Annex 11

Possible implications of the inclusion of CCS as CDM project activities

1. Decision 2/CMP.4 requested the CDM Executive Board to assess the implications of the possible inclusion of carbon dioxide capture and storage (CCS) in geological formations as clean development mechanism project activities, taking into account technical, methodological and legal issues, and report back to the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol at its fifth session.

2. The CDM Executive Board conducted a study on the matter and agreed that the implications of the possible inclusion of carbon dioxide capture and storage in geological formations as clean development mechanism project activities may be considered under different perspectives summarized in Table 1 below.

3. The CDM Executive Board noted that the issue of possible inclusion of CCS in geological formations as clean development mechanism project activities is on the agenda of other Convention Bodies and recommends that further considerations be undertaken by the COP/MOP Bureau on this issue.

4. The CDM Executive Board recommends the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol to request the CDM Executive Board not to consider any CCS related CDM baseline and monitoring methodologies submission until further guidance is provided.

Table 1: Possible implications of the inclusion of CCS as CDM project activities

Issues	Positive	Negative
Technical issues		
Emission reductions are to be real, measurable and of long-term benefit (Article 12 of the Kyoto Protocol, paragraph 5).	The system that allows emissions reductions to be real, and measurable can be designed for CCS projects through proper site characterization and selection process, procedures for operation and monitoring and seepage remediation options.	Detailed criteria for assessment of the site characterization is still lacking. Carbon capture and storage does not necessarily mean long term emission reduction because the storage might not be permanent. Stored carbon is not measured but modelled.

Environmental issues		
An Environmental Impact Assessment is to be undertaken if the impacts of the projects activities are considered significant. (Annex of Decision 3/CMP.1, paragraph 37 (c)).	It is possible to conduct for any CCS project a comprehensive Environmental Impact Assessment as required by CDM modalities and procedures.	The lack of experience on CCS compared to the current eligible CDM projects, the lifetime of the projects and the uncertainty on the risk of seepage make the Environmental Impact Assessment challenging for CCS. The ToR and review process for IEEs and EIAs is currently solely within the purview of the host country. A faulty EIA could have regional or international implications, if it leads to poor site selection or operating practices that result in leakage.
Methodological issues		
The project boundary shall encompass all anthropogenic emissions by sources of GHG under the control of the project participants that are significant and reasonably attributable to the CDM project activity (Annex of Decision 3/CMP.1, paragraph 52). The project design document shall include a description and a justification of the project boundary. (Annex of Decision 3/CMP.1, appendix B (a)).	A predictive modeling and simulation of CO2 migration to include larger 'storage complex' might ensure that the CO2 plume will stay in the project boundary. The carbon capture installation and the storage site can be entirely located within the same host country, thereby minimizing the risk that any project boundary moves beyond the host country boundaries.	A reservoir may cover different countries or international waters and after storage the plume may migrates irrespectively to plans or political borders. There are difficulties in defining the project boundaries if there are several different injection points from different projects activities in different time frames. A change of project boundary during the project lifetime may be required. Project boundary is difficult to define in a situation in which potential leakage or seepage may result in international impacts. Project boundaries are determined by modeling under CCS. The uncertainty inherent to a model approach may be difficult to handle within the CDM system.
Project emissions, baseline emissions and leakage emissions are to be determined (estimation or measurements) during the crediting period. (Annex of Decision 3/CMP.1, paragraph 53 (a), (b) and (c)).	It is possible to determine the project emissions through modelