunity afforded by decisions arising from the Durban Platform (Draft decision -/CMP.7 [paragraphs 4 to 6]) to provide its considered views to the Subsidiary Body for Scientific and Technological Advice (SBSTA) on the eligibility of transboundary CCS projects and the establishment of a global reserve of certified emission reduction (CER) units for CCS projects in the Clean Development Mechanism (CDM).

The Institute hopes its views will positively assist the SBSTA in its deliberations on such issues at its 36<sup>th</sup> meeting (2012); and in preparation of its recommendations to the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) at CMP 8.

On February 2011, the Institute submitted its views on the limited range of outstanding issues as identified by SBSTA relating to CCS in the CDM, including transboundary projects. This current submission should be read as a complementary document to that submission.

## Overview

In September 2011, the Institute attended the UNFCCC's technical workshop on CCS in the CDM in Abu Dhabi. The workshop helped facilitate the UNFCCC Secretariat's drafting of the draft modalities and procedures (M&Ps) for CCS in the CDM that were ultimately considered and adopted by the CMP in December 2011.

While transboundary issues were comprehensively covered at this meeting, there was no substantive discussion on or any specific need identified for a *global reserve* provision to address the issue of non-permanence. Similarly, the consolidated views of Parties and accredited observers as expressed in the CMP 6 call for submissions in February last year (FCCC/SBSTA/2011/MISC.10) has no reference to any need of a *global reserve* to accommodate what should be, if due processes on site selection are observed and upheld, a relatively low risk of a non-permanence event occurring.

In summary, the Institute's position is that:

- Transboundary CCS projects should be considered eligible under the CDM and that the M&Ps be developed as soon as possible to provide for such projects; and
- The financial provisions contained within the existing M&Ps are adequate and the need for a global reserve is unnecessary.

## Provisions for non-permanence

It is well accepted by industry, policy makers and regulators alike that the integrity of the environmental and economic performance of carbon markets, such as the CDM, is dependent on eligible mitigation activities delivering permanent outcomes.

While the need for permanence is obvious from an environmental and climate change impact perspective, market arrangements for baseline-credit accounting frameworks (such as the CDMs) also need to ensure that the rewards for mitigation, which are typically recognised upfront through the generation of a tradable asset, align with the benefit/s bestowed to the atmosphere which proceeds over time (ie. the climate change impact of a molecule of CO<sub>2</sub>-e released to the atmosphere today continues for about 100 years).

The Kyoto Protocol recognises for example forest-related carbon sequestration on the basis of permanence. In an administrative sense, these types of forest carbon stores are usually considered to be permanent if the credited carbon stock is wholly contained over a 100 year period. After this period, any discontinuity to the original carbon stock would not likely trigger make-good provisions (ie. a defacto liability period for biomass sequestration).

The definition of permanence as applied to CCS mitigation rightly extends beyond the time frame illustrated in the bio-sequestration example above. This is because the environmental performance of a geological storage site can be judged on a true notion of permanence (ie. zero seepage over time). The Institute considers it important however that the market rules to include CCS avoid imposing unnecessary premiums on the cost of projects especially if they serve little other purpose than to hedge (ie. a *global reserve*) highly improbable events (ie. catastrophic leakages from geological formations).

This has led to the issue of non-permanence for CCS in the CDM being managed on a fairly prescriptive basis. CCS projects have to reserve 5 per cent of their total CERs in a new CDM reserve account as a type of 'insurance policy' to fund any costs associated with remediation of leakage/seepage events (which collectively characterise non-permanence events). The climate change talks in Durban defined a CCS proponent's contingent liability period as "no earlier than 20 years after the end of the last crediting period of the CDM project activity or after the issuance of CERs has ceased; and only if no seepage has been observed at any time in the past 10 years and if all available evidence indicates that the stored CO<sub>2</sub> is behaving as predicted". After this period, the longer term liability of CCS projects defaults to, depending on how it has been, agreed either the Host Party and/or the Annex I Party.

The Institute notes that the design of market mechanisms can provide for a wide range of equally appropriate and less prescriptive ways to manage these sorts of issues. Many of these market driven options, such as securing insurance products and services, can help deliver greater incentives to investors to support CCS projects by better complementing the regulatory approval/s processes, and drive timely and large scale abatement outcomes.

