

A Step Forward for CCS as a CDM Project Activity

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Report commented on:

[Subsidiary Body for Scientific and Technological Advice \(SBSTA\) Technical Workshop on the eligibility of carbon capture and storage projects under the clean development mechanism of the Kyoto Protocol](#), released on November 8th, 2011.

In December 2010, the Conference of the Parties serving as the meeting of the Parties (CMP) to the Kyoto Protocol (KP), by its decision 7/CMP.6, decided that carbon dioxide capture and storage (CCS) in geological formations would be eligible as a project activity under the clean development mechanism (CDM), provided that the following issues could be addressed and resolved in a satisfactory manner:

- non-permanence, including long-term permanence;
- measuring, reporting and verification;
- environmental impacts;
- project activity boundaries;
- international law;
- liability;
- the potential for perverse outcomes;
- safety ,and
- insurance coverage and compensation for damages caused due to seepage or leakage.

(See also Nigel Bankes' blog on [CCS and CDM: the eligibility of carbon capture and storage projects under the clean development mechanism of the Kyoto Protocol – the Cancun Meeting of the Conference of the Parties](#))

Parties and admitted observer organizations were invited to submit their views on how to address and manage these issues. [Ten admitted observer organizations](#) and Australia, the Alliance of Small Island States (AOSIS), the European Union, Indonesia, Japan, Norway, Qatar, Saudi Arabia, United Arab Emirates and USA (as an observer state to KP) responded the invitation. Also, the Secretariat hosted a technical workshop with technical and legal experts to consider these [submissions](#) and to discuss the issues referred to in decision 7/CMP.6. The workshop, held in Abu Dhabi on September 7th and 8th 2011 clarified some of the technical and legal issues in its [report](#) and suggested possible solutions.

While acknowledging the significance of the full suite of issues listed above this post deals only with project boundary, accounting and transboundary issues, permanence and liability, since these seem to be the most controversial issues.

Project boundary, accounting and transboundary issues

Project boundary

From the Parties' submissions, there seems to be a certain degree of consensus as to the elements to be included in the project boundary: all above-ground and underground installations and storage sites, as well as all potential sources of CO₂ that can be released into the atmosphere. The submissions note that boundaries should include the full chain of CCS activities, covering capture, treatment, transport, injection and storage of CO₂. Since the project boundary is interrelated with monitoring and modelling, one party suggested that once CO₂ moves outside the predefined project boundary, the monitoring plan and risk and safety assessment would also need to be reviewed.

Another two clarifications worth mentioning are: (a) the above-ground emission sources will not be included in the project boundary once the capture and injection components of the project cease; (b) there may be a need to establish temporal boundaries. (The temporal extent of the project boundary should cover the development, operation, closure and post-closure phases of a CCS project).

The SBSTA workshop concluded (page 5) that the project boundary should be linked to site characterization and risk assessment procedures so that it includes all subsurface components and all potential direct seepage pathways. What is unique is the recommendation that the project boundary should be reviewed periodically so that it takes account of deviations between the predicted behavior and the observed behavior.

Accounting

With respect to emission accounting for CCS projects, SBSTA concluded that the [2006 IPCC Guidelines](#) account for CO₂ captured and injected by excluding it from a Party's GHG emissions (page 6 of the report). Most Parties and admitted observer organizations have suggested that accounting should include all of the following:

Fugitive emissions (leaks from pipelines);

Emissions resulting from the direct and/or indirect use of electricity and other energy sources required for the project, and the increased energy use (or "energy penalty") associated with capturing CO₂;

Potential seepage.

Most Parties and admitted observer organizations agree that the 2006 IPCC Guidelines provide a comprehensive tool for accounting project emissions from CCS activities. On the other hand, the submissions did not agree on how to account for emissions attributed to incremental oil produced through EOR using CCS. Norway and AOSIS pointed to the potential "perverse outcomes" that CCS might produce, such as the additional energy requirements associated with capturing the CO₂, the emissions associated with oil produced through EOR using CCS, and the diversion of investment into CCS from renewable energy technologies.

Transboundary issues

According to submissions from Parties, transboundary scenarios can arise from the following situations:

- transporting CO₂ that is captured in one country to another country for storage;
- migration or seepage of the injected CO₂ into the underground or the atmosphere of another country;
- sharing of a storage reservoir located within more than one country.

There was no agreement in the submissions to include CCS projects involving transboundary scenarios. Some submissions suggest that these types of projects should only be allowed once more experience is gained with CCS in the CDM. Another submission argued that it should be possible to use provisions developed for transboundary projects under the [EU CCS directive](#) and those that have been proposed under the London Protocol: [Risk Assessment and Management Framework for CO₂ Sequestration in the Subsea Bed](#) and the [Related Injection Guidelines](#) can be used as models.

Parties agree that the proper tool for reporting emissions would be the 2006 IPCC Guidelines. The submissions also highlight that transboundary projects should only be allowed subject to a range of governance rules being agreed between all parties involved prior to project initiation. A common belief is that, in practice, there may be relatively few transboundary projects since most CCS projects will be contained well within the national borders of one host country.

The SBSTA workshop concluded that, at least at first, transboundary projects should not be allowed under CDM “as they pose significant cross-border and regulatory challenges” (page 6 of the report). The workshop report also mentions that some international laws do address the transboundary movement of CO₂: [the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter \(London Convention\)](#), the [Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal](#). However, such movements are generally permitted where all Parties consent.

