

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

Decisions arising from the 36th Meeting of the SBSTA (Bonn, May 2012).

Agenda item 11(a) – Methodological issues under the Kyoto Protocol: Carbon dioxide capture and storage in geological formations as clean development mechanism project activities.

Views on issues referred to in decision 10/CMP.7, Paragraph 4 (FCCC/SBSTA/2012/L.8, Paragraph 3):

- the eligibility of carbon dioxide capture and storage (CCS) project activities which involve the transport of carbon dioxide from one country to another or which involve geological storage sites that are located in more than one country; and
- the establishment of a global reserve of certified emission reduction (CER) units for CCS project activities, in addition to the reserve referred to in decision 10/CMP.7, Annex, Paragraph 21(b).

AUGUST 2012





Introduction

Announced by the Australian Government in September 2008, the Global CCS Institute (the 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 (www.globalccsinstitute.com/Institute).

As an accredited observer, the Institute welcomes the opportunity afforded by decisions arising from the 36th Meeting of the Subsidiary Body for Scientific and Technological Advice (SBSTA – FCCC/SBSTA/2012/L.8 [paragraph 3]) to provide its considered views 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 provided its views on 5 March 2012 on these two issues, responding to the SBSTA's call for submissions following decisions taken at CMP 7. The Institute hopes its views will positively assist the SBSTA in its deliberations on such issues at its 37th meeting (2012) and in preparation of its recommendations to the Eighth Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) at CMP 8.

The Institute also submitted to the SBSTA in February 2011 its views on a range of issues relating to CCS in the CDM, including transboundary projects. This current submission should be read as a complementary document to the Institute's previous submissions.

Overview

In March 2012, the Institute submitted its views to the SBSTA on the issues of transboundary movement of CO₂ and the establishment of a global reserve of CERs in addition to the existing reserve provisions. Its position on these issues has not changed, and is represented as:

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

The Institute also attended the 36th Meeting of the SBSTA in Bonn, as a follow up to the CMP 7 negotiations, and keenly observed both the nature of current discussions and the progress made in resolving these two key issues.

It seems evident from the many expert views provided to the SBSTA on these issues, both in and out of formal sessions, that stakeholders consider the transboundary issue to be largely a procedural challenge that can be relatively easily resolved, while the dialogue on the global reserve appears somewhat more divided. Many Parties and observer stakeholders have already indicated that they consider such a provision, in addition to the reserve of CERs already stipulated in decision 10/CMP.7, annex, paragraph 21(b), to be unnecessary. The Institute has previously stated and continues to support such a view.



The diversity of views on the establishment of a global reserve may be indicative of why the SBSTA tasked the secretariat at this time, and prior to COP 18, to prepare only a technical paper on the transboundary movement of CO₂ and not call for an equivalent paper on the merit or otherwise of the establishment of a global reserve account. The Institute urges the SBSTA to resolve the issue of whether an additional reserve provision is to be established or not in a timely manner, as the associated uncertainty will act as an effective barrier to all future investments in CCS projects.

Transboundary movement of CO₂

The transboundary movement of CO₂ from one country to another, or the location of a geological storage site spanning across more than one country, will be a likely scenario for a small number of developing countries looking to capture the CO₂ from production processes within their own jurisdiction, and subsequently permanently preventing those same emissions from entering the atmosphere. Countries that do not have access to locally sited and appropriately characterised storage solutions, may look to transporting the CO₂ via pipelines or other means to a suitable location.

As stated in the Institute's previous submission, there are two main considerations of transboundary project related issues, including the:

- (i) legality of transboundary movements of CO₂; and
- (ii) compliance conditions within the CDM to address the movement of CO₂ from one jurisdiction to another and/or its transfer across multiple jurisdictions.

Legality of transboundary movements of CO₂

The SBSTA requested the secretariat to examine the following issue: international law and frameworks relevant to CCS project activities which involve the transport of CO₂ from one country to another or which involve geological storage sites that are located in more than one country¹.