The Institute can only envisage that the aim of establishing a *global reserve* is to satisfy a potential host Party's fear that: (i) the quantum of reserves already prescribed over the life of a project requires supplementation as it is deemed insufficient to cover the risk of non-permanence; and/or (ii) the likelihood of non-permanence events increases in the post contingent liability period. The Institute believes that neither of these scenarios is supported by the prevailing scientific evidence.

There also seems to be only a finite number of CER sources to supply such a *global reserve* including: (a) an additional tranche of CERs to the 5 per cent already required by the CMP; and/or (ii) carry over any net balance of CERs from the 5 per cent reserve into perpetuity. The Institute does not consider either of these options as reasonable as they both materially adversely impact on the economics of CCS projects.

### Is there a need for a global reserve of CERs

The two processes outlined above (ie. the UNFCCC expert workshop and submissions to SBSTA), in addition to the quantum of knowledge generated over the past 6 years of negotiations, led to a suite of draft M&Ps (FCCC/SBSTA/2011/4) being considered by SBSTA at its 35<sup>th</sup> meeting (2011). These draft M&Ps were further subjected to negotiations in Durban, and gave rise to the M&Ps that were ultimately adopted at CMP 7.

The draft M&Ps as considered by the 35<sup>th</sup> meeting of the SBSTA simply proposed that a tranche (eg. 5 per cent was cited as one of many possible quotas) of CERs be reserved to address non-permanence, and the remaining CERs be returned to the Parties and project participants involved in the CCS project. This reveals that even prior to the CMP 7 negotiations, any notion that a *global reserve* is required to institutionalise CCS projects in the CDM was not considered by CDM experts, CCS experts nor Parties alike.

The Institute understands that a *global reserve* of CERs was first proposed during the broader negotiations of the draft M&Ps in the 35<sup>th</sup> meeting of the SBSTA, and in regards to the sufficiency of prevailing provisions to help offset any host party costs that might arise if CCS projects experience 'seepage' (ie. the CO<sub>2</sub> plume migrates outside of designated project boundaries to the atmosphere or ocean) events.

The Institute understands that the country responsible for proposing such a provision is publicly supportive of the development of CCS, but it has made clear that it believes that CCS projects are incompatible and not appropriate with the nature and characteristics of the CDM, due to the unique nature of issues such as leakage, long-term liability and permanence. The Institute believes however that the CCS community has successfully prosecuted and demonstrated over the past 6 years that these issues are neither unique (as they apply to forestry related offsets and indeed to most mitigation efforts) and are entirely manageable.

The CMP 7 decision for example to settle on a 5 per cent reserve seems a relatively reasonable compromise given the breadth of negotiating positions that were tabled by Parties during the 35<sup>th</sup> meeting to the SBSTA, ranging from a 2 per cent reserve to a 20 per cent reserve.

While the 5 per cent reserve provision has real implications for a CCS project over its economic life (medium term) – a *global reserve* has implications for the very long term. Apart from a very large opportunity cost associated with such a reserve, as illustrated below in Box 1, some obvious questions arise as to: (i) what level of provision is required to address the scale of the perceived risk (which will be locationally specific, non-uniform, and depending on the prevailing geological characteristics); (ii) who would be responsible for administering and (iii) disbursing the CER assets/funds; (iv) what would be the cost of administering the reserve; (v) who would bear this cost; and (vi) on what basis should CERs/funds be dispersed.

Brazil in its submission to the 32<sup>nd</sup> meeting of the SBSTA highlights the complexity of determining what an appropriate quantum for a *global reserve* should be – it states for example that accounting for non-permanence in CCS projects over a very long time horizon is not feasible, and that the "... mechanism of canceling units after a reversion is verified, would not be possible if the reversion occurs in 200 or 500 years". It further states that a 'statistical approach' to anticipating seepage is highly uncertain as it is difficult to associate a probability.

The very nature of the risk that the country proposing such a financial provision seems to ascribe to CCS projects over the very long term suggests that the present value (PV) of any such *global reserve* amounts to almost nothing over that timeframe (ie. into 'perpetuity'). Depending on the purpose of the *global reserve*, the immediate value of such provisions appears to be negligible.

