



EUTurbines • Bd. A. Reyers 80 • 1030 Brussels • Belgium

Ms. Christiana Figueres  
Executive Secretary  
UNFCCC secretariat  
P.O. Box 260124  
D-53153 BONN

Contact Florian Böger  
Phone +32 2 706-82 11  
Fax +32 2 706-82 10  
E-mail Florian.Boeger@mcm.be  
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### **Statement of EUTurbines on CCS in the CDM**

Dear Madam Secretary,

EUTurbines is the Association and the voice of the European gas and steam turbine manufacturers employing 70,000 people across Europe with a turnover of 25 billion euros. Gas and steam turbines are the key element for future power generation offering the highest degree of fuel flexibility – from fossil fuels through nuclear and solar energy to biomass. Our members are Alstom, Ansaldo Energia, Dresser-Rand, GE Energy, MAN Diesel & Turbo, Rolls-Royce, Siemens, Skoda and Solar Turbines.

We are writing in order to express our sincere hope that the COP16 decision will lead to a final decision of including CCS in CDM at COP17 in Durban.

The inclusion of CCS in CDM is an important step forward to accelerate the deployment of CCS in developing countries, countries that are still very dependent on fossil fuels as part of their base-load need for power. The income from CDM will provide a contribution to the financing of CCS. It will also pave the way for inclusion of CCS in a future reformed CDM or New Mechanism whatever may be the outcome of continuous negotiations on this issue. Furthermore, inclusion of CCS in CDM is an important signal for the UNFCCC to send globally, clearly stating that they recognise the needs of developing countries and see CCS as a valid CO<sub>2</sub> mitigation technology to reduce emissions. Thereby the decision would help to raise additional sources of funding and enable increased deployment and emissions reductions in developing countries.

EUTurbines

[www.euturbines.eu](http://www.euturbines.eu)

**European Association of Gas and  
Steam Turbine Manufacturers**  
President  
Dr. Chris Floyd  
Secretary General  
Matthias Zelinger

Lyoner Str. 18  
60528 Frankfurt/Main  
Germany  
Phone +49 69 66 03-17 48  
Fax +49 69 66 03-27 48  
[matthias.zelinger@vdma.org](mailto:matthias.zelinger@vdma.org)

Diamant Building  
Boulevard A. Reyers 80  
1030 Brussels, Belgium  
Phone +32 2 706-82 11  
Fax +32 2 706-82 10  
[Florian.Boeger@mcm.be](mailto:Florian.Boeger@mcm.be)

With these arguments, we would like to bring to your attention the necessity to include this technology into the CDM by addressing issues that were agreed on in Cancun. In this letter we provide you with technical responses to citations in the Cancun protocol and with reference to other relevant documents. We would be pleased to take these points into consideration:

#### Addressing issues from Cancun text

##### 1. Site selection criteria (Para. 3.a & d)

###### Technical response

- Good site characterisation and selection procedures are key to ensuring permanent storage of CO<sub>2</sub> (noting that criteria should not be technology prescriptive).
- Site specific risk assessment undertaken in as an integral part of the site characterisation and selection (see section 7 below).
- Utilises the practices and technologies of other industries that operate in the subsurface including petroleum, underground gas storage and waste disposal.
- Following conclusion of the site selection and risk assessment the operator will use the findings to develop a Field Development Plan (to include site specific plans for operating and monitoring (Section 2) which it will agree with the Host Country.

###### Existing work of relevance

- London Protocol, Risk Assessment and Management Framework for CO<sub>2</sub> Sequestration in Sub-Seabed Geological Structures; Appendix 1, Information for Site Selection and Site Characterization.
- EU CCS Directive, Annex I, Criteria for the Characterisation and Assessment of the Potential Storage Complex and Surrounding Area Referred to in Article 4(3)
- DNV CO<sub>2</sub>Qualstore (P19 – 27).

