Twelfth Annual Conference on Carbon Capture, Utilization & Sequestration

Regulating CO_2 Storage

Recent Regulatory Transboundary Developments for CCS

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Transboundary CCS UNFCCC - CDM

- Durban left two unresolved issues:
  - Transboundary CCS activities
  - Global Reserve of CERs (credits)
- SBSTA-36 Bonn (May 2012) – some progress on Transboundary, no progress on Global Reserve
  - UNFCCC administration processes in place for projects to apply under CDM framework
  - Technical paper by UNFCCC on transboundary and Global Res
  - Submissions – Australia and EU
- CDM Executive Board's Working Group on CCS established
- COP-18/CMP-8/SBSTA-37 at Doha (Nov 26-Dec 8) – to consider with a view to a decision at CMP8.

IPCC Guidelines for GHG Inventories

- Apr 2006
- Vol 2 Energy, Chp 5 - CO2 Transport, Injection and Geological Storage

- Each site will have different characteristics
- Methodology

  Site characterisation – inc leakage pathways

  ↓

  Assessment of risk of leakage – simulation / modelling

  ↓ ↑

  Monitoring – monitoring plan

  ↓

  Reporting – inc CO2 inj and emissions from storage site

- For appropriately selected and managed sites, supports zero leakage assumption unless monitoring indicates otherwise

IPCC Guidelines for GHG Inventories

Reporting of cross-border CCS operations - 4 scenarios:

- **Scenario 1**. CO2 may be captured in one country, Country A, and exported for storage in a different country, Country B.

- Country A should report the amount of CO2 captured, any emissions from transport and/or temporary storage that takes place in Country A, and the amount of CO2 exported to Country B.
- Country B should report the amount of CO2 imported, any emissions from transport and/or temporary storage (that takes place in Country B), and any emissions from injection and geological storage sites.

IPCC Guidelines for GHG Inventories

Reporting of cross-border CCS operations

- **Scenario 2**. CO2 is injected in one country, Country A, and migrates from the storage site and leaks in a different country, Country B.

- Country A is responsible for reporting the emissions from the geological storage site. If such leakage is anticipated based on site characterization and modelling, Country A should make an arrangement with Country B to ensure that appropriate standards for long-term storage and monitoring and/or estimation of emissions are applied.

IPCC Guidelines for GHG Inventories

Reporting of cross-border CCS operations

- **Scenario 3**. More than one country utilizes a common storage site.
- The country where the geological storage takes place is responsible for reporting emissions from that site. If the emissions occur outside of that country, they are still responsible for reporting those emissions.

IPCC Guidelines for GHG Inventories

Reporting of cross-border CCS operations

- **Scenario 4**. Storage site occurs in more than one country.
- Countries concerned should make an arrangement whereby each reports an agreed fraction of the total emissions.

Transboundary CCS UNFCCC

UNFCCC Technical Paper 'Transboundary CCS Project Activities' TP/2012/9

- Relevant international frameworks
- Scenarios
  - Capture in A and storage in B
  - Capture in A and storage in A and B
  - Capture in A and B and storage in A and B
  - Capture in A, transport through C, storage in B
- *Doesn't cover*
  - *Capture in A and storage in A and unintentional migration and seepage in B (IPCC Scenario 2)*
  - *Capture in A and storage in A and unintentional migration into international waters (and seepage) – CBD Geoengineering*
  - *Capture in A and B and storage in C (IPCC Scenario 3)*
  - *London Convention 2012 LC34 outcomes*

Transboundary CCS UNFCCC

- SBSTA 37, Doha 2012
- SBSTA/2012/ L.21
- "The SBSTA agreed to recommend to CMP that the issue of eligibility of transboundary CCS project activities under the CDM and the establishment of a global reserve of certified emission reduction units for CCS project activities be considered by the **SBSTA at its forty-fifth session**.
- The SBSTA also agreed that while transboundary CCS project activities would merit inclusion under the CDM, more practical experience of CCS project activities in the CDM would be beneficial."

Transboundary CCS London Convention

London Protocol Article 6

"EXPORT OF WASTES OR OTHER MATTER

Contracting Parties shall not allow the export of wastes or other matter to other countries for dumping or incineration at sea."