The legality of transboundary movements is well advanced in providing for and/or is already well provided for in prevailing international agreements and arrangements such as the London Protocol (Article 6), the Basel Convention, and the European Commission's (EC) CCS Directive.

From a practical perspective of institutionalising the transboundary movement of CO₂ in the CDM, these international arrangements have established and/or are establishing important precedents for which the SBSTA, the CMP, and the CDM Executive Board could consider adopting as opposed to creating new or imposing additional provisions.

London Protocol

In 2008, the International Maritime Organization (IMO) established a Legal and Technical Working Group (WG) on Transboundary CO₂ Sequestration Issues to analyse scenarios by which CO₂ streams are transported under Article 6 of the London Protocol². It identified a number of possible scenarios including the transfer of CO₂ streams:

- from one country to another, before or after disposal takes place;

¹ FCCC/SBSTA/2012/L.8, paragraph 4.a

² IMO LP/CO₂ 1/8



- between the point where CO₂ is captured on land or at offshore installations and the storage site transported by pipeline and other [ship], alone or in combination;
- a well-defined storage site where a given CO₂ stream behaves differently than predicted through modelling exercises over the timescale considered and migrates (in terms of kilometres rather than hundreds or thousands of kilometres) to adjacent formations/sites;
- the movement of a CO₂ stream within or out of reservoir rocks, rather than leakage which in respect of carbon storage is the escape of CO₂ from the storage formation into a water column or atmosphere; and
- the use of CO₂ streams for enhanced oil recovery (EOR).

While the London Protocol's focus is the geological storage of CO₂ in the sub-seabed (offshore), the effectiveness of its transboundary provisions seem as equally applicable to both offshore and/or onshore geological storage operations.

The WG considered that a coordinated approach should be taken using bilateral agreements or arrangements as appropriate. For example, an exporter of a CO₂ stream should include a characterisation (i.e. physical and chemical properties) of the stream within a permit allowing for its transboundary movement. It would then be the responsibility of the receiving country to permit the transportation, injection and storage activities.

It was also considered that in all cases of transboundary movement of CO₂ streams, the competent authorities in each country should apply equivalent protocols (i.e. guidelines) jointly. This essentially provides for all jurisdictions to act in conformity with international agreements and/or arrangements (both Parties and non-Parties) and meet, in-principle at least, any stipulated conditions for CO₂ movement.

As all Parties involved in a CDM project are bound to account for all attributable emissions and sinks under the control (i.e. project boundary) of the project participants³, this suggests that for a project to be considered eligible to generate CERs, all countries involved would likely be Parties to the Kyoto Protocol. A situation arising where one of the affected countries is a non-Party to the Kyoto Protocol seems unlikely, and so any requirement for countries to observe equivalent provisions under the CDM should be a relatively simple administrative matter to enforce.

The WG explored the scenario where storage sites cross international and/or national boundaries. It proposed that where there are two or more permitting authorities for one storage site, then States should reach bilateral (or more) agreements or arrangements in accordance with agreed equivalent guidelines (including characterisation of the CO₂ stream and its expected behaviour).

While the M&Ps for CCS in the CDM state that the provisions for liability associated with the project need to be agreed in accordance with the laws and regulations of the host Party (as the transfer of liability will ultimately pass from the project participants to the host Party), the Institute believes it should be left to the sovereign right of nations to forge agreements between themselves stipulating the conditions capable of delivering on their respective national interests. This includes for example allowing a financial obligation to make good any shortfalls in emissions (i.e. a net reversal of storage) to rest with either the recipient host country of the storage site, the exporting country of the CO₂ stream, or a shared

³ FCCC/KP/CMP/2005/8/Add.1, page 17 [3/CMP.1, paragraph 52]



responsibility among all countries (including if necessary, and as provided for in the M&Ps for CCS in the CDM, those Annex I countries who hold the associated tradable offsets).