###### Approach under CDM

- CMP adopt criteria for site selection to be used by CCS project developers.
- Project developer agrees with the host country on the storage site to be selected
- Project developer details the site characterisation and selection activities along with the site specific operating plan in the Project Design Document (PDD).
- During the project validation stage the DOE independently assesses the information contained in the PDD including whether the project developer adequately considered the CMP approved site selection criteria.
- EB makes registration decision, referring to CMP criteria

## 2. Monitoring plans (Para. 3.b & d)

### Technical response

- Monitoring of geological storage key to providing assurance that CO<sub>2</sub> is permanently contained (Noting that good site selection, development and management practices are key to ensuring that the injected CO<sub>2</sub> is securely stored).
- Monitoring will need to be used in conjunction with modelling (section 3) and measurement to ensure that emission reductions are real, measurable and verifiable (XXX Marrakech Accords).
- Utilises the practices and technologies of other industries that operate in the subsurface including petroleum, underground gas storage and waste disposal.
- Monitoring plans need to be site specific, performance based and developed on the basis of the site characterisation and selection (section 1), site specific risk assessment (section 7) and operating plan.
  - Discuss monitoring arrangements over life of CCS project (crediting and post-crediting).
  - Monitoring should continue during both the crediting period and post-crediting. Should continue until the monitoring results demonstrate that the CO<sub>2</sub> is permanently contained. Following this the host country decides whether the monitoring can be stopped or continued at a low-intensity.
  - Monitoring data should be recorded and stored in a manner which enables independent verification if necessary.
- Monitoring also required for capture and transportation facilities – standard techniques / methodologies applied.

### Existing work of relevance

- IPCC 2005, Special Report on CCS (p.234 – 242).
- IPCC 2006 GHG Inventory Guidelines
- EU CCS Directive, Annex II, Criteria for Establishing and Updating the Monitoring Plan Referred to in Article 13(2) and for Post-Closure Monitoring
- London Protocol, Risk Assessment and Management Framework for CO<sub>2</sub> Sequestration in Sub-Seabed Geological Structures.
- Recent new CCS CDM methodologies

### Approach under CDM

- CMP adopt criteria for monitoring to be used by CCS project developers.
- Project developer agrees site specific monitoring plan with host country.

- Project developer details site specific monitoring plan in the PDD.
- DOE to validate that project developer has developed a monitoring plan that adequately considers the monitoring criteria adopted by the CMP
- During project verification the DOE to confirm that the project developer has implemented the agreed monitoring plan and the emission reductions achieved by the CCS project as demonstrated by the monitoring results.
- EB makes registration decision, referring to CMP criteria

### 3. Role of modelling (Para. 3.c)

#### Technical response

- Modelling is an important tool used to support work undertaken during the site characterisation and selection phases, the risk assessment and the development and implementation of the site monitoring plan.
- CCS CDM projects should not be credited based solely on the modelling of stored CO<sub>2</sub> but on the combination of modelling and monitoring as outlined in 2006 IPCC Inventory Guidelines, and should only be credited on the basis of emissions reductions that are real, measureable and verifiable.
- Modelling complements the use of measurement and monitoring of CO<sub>2</sub> to verify that the CO<sub>2</sub> is permanently stored.
  - Results of the monitoring used to update the models of the storage system

#### Existing work of relevance

- IPCC 2006 GHG Inventory Guidelines (p.5.13 – 5.16)
- IPCC Special Report CCS (p.225 – 230)

#### Approach under CDM

- Approval by the host country of the Project Development Plan (including the site selection, operation and monitoring plans) developed by the project developer based on assessment that the plans have used the appropriate techniques including modelling, measurement and monitoring.
- Project developer to include relevant information on the approach used for site selection and development of operation and monitoring plans in the PDD.
- DOE assesses the approach during project validation, and also during the periodic project verification phase.
- EB registration decision