The Institute strongly prefers to see more market friendly (ie. such as insurance products) and/or sovereign determined remedies (ie. regulatory requirements) to resolve these sorts of issues. The Institute believes that if storage site characterisation and selection is given regulatory approval on the basis of best practice procedures and scientific standards that exist today (and which will continue to improve over time), then the risk of non-permanence can be reasonably considered to be no more than for any other alternate large scale clean energy option.

The Institute also recognises that sovereign decision making of host countries should be increasingly relied on to put in place the locationally-appropriate regulatory arrangements to ensure that project participants deliver on any shortfalls at the time they occur, through upfront, clear and credible compliance incentives. Indeed, the Institute is currently engaging with many developing countries to assist them specifically with the development of appropriate and sufficient regulatory frameworks in which to approve CCS projects.

Box 1 illustrates the potential impact that a CER reserve requirement can have on a CCS project, noting that it is essentially providing for the cost of an event that will likely never occur if best practice approaches (including engineering, scientific and regulatory) are observed. For example, the Australian government has made it clear that it will only provide regulatory approval for storage activities on the basis of zero leakage, and so this calls into question the need to quarantine a tranche of CERs at all.

**Box 1 – value of 5% CER reserve for a large scale CCS project**

| CCS PROJECT - ASSUMPTIONS |            |                             | FUTURE VALUE         |               |
|---------------------------|------------|-----------------------------|----------------------|---------------|
| Site                      | 1,000,000  | MtCO <sub>2</sub> per annum | Monthly Investment   | \$ 20,833     |
| CERs                      | 500,000    | Issued                      | Interest rate (APR)  | 7.0%          |
| 5%                        | 25,000     | reserve                     | Time (years)         | 40            |
| value                     | \$ 250,000 | \$10 per CER                |                      |               |
|                           |            |                             | OPPORTUNITY COST     |               |
|                           |            |                             | Total amount paid in | \$ 10,000,000 |
|                           |            |                             | Interest earned      | \$ 44,683,612 |

source: Global CCS Institute

Box 1 serves to illustrate the opportunity cost of a 5 per cent reserve on a hypothetical large scale CCS project storing one million tonnes of CO<sub>2</sub> per annum. Assuming a purely arbitrary value of 500,000 tonnes of CO<sub>2</sub> per annum as the amount of abatement credited to be additional to business as usual (emissions and investment that would have occurred had the project not proceeded) – and noting that this correlates to the number of CERs issued to the project – applying the 5 per cent reserve requirement against a modest carbon value of US\$10 per CER over a 40 year life of the project translates to an opportunity cost of almost US\$45 million over the life of the project. This estimate is clearly a conservative one in regards to its assumptions about the number of CERs generated and the value of carbon (which is expected to rise substantially over time as increasingly more stringent emission reduction targets are agreed to by Parties).

The Institute considers at the forefront of the arguments against a *global reserve* are ones of equity and moral hazard. Careful, robust and appropriate storage site selection helps mitigate the risks of a net reversal outcome (ie. the seepage from a site exceeds the remainder of the emission reductions achieved by the project), and so diminishes the need for such a provision. A global reserve also simply adds another layer of administrative complexity to the existing suite of financial provision compliance requirements and further and disproportionately disadvantages CCS projects relative to other mitigation options by penalising them for events that may never eventuate. Also, by essentially giving the host Parties a 'get out of jail free card' in their approvals processes, such reserves are likely to increase any incidence of moral hazard (ie. a Party protected in some way from the risk will act differently than if they did not have that protection). As these sorts of provisions also serve to act like 'insurance policies' for host Parties, this could further undermine the emergence of private sector solutions to provide insurance products and other innovative financial services.

The Institute concedes one positive design aspect of the 5 per cent provision is the preservation of the integrity of the CDM CER asset, as generated by CCS projects. This avoids the need to create a new asset such as a 'temporary CER' for CCS mitigation, and reduces any temptation buyers may have to discount the market value of CERs in line with a false perception that they may be in risk of default due to non-permanence.

### The issue of cross-boundary CCS projects

The Institute strongly believes that transboundary projects should be allowed within the CDM, and all associated issues can be appropriately managed and resolved through effective governance approaches. But the Institute also recognises that some of the remedies reside outside of the UNFCCC's scope of governance. As such, transboundary projects need to be consistent with both domestic legislation and relevant international law applicable in those jurisdictions.