In regards to monitoring (including but not limited to: injection rates; injection and formation pressures; mechanical integrity; and properties and composition of the CO₂ streams), the WG also concluded that there was no need to develop additional monitoring requirements as, in the event of co-operation, the jurisdictions concerned would apply existing protocols to the same standard. This was considered applicable to situations of unintended transboundary movements too, deferring to the sufficiency of international customary law rules, such as notification and co-operation obligations.

Since 2006, both the *Risk Assessment and Management Framework for CO₂ Sequestration in Sub-seabed Geological Structures* and the *Specific Guidelines for Assessment of Carbon Dioxide Streams for Disposal into Sub-seabed Geological Formations* have been adopted under the London Protocol. Further, in 2009 Parties adopted an amendment to Article 6 of the London Protocol enabling the export of CO₂ streams for the purpose of sequestration in transboundary sub-seabed geological formations. The amendment is still to enter into force due to an insufficient number of ratifications.

Parties are currently reviewing the *Specific Guidelines for Assessment of Carbon Dioxide Streams for Disposal into Sub-seabed Geological Formations* to take into account the 2009 amendment to provide for transboundary issues. This work, which is expected to be completed in 2012 (i.e. the 34th Consultative Meeting of Contracting Parties to the London Protocol is scheduled for October-November), aims to enable administrations to implement the expanded Guidelines on an interim, voluntary basis.

The Basel Convention

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Article 11) also supports the use of bilateral, multilateral, or regional agreements or arrangements to manage the transboundary movement of hazardous wastes or other wastes (noting that CO₂ should not be presumed to be legally classified as a hazardous waste⁴) with Parties or non-Parties, provided that such agreements or arrangements do not derogate from the environmentally sound management of such streams as required by (this Convention) international conventions.

Article 12 of the Basel Convention addresses related liability and compensation arrangements for damage from the transboundary movement and disposal of wastes in a similar way by essentially leaving it to the Parties to co-operate with a view to adopting, as soon as practicable, a protocol setting out appropriate rules and procedures.

EU CCS Directive

Another example of where the transboundary movement of CO₂ has been pursued and is being institutionalised is the European Commission's CCS Directive (2009/31/EC). Article 24 (and Paragraph 39) stipulates that provisions are required to ensure that, in cases of transboundary CO₂ transport, transboundary storage sites or transboundary storage complexes, the competent authorities of the Member States concerned meet jointly the requirements of this Directive and of all other Community legislation.

⁴ The US Environmental Protection Agency (<http://www.epa.gov/osw/nonhaz/industrial/geo-sequester/index.htm>) is one example of how CO₂ is not considered to be classified a hazardous waste.



While the CCS Directive does not treat the issue of transboundary movement of CO₂ in a prescriptive way, provisions to address such risks are mainly left to be dealt with under the Environmental Impact Assessment Directive (85/337/EEC and 2011/92/EU) and national laws, rather than within the dedicated framework of the CCS Directive.

The EIA Directive (paragraph 24) requires all affected Member States concerned to enter into consultations regarding, inter alia, the potential transboundary effects of a project and the measures envisaged to reduce or eliminate such effects and agree on a reasonable timeframe for the duration of the consultation period.

The detailed arrangements for implementing this Article may be determined by the Member States concerned and shall be such as to enable the public concerned in the territory of the affected Member State to participate effectively in the environmental decision-making procedures for the project.

The CCS Directive also importantly removes legal barriers to the movement of CO₂ across Europe through amendments to existing provisions in other EU directives, and as outlined in Articles 31, 33, 35 and 36 of the CCS Directive.

IPCC Guidelines

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 Inventories⁵ (Chapter 5, CO₂ 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 5.20). The suggested reporting guidelines could also mirror the responsibility for surrendering CERs (or equivalent units) in the event of seepage/leakage.