#### 4. CCS project boundaries (Para. 3.e - g)

##### Technical response

- Requirements of the CDM; the project boundary should “encompass all anthropogenic emissions by sources of greenhouse gases under the control of the project participants that are significant and reasonably attributable to the CDM project activity”.
- The boundary for CCS projects to cover the whole chain; capture, transportation and storage - presents no practical difficulties for CCS.
- CCS project boundary based on the findings of the site characterisation and selection (Section 1) and risk assessment exercise (section 7).
- Any release of CO<sub>2</sub> emissions from the project boundaries (including capture, transportation and storage) will be determined by the site specific monitoring enabling the emissions to be measured and accounted for as part of the project activity.
- All of the relevant data collected during the monitoring and operation of the CCS project (not just reservoir pressure) should be collected and archived by the project operator to enable project verification.

##### Existing work of relevance

- CDM M&Ps
- IPCC 2006 GHG Inventory Guidelines (p5.5 – 5.12)
- IPCC Special Report CCS

##### Approach under CDM

- Project developer should delineate and agree with the host country on the project boundary.
- The project boundary should be clearly outlined in the PDD.
- DOE to confirm that project boundary meets the requirements of the CDM M&P during project validation and future verification.
- Both the host country and CDM Executive Board (CDM EB) should keep a register of CCS projects which includes a record of the project boundary of the CO<sub>2</sub> store.

#### 5. Transboundary projects (Para. 3.h)

##### Technical response

- Transboundary projects could occur if CO<sub>2</sub> is exported from one country to another for storage or more than one country utilises a storage site which crosses a common national border.

- The overwhelming majority of CCS projects will have project boundaries that are contained well within the national borders of the host country and so in practice there will be very few transboundary CO2 stores.
- Parties to the London Protocol amended the protocol in October 2009 to permit the transboundary export of CO2 for storage in sub-seabed geological formations.
  - There are already transboundary CCS projects occurring onshore in Annex I Parties (Weyburn).
- The IPCC 2006 Greenhouse Gas Inventory Guidelines foresees transboundary projects and recommends to Parties how emissions from such projects should be reported.
- Transboundary projects will have to establish liability regime arrangements that address the specific nature of such projects (Section 8). These liability arrangements should build on the reporting arrangements outlined in the IPCC 2006 guidelines.
- A theoretical transboundary issue that could arise is where stored CO2 migrates in the geological formation, crosses a national border and then leaks from the store. If such a scenario is considered to be a realistic probability during the site characterisation (Section 1) and risk assessment (Section 7) phases and the other country sharing the geological formation does not signal approval for that project then the project should not be registered by the CDM EB.

#### Existing work of relevance

- London Protocol, Article 6.
- IPCC 2006 GHG Inventory Guidelines (p.5.20)

#### Approach under CDM

- Transboundary CDM CCS projects should only be registered where the Designated National Authorities (DNA) of all participating countries confirm national approval to co-host the project.
- The national approvals submitted by the DNAs should clearly establish the respective responsibilities of the host countries including liability arrangements. The liability arrangements should follow the recommended methodology for recording emissions from transboundary projects outlined in the IPCC 2006 Guidelines.

#### 6. Accounting for project emissions (Para. 3.i)

##### Technical response

- Reference IPCC 2006 Guidelines approach to accounting for project emissions.

- Leakage defined under the CDM “as the net change of anthropogenic emissions by sources of greenhouse gases which occurs outside the project boundary, and which is measurable and attributable to the CDM project activity”
- These should apply to CCS projects; project emissions will be determined by the implementation of the monitoring plan.

#### Existing work of relevance

- Reference existing CDM M&Ps on project emissions and leakage
- Reference IPCC 2006 Guidelines (p.5.5 – 5.21).

#### Approach under CDM

- Project emissions should be accounted for and will be determined during the verification by the DOE review of the project monitoring results.
- In common with the inclusion of other technologies under the CDM, leakage should be accounted for as project emissions.