Permanence and liability

Permanence

In the context of CCS, permanence “relates to the ability of geological storage reservoirs to retain the injected CO₂ for very long periods of time, or in perpetuity” ([Synthesis of views on modalities and procedures for carbon dioxide capture and storage in geological formations as clean development mechanism project activities](#); Note by the secretariat, page 18). As many submissions highlighted, the risk of non-permanence can be reduced by a careful and appropriate site selection, a risk and environmental impact assessment, and a risk mitigation and remediation plan to manage permanence over the short, medium, and long term. Submissions emphasized that well selected and well managed storage sites should retain injected fluids for very long periods of time. The risks associated with CO₂ seepage can be identified as local and global climate risks.

Liability

Attributing liability to cover both local and global climate risks, in the short, medium or long term, is critical for developing CCS projects. Parties' submissions concur that short-term liability should be channeled to project participants during the operational phase and the post-closure phase of a CCS project. As for long-term liability, the majority of submissions suggest that it should be transferred to the host country, established either through national regulation or through a negotiated agreement and subject to several conditions:

the transfer should occur after a defined period of time;
pre-agreed conditions for transfer have been met.

Host country liability could be eased by using financial instruments such as long-term financial bonds or insurance or contractual arrangements with the project operator. However there is no consensus as to the scope of such financial instrument: some submissions suggested a financial provision that would only be required to cover local liabilities during the operational phase; others suggest a wider scope covering global climate liabilities and ongoing costs of monitoring and remediation and/or compensation if seepage occurs in both the operational and post-closure phase.

Another option mentioned by the United Arab Emirates would be the establishment of an international "compensation fund" established and held by the CDM Executive Board to cover a wide range of potential issues and risks, possibly focused on the post-closure phase, including ongoing monitoring of the storage site, remediation, compensation and replacement of CERs or similar units in the event of seepage.

According to the submissions from the EU, United Arab Emirates, World Resources Institute, International Emissions Trading Association and Carbon Capture and Storage Association, the transfer of liability to the host country should take place after a post-closure period, subject to a set of criteria agreed between the project participants and the host country prior to project authorization. The details of the liability arrangements would need to be set out in the Project Design Document (PDD). As for post-transfer liabilities, there are two possibilities mentioned in the submissions:

Option one: the host country should take full liability for monitoring, remediation, compensation and replacement of CERs or similar units in the event of seepage;

Option two: liability needs to be placed in the context of benefits accruing to Annex I Parties, and therefore any liabilities arising should be the responsibility of the Annex I Party investing in such projects.

In terms of managing the global climate risk of "carbon reversal, the submissions highlight the fact that in the short-term the lost carbon will be accounted for as a project emission and deducted from the total amount of CERs issued. In the medium term (the post-closure phase prior to any transfer of liability), liability for any seepage would rest with the project participants and they would be required to remediate through the purchase of replacement CERs or equivalent units. In the long term, the submissions discuss various options:

- (1) the "seller liability" approach;
- (2) the use of temporary CERs or long-term CERs;
- (3) the use of a "discount factor";

(4) the creation of a “confidence buffer”.

The seller liability approach received the most support from the Parties and translates into the surrender of CERs by the holder of liability (e.g. project participant or host country if liability had been transferred). It seems peculiar that no submission mentions who is going to carry the obligation to report the escaped carbon in the national inventory if seepage occurs after the crediting period and if a transfer of liability to the host state took place. And since the host country (being a non-Annex I country) does not have binding emission targets it begs the question: Is it legitimate to avoid reporting the escaped emissions in the national emissions inventory of the Annex I country that ultimately uses CERs for compliance purposes? Does this not undermine the very objective of climate change mitigation?

Using temporary or long-term CERs for CCS projects would be similar to afforestation and reforestation project activities and would channel liability to the buyer. The discount factor approach implies setting aside a percentage of the total CERs that would be issued so that a proportion of CERs are available for use to remediate against “carbon reversal” due to any future seepage. Finally the fourth option means that a proportion of CERs would be surrendered to a “confidence buffer” that could be used to remediate for any future seepage. It is regrettable that [Australian submission](#) did not specify how this might work; would it be comparable to a compensation fund?

Since most countries with existing CCS regulations provide for a transfer of liability to the state, the SBSTA workshop report suggested that long-term liability should be allocated to the host country after site closure and when pre-determined conditions are met (so that the risk of seepage would be low) would be preferable.

The SBSTA workshop report concludes (page 8 of the report) that neither discounting the CERs or issuing temporary CERs are viable solutions since the discount factor would be solely arbitrary and would not have a scientific basis; and temporary CERs would not be suitable for CCS projects given fungibility issues and it would be a significant disincentive to investments. As complex and contentious these issues might be, they need to be solved in order to implement CCS as CDM project activities. Although the future of the Kyoto Protocol is still uncertain and a significant breakthrough is too much to expect in Durban, COP 17 may deliver some indications on how will international community collaborate to tackle climate change in the future.

The SBSTA held its 35th session in Durban and [the agenda](#) also included the [draft modalities and procedures for including CCS as CDM projects](#), prepared by the Secretariat based on relevant Parties’ submissions and admitted observer organizations and the outcomes of SBSTA workshop held on 7-8 September 2011. I will report on these issues in a subsequent post.

This blog submission is supported in part by a grant from Carbon Management Canada.