The Institute described such arrangements in its March 2012 submission to the SBSTA.

Compliance conditions within the CDM

The SBSTA also tasked the secretariat to examine possible options for transboundary CCS project activities, and obligations arising therefrom, including the following:

- i. the assignment of liability, as defined in decision 10/CMP.7, annex, paragraph 1(j);
- ii. options for sharing the obligation to address a net reversal of storage;
- iii. environmental and socio-economic impacts and remedial measures to address them;
and
- iv. monitoring requirements in the context of transboundary CCS project activities.

As can be seen from the table below, the current M&Ps already outline arrangements that can address these issues.

⁵ <http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>



POSSIBLE ACTORS IN A CCS PROJECT			
COUNTRY A ANNEX I PARTY (developed country)	CCS PROJECT PARTICIPANT (private sector)	COUNTRY B NON-ANNEX I / host Party (capture, storage, or exporter of CO ₂)	COUNTRY X (transboundary) (transit and/or co-storage of CO ₂ with Country B)

nb: where the project boundary does not include cross border attributes,
then there would be no transboundary considerations

Possible options for transboundary CCS project activities, and obligations arising there from, including the following:

i The assignment of liability, as defined in decision 10/CMP.7, annex, paragraph 1(j);		[Section 5.22, Annex B] Project participants need to document in the PDD how liability obligations arise from the proposed CCS project, are allocated during the operational phase, closure phase, and post-closure phase	<i>Under the CDM M&P, it is the host Party that is held legally accountable for the long term liability (transfer from project participant to host Party). Note that the financial burden may however rest elsewhere such as an Annex I Party (see ii below).</i>	
		[Section 5.23, Annex B] Operational phase and up to the time of transfer to a Party, liability resides with project participant	[8.e] Establish means for addressing liability arrangements taking into account the provisions set out in Section 5, paragraphs 22 to 25 of appendix B to Decision 10/CMP.7	<i>If storage takes place in Country X, then it would need to agree to take on liability or a share of the liability with Country B if the site straddles borders, at the point of DOE's project validation and registration</i>
			[11.c] That the host Party accepts the allocation of liability as proposed in the project design document (PDD) and the transfer of liability referred to in paragraph 25 of appendix B	<i>If Country X is considered a host Party, then it would need to comply with the conditions outlined in 11.c and 8.e</i>
			[Section 5.23, Annex B] Relevant provisions and laws that shall apply to matters related to liability	
			[Section G.10.f] Provisions for liability have been agreed in accordance with the laws and regulations of the host Party	



POSSIBLE ACTORS IN A CCS PROJECT				
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ii Options for sharing the obligation to address a net reversal of storage (NRS)		[Section K.28] If there is a NRS, then the CERs issued for the CCS project activity held in the CDM registry may be cancelled, up to the amount of the NRS	[8.f] For a host Party that accepts the obligation to address a NRS, shall establish measures to fulfil such an obligation	<i>If Country X is a host Party, then it would also need to state its intent to accept or otherwise an obligation to redress NRS (see Country B).</i> If neither host Party accept NRS, then defers to Section K.26.b and 28.e
		[Section K.26.b/28.e] If project participants do not comply, fully or partially, and the host Party has not agreed to take good NRS, the outstanding amount shall be transferred to a cancellation account of the national registry of any Annex I Party holding CERs issued for the CCS project	[Section K.24.b] Project participants to transfer, within 30 days after the notification, an amount of assigned amount units (AAUs), CERs, emission reductions units (ERUs) or removal units (RMUs) equivalent to the outstanding amount	[11.d/27] host Party may accept the obligation to address a NRS in the situation (as per paragraph 26.a) and after notification, acquit an amount of assigned amount units (AAUs), CERs, emission reductions units (ERUs) or removal units (RMUs) equivalent to the outstanding amount



