

# **CCS**

## **Recent Transboundary Developments**

Tim Dixon

IEA Greenhouse Gas R&D Programme

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# Transboundary CCS

## UNFCCC



- 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
  - 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.

# Transboundary CCS

## UNFCCC



- IPCC GHG Inventory Guidelines 2006



# **Carbon Dioxide Capture and Storage. Transboundary Issues**

Tim Dixon

IEA Greenhouse Gas R&D Programme

UNFCCC Technical Workshop on  
Modalities and Procedures for CCS in CDM  
7-8 Sep 2011, Abu Dhabi

# 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.** CO<sub>2</sub> 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 CO<sub>2</sub> captured, any emissions from transport and/or temporary storage that takes place in Country A, and the amount of CO<sub>2</sub> exported to Country B.
- Country B should report the amount of CO<sub>2</sub> 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.** CO<sub>2</sub> 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 into B and seepage in B (IPCC Scenario 2)*
  - *Capture in A and storage in A and unintentional migration into international waters (and seepage in B) – CBD Geoengineering*
  - *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 CO<sub>2</sub> 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 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’
- Agreement shall include : permitting responsibilities; for export to non-LP Parties provisions equivalent to LP’s for issuing permits.

# Transboundary CCS London Convention



- Transboundary amendment in 2009 to allow CO<sub>2</sub> export. Needs 27 countries to ratify to come into force. 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 **CO<sub>2</sub> 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 from Specific Guidelines
- Both for comment/work/approval at LC-34, 29-Oct 12, London
- Revised CO<sub>2</sub> 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)
- Definition: Transboundary movement of CO<sub>2</sub> streams after injection is defined as movement of CO<sub>2</sub> streams across a national boundary within a transboundary sub-seabed geological formation after the CO<sub>2</sub> 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<sub>2</sub> 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)
- 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)
- 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)
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- 1.11 These guidelines will apply in case of export of CO<sub>2</sub> 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. [3](#)

# 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)

# Useful information sources



- London Convention <http://www.imo.org>
- UCL Carbon Capture Legal Programme <http://www.ucl.ac.uk/cclp/>
- IEA Regulatory Network <http://www.iea.org/ccs/legal/index.asp>  
(Model Regulatory Framework, Legal Review, Webinars)
- <http://unfccc.int/resource/docs/2011/sbsta/eng/inf07.pdf>
- [http://unfccc.int/documentation/submissions\\_from\\_parties\\_in\\_2011/items/5901.php](http://unfccc.int/documentation/submissions_from_parties_in_2011/items/5901.php)
- [http://unfccc.int/parties\\_observers/ngo/submissions/items/3689.php](http://unfccc.int/parties_observers/ngo/submissions/items/3689.php)