The CDM has already given some consideration to transboundary impacts as addressed under the existing M&Ps for CCS in the CDM. For example, Decision -/CMP.7, Annex G (Validation and Registration), paragraph 10(D) refers to "environmental and socio-economic impact assessments ... including with regard to potential transboundary impacts ..."; and Annex I (Verification and certification), paragraph 16(g) refers to "determine whether there have been any unintentional transboundary effects".

There are two main categories of transboundary project issues: (i) the legality of transboundary movements of CO<sub>2</sub>; and (ii) the compliance conditions within the CDM to address the movement of CO<sub>2</sub> from one jurisdiction to another and/or its transfer across multiple jurisdictions.

There are several significant legal issues when considering transboundary projects including: the classification of CO<sub>2</sub>; the legality of its transportation under international and domestic agreements; the likely impact upon nascent or pre-existing liability and CO<sub>2</sub> infrastructure regimes; as well as the interplay between jurisdictions and regulators.

As indicated above, a number of compliance conditions for transboundary CCS projects are stipulated in various international treaties, including:

- The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention);
- The London Protocol (and Amendment to Article 6) to the London Convention; and
- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention)).

The issue of transboundary transportation of CO<sub>2</sub> for storage in the geological sub-sea bed purposes has recently been addressed by an amendment to Article 6 of the London Protocol. The London Protocol provides for the disposal of CO<sub>2</sub> streams from capture processes for geological storage in the sub-seabed if the following conditions are met:

- the waste stream is overwhelmingly of CO<sub>2</sub>;
- the stream may contain incidental substances derived from the source material; the capture and storage processes; and
- no wastes or other matter are added for the purpose of disposing.

Article 6 as it currently stands however prohibits the transboundary transport of CO<sub>2</sub> for offshore geological storage by stating that “contracting Parties shall not allow the export of wastes or other matter to other countries for dumping or incineration at sea”.

The amendment proposes that the “export of CO<sub>2</sub> for disposal in accordance with Annex 1 may occur, provided an agreement or arrangement has been entered into by countries concerned”. The amendment also proposes that the receiving state gives prior consent, and that both states apply the *London Protocol’s CO<sub>2</sub> Sequestration Guidelines* (ie. detailed guidelines to regulators when permitting on risk assessment and management). These external requirements will need to be observed and satisfied within any M&Ps developed for transboundary CCS projects in the CDM.

Whilst the amendment has yet to be ratified by two thirds of Parties for it to enter into force, the deliberations have highlighted some considerable tensions and issues under consideration between the Parties. Currently only 1 Party has ratified the Amendment.

Several other international regulatory regimes may also impact upon transboundary CCS activities, not least those governing the protection of particular environments or the international movement of wastes.

International and regional agreements governing the trans frontier shipment of hazardous wastes, such as the Basel Convention or the Bamako Convention on Ban on Import to Africa and Control of Transboundary Movement within Africa of Hazardous Wastes (1991), may place additional constraints or time delays upon CCS activities, should CO<sub>2</sub> be included

within the materials they control. But CO<sub>2</sub> is currently not listed in either treaty as a regulated substance.

But if CO<sub>2</sub> was to be included in the list of materials governed by the Basel Convention, a number of administrative provisions governing its transboundary transportation would apply; not least the potential for individual countries to effectively ban the transit of the material across their territory.

At the national or regional level, disparities between regulatory regimes governing health and safety, liability, planning and environmental protection, also have the potential to distort activities associated with the transboundary transportation of CO<sub>2</sub>. In the absence of harmonised provisions, transportation activities will inevitably be subject to the interpretation of national laws and regulations.

Article 24 of the European Union's (EU) Directive on the geological storage of CO<sub>2</sub> (Directive 2009/31/EC) contains only a few provisions relating to the transport aspect of CCS, and instead cedes much of the regulation of this aspect of the process to national governments. For example, it states: "in cases of transboundary transport of CO<sub>2</sub>, transboundary storage sites or transboundary storage complexes, the competent authorities of the Member States concerned shall jointly meet the requirements of this Directive and of other relevant Community legislation".

In terms of possible institutional procedures to guide the inclusion of transboundary CCS projects in the CDM, the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (Chapter 5, CO<sub>2</sub> Transport, Injection and Geological Storage) which were formally adopted at CMP 7 for the second commitment period, provides a legitimate outline of approaches for the reporting of emissions captured in one country and transported across boundaries for the purpose of storage in another (refer page Chapter 5, 5.20).