### 7. Risk and safety assessment (Para. 3.j - l)

#### Technical response

- All CDM project developers must undertake an Environmental Impact Assessment as an eligibility requirement for projects to be registered under the CDM. This requirement should be extended to CCS projects included under the CDM.
- The CCS site selection criteria adopted by the CMP (Section 1) should include a section on the risk assessment of the potential store.
- A broader Environmental Impact Assessment (EIA) – which includes an assessment of risks and safety of the operation of the full CCS chain should be undertaken by the project proponent (This is not materially different from the EIA undertaken on all large industrial projects).
- The EIA assessment for the CCS project as a whole does not need to be undertaken by independent entities as not standard CDM practice. Standard practice is that the project proponents undertake an Impact Assessment (IA) which may be extended to a full EIA if considered significant (Host country controls scope of EIA). DOE only confirms that impacts have been considered during validation.
- Address reference to ‘massive and catastrophic’ release of CO<sub>2</sub>.

#### Existing work of relevance

- Reference CDM M&Ps on the impact assessment process.
- EU CCS Directive, Annex I, Criteria for the Characterisation and Assessment of the Potential Storage Complex and Surrounding Area Referred to in Article 4(3) – Step 3.3.

- DNV CO2Qualstore (p.17; 25 – 27; 39; 65 – 72).

#### Approach under CDM

- CMP to include risk assessment criteria in the site selection criteria they will adopt.
- Project developer agrees with the host country on whether the storage site should be selected based on results of risk assessment.
- Project developer includes the results of the risk assessment exercise in the PDD.
- DOE confirms that risk assessment criteria addressed during validation phase.
- DOE confirm that impact assessment undertaken by project developer.

#### 8. Liability (Para. 3.m & n)

##### Technical response

- Define liability;
  - Liability in relation to release of CO2 – issue that needs to be addressed in context of CDM.
  - Liability for local impacts of CO2 release, i.e. local environment, resources, communities, etc – issue needs to be addressed by host country.
- Discuss widely accepted approach to liability regimes during the operation, post-closure and post-transfer regimes.
- Countries have adopted broadly similar approaches although details and mechanisms vary. CDM should follow approach and require clearly defined liability arrangement to be established before project can be registered.
  - The detail on how to implement liability regime should be left to host country to agree with project developer.
  - Do not want establishment of international liability regime or issuance of temporary CERs as is done with some forestry projects (tCERs have very little market value).
- Example of potential host country liability arrangements;
  - Operator remains liable for store until stored CO2 is demonstrated to be permanently stored. Following which a number of options available;
    - Responsibility for the store reverts to the host country. Host country surrenders CERs in the very unlikely event that any subsequent seepage of CO2.
    - Host country establishes a pool of CERs which can be surrendered in the very unlikely event that any subsequent seepage of CO2.



- Address induced seismicity comment in text.
- Issue of redress (para 3.n(i)) a national issue and similar to the arrangements established for other industrial activities.
  - Address scenario of migration and seepage into another country (refer to Section 6 above).
- Allocate liability amongst entities sharing reservoir, options; EU approach one operator per storage site alternatively can use standard commercial arrangements to manage liability between operators.

Existing work of relevance

- Reference approach adopted in other regions.

Approach under CDM

- Any seepage of CO<sub>2</sub> during the crediting period should be accounted for as project emissions.
- Project developer and host country agree on the liability regime that will regulate the proposed project in the unlikely event that seepage emissions are greater than the credits to be issued for that crediting period or for seepage after the crediting period.
- Host country DNA issues statement at the national approval stage confirming that it has established a liability regime with the project proponent.
- Host country DNA commits to the CDM EB that it holds ultimate responsibility for the site and provides assurance that in the event of any seepage of CO<sub>2</sub> that cannot be accounted for as project emissions then an equivalent volume of CERs or equivalent will be surrendered or additional mitigation actions undertaken to compensate for the volume of CO<sub>2</sub> released.
- DOE to confirm that liability arrangements established by host country during validation.

We remain at your disposal for further queries.

Yours sincerely,



Matthias Zelinger  
Secretary General