		POSSIBLE ACTORS IN A CCS PROJECT			
		COUNTRY A ANNEX I PARTY (developed country)	CCS PROJECT PARTICIPANT (private sector)	COUNTRY B NON-ANNEX I / host Party (capture, storage, or exporter of CO ₂)	COUNTRY X (transboundary) (transit and/or co-storage of CO ₂ with Country B)
iii	Environmental and socio-economic impacts and remedial measures to address them;		[Section G.10.d] The DOE will ensure environmental and socio-economic assessments have been carried out in accordance with the laws of the host Party		<i>If Country X is a host Party, then its laws and regulations would also need to be observed.</i>
				[Section 6.27] Best available techniques will be applied for the assessments.	
			[Annex B, Section 4, Paragraphs 18.a/.c] Project participants will establish financial provision to meet all obligations in accordance with the laws and regulations of the host Party and the cost of remedial measures required by laws and regulations of the host Party.	Responsibility for remediation should be identified upfront during the project validation phase. <i>Depending on where remediation is required, if it is possible to isolate an affected country then its laws should prevail, but if affected jointly, then how observance of both host Party laws (in accordance with the M&Ps) can be accomplished needs to be agreed to upfront.</i>	
iv	Monitoring requirements in the context of transboundary CCS project activities;		[Section 4.12] Project Participants shall for each verification period carry out history matching and updates to numerical models used to characterise the storage site, and if need be, recharacterise the storage site, review project boundaries, update risk and safety assessments, revise monitoring plans, update management plan	[Section 4.17] The monitoring of the storage site (as per conditions defined in the CCS M&Ps) shall be conducted by the entity or Party (via possibly a contracted 3rd Party) that is liable for the storage site.	<i>Monitoring responsibilities should fall to all Parties considered a Host, including for the component of the project that is considered located in their jurisdiction.</i>



Finally, the SBSTA expressed interest in possible resolution mechanisms for any disputes, including with regard to liability, that may arise between host Parties. There are well established protocols under existing international agreements and arrangements to manage disputes between sovereign countries. The Institute believes that the UNFCCC's CDM EB is well within its right to decide to include, exclude or suspend projects based on their observance to the CCS in the CDM M&Ps and the CDM M&Ps more generally, but should avoid intervening to resolve disputes between sovereign nations.

Conclusion

The Institute strongly supports the M&Ps that currently underpin the inclusion of CCS projects in the CDM. It considers that these rules of engagement provide an appropriate level of guidance and governance to project participants, local communities and national regulators alike to ensure a high degree of integrity for storage site characterisation, project related environmental and risk assessments, adequacy of financial redress for unforeseen events, and site specific monitoring, measurement, verification and reporting regimes.

In regards to the establishment of a global reserve of CERs, the Institute stands by the arguments and positions stated in its previous submission (March 2012) to the SBSTA on this issue, and consequently has no further views to express on this issue at this time.

The Institute considers the removal of all legal impediments and operational barriers to the transboundary movement of CO₂ as a core priority for the deployment of CCS under all UNFCCC mechanisms, especially the CDM, and essential to enhance the capacity of developing countries to articulate, commit to and ultimately achieve their mitigation aspirations.

As such, the Institute supports a proposition that the UNFCCC firstly consider observance in the CCS M&Ps with precedents already established for the treatment of transboundary project related issues as they exist under prevailing international agreements and arrangements (i.e. identified above).

Such provisions respect the rights of sovereign decision-making without the need for overly prescriptive conditions being imposed, noting that all countries affected by a project should come to a general agreement upfront (i.e. bilateral, multilateral etc) on the nature of the stipulated conditions (i.e. for characterising the CO₂ stream, subsequent monitoring regimes, liability, remedy and dispute resolution arrangements).

The Institute suggests that the UNFCCC should only consider imposing additional requirements if the prevailing provisions under the existing CCS in the CDM M&Ps and/or international legal arrangements are found to be materially wanting for the purposes of safeguarding the legality and operational integrity of the CDM.