- Prohibits transboundary transport of CO2 for geological storage

- LP4 30 Oct 2009 - Amendment was adopted by vote. 15-for, 1-no, 6-abst. Needed 2/3 majority voting (22 present). 2 against.
- Article 6 , new para 2. 'Export of CO2 for disposal in accordance with Annex 1 may occur, provided an agreement or arrangement has been entered into by countries concerned'
- Agreement shall include : permitting responsibilities; for export to non-LP Parties provisions equivalent to LP's.

Transboundary CCS London Convention

- Amendment needs two-thirds of countries to ratify to come into force (currently 28 parties). Only 2 so far, 2 more on way.
- Work to revise the Specific Guidelines to take into account transboundary activities (export and migration)
- Stalled in 2011. Progress made in SG-35 (May 2012). WG chaired by Korea. 2 new documents:
  - Revised **CO2 Specific Guidelines** prepared covering subsurface transboundary migration
  - Draft guidelines prepared for "**Development and implementation of arrangements or agreements for export**" – separating out permitting responsibilities and standards for export from Specific Guidelines
- Both for comment/work/approval at LC-34, 29-Oct 12, London
- Revised CO2 Specific Guidelines approved and adopted 1 Nov 12
- Ongoing work on 'arrangements or agreements for export' guidelines

Transboundary CCS London Convention

- **CO2 Specific Guidelines**
  - Introduction
  - Waste Prevention Audit
  - Consideration of Waste Management Options
  - Chemical and Physical Properties
  - Action List
  - Site Selection and Characterisation
  - Assessment of Potential Effects
  - Monitoring and Risk Management
  - Permit and Permit Conditions

Transboundary CCS London Convention

- **CO2 Specific Guidelines (revised draft 1 Nov 2012 for subsurface transboundary migration)**
- Definition: Transboundary movement of CO_2 streams after injection is defined as movement of CO_2 streams across a national boundary within a transboundary sub-seabed geological formation after the CO_2 streams have been injected. The transboundary sub-seabed geological formations may extend into the jurisdiction of another state or into the high seas. Transboundary movement of CO_2 streams after injection is not export in the sense of article 6, of the London Protocol.

Transboundary CCS London Convention

- **CO2 Specific Guidelines (revised draft 1 Nov 2012 for subsurface transboundary migration)**
- 1.10 In the case of transboundary sub-seabed geological formations that could be used by more than one country or where sub-seabed geological formations are located in areas where there is the potential for transboundary movement of CO2 streams after injection the Contracting Party where the injection occurs should be responsible for the implementation of these Specific Guidelines.

Transboundary CCS London Convention

- **CO2 Specific Guidelines (revised draft 1 Nov 2012 for subsurface transboundary migration)**
- 1.10 (cont) Consent should be sought for the use of the sub-seabed geological formation from all countries with jurisdiction over this sub-seabed geological formation, without prejudice to international law including as reflected in the relevant provisions of UNCLOS. The Contracting Party where the injection occurs should cooperate with other relevant Contracting Parties, other States and other relevant entities, to ensure adequate sharing of information as needed and in accordance with international law, including by way of arrangement or agreement to ensure that these Specific Guidelines are implemented effectively.

Transboundary CCS London Convention

- **CO2 Specific Guidelines (revised draft 1 Nov 2012 for subsurface transboundary migration)**

- 1.11 These guidelines will apply in case of export of CO_2 streams for disposal according to article 6, paragraph 2, of the London Protocol once the amendment of 2009 (see resolution LP.3(4), adopted on 30 October 2009) has entered into force.

Transboundary CCS London Convention

- **Draft guidelines prepared for "Development and implementation of arrangements or agreements for export"**
  - Application of amendment
  - Content of agreements or arrangements

- Work continues at LC Scientific Group (May 2013) and LC 35 (Oct 2013)

Conclusions and Implications

- IPCC Guidelines for GHG Inventories (2006) provides guidance on responsibilities for emissions from transboundary CCS activities.
  - Except for into international waters
- For storage beneath sea-bed
  - Storage in transnational storage formations is now possible to be permitted
  - Export (above ground) to other countries is still prohibited (unless for utilisation eg EOR)
- For projects in developing countries
  - Projects are not accommodated in the CDM rules. Hence unlikely to be approved for CDM.

Useful information sources

- London Convention http://www.imo.org
- UCL Carbon Capture Legal Programme http://www.globalccsinstitute.com/networks/cclp
- IEA Regulatory Network http://www.iea.org/topics/ccs/ccslegalandregulatoryissues/ (Model Regulatory Framework, Legal Review, Webinars)
- http://unfccc.int/

International
Energy Agency

Thank you