Four general transboundary project scenarios present themselves, including:

- transporting CO<sub>2</sub> that is captured in one country and exported to another for storage;
- transporting CO<sub>2</sub> that is captured in more than one country and exported to another for storage;
- the migration or seepage of the injected CO<sub>2</sub> into the sub-surface or atmosphere of another country; and
- the sharing of a storage reservoir located within more than one country.

The guidelines also provide guidance on the responsibilities in terms of reporting emissions from storage which crosses national boundaries, and this could be mirrored by the responsibility for surrendering CERs (or equivalent) in the event of seepage/leakage.

For example, the Guidelines suggest:

| SCENARIO | Captured CO <sub>2</sub> | Transport Mechanism | Stored CO <sub>2</sub> |
|----------|--------------------------|---------------------|------------------------|
| 1        | Country A                | exported to         | Country B              |
| 2        | Country's A, ..., n      | exported to         | Country B              |
| 3        | Country A                | seepage             | Country B              |
| 4        | Country A                | exported to         | Country's B, ..., n    |

#### Reporting responsibilities

CO<sub>2</sub> captured, fugitive emissions from transport/storage; CO<sub>2</sub> exported

CO<sub>2</sub> imported, fugitive emissions from transport/storage; CO<sub>2</sub> from injection activities and storage site

In the case of CDM, eligible transboundary CCS projects would necessarily involve the capture of CO<sub>2</sub> in a developing country, for storage in either an Annex I and/or another developing country. Clearly, capturing CO<sub>2</sub> in an Annex I country for transport and storage in a developing country would not be eligible to generate CERs, however, if such a trade can demonstrate a net-benefit to the host developing country, then it should be made possible through other bilateral and/or multilateral arrangements.

The transport mechanism for the CO<sub>2</sub> will most likely be via a pipeline but may also include road; rail or ships. Responsibility for the integrity of the CO<sub>2</sub> pipelines would need to be clearly attributed. Also, where multiple Parties are involved in storing the CO<sub>2</sub> (scenario 4), the respective shares for longer term liability would need to be agreed to upfront and possibly on the basis of shares of CO<sub>2</sub> imports.

This would however create additional legal relationships and responsibilities needing to be implemented and enforced across Designated National Authorities (DNAs) from more than one country. This will require the approval of all DNAs involved in, and/or potentially impacted by, the project, including agreement on the long term liability arrangements and the accounting methodology and reporting requirements.

## Conclusions

The Institute does not support the establishment of a *global reserve* of CERs for all of the arguments presented above. While the Institute considers it an imperative for the SBSTA to define an acceptable set of M&Ps for transboundary projects in the CDM, it considers that there is also an urgency to accelerate the entering into force of the Amendment to the London Protocol's Article 6. Given that the Amendment requires some 26 to 27 of the Contracting Parties to the London Protocol to ratify it before it can become legally binding, there is coincidentally about the same number of eligible Parties to the UNFCCC who have expressed explicit support for CCS in the CDM<sup>1</sup>.

The Institute considers that enabling transboundary CCS projects in the CDM should be given effect as soon as possible through an appropriate suite of M&Ps, and that the SBSTA could consider playing a separate role in also encouraging countries to join Norway in ratifying the London Protocol Amendment as soon as possible.

The Institute would welcome participating in the SBSTA's 2012 work programme (including workshops) to further discuss these issues, and how they may apply to and affect the deployment of a major mitigation technology such as CCS.

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<sup>1</sup> *Parties to the London Protocol*: DENMARK; GERMANY; UNITED KINGDOM; SOUTH AFRICA; VANUATU; SPAIN; NORWAY; TRINIDAD AND TOBAGO; GEORGIA; CANADA; SWITZERLAND; SWEDEN; AUSTRALIA; IRELAND; NEW ZEALAND; ANGOLA; ICELAND; TONGA; FRANCE; EGYPT; ST. KITTS & NEVIS; LUXEMBOURG; BULGARIA; SAUDI-ARABIA; BELGIUM; MEXICO; SLOVENIA; BARBADOS; CHINA; ITALY; SURINAME; JAPAN; KENYA; SIERRA LEONE; MARSHALL ISLANDS; NETHERLANDS; REPUBLIC OF KOREA; GHANA  
[green = known support for CCS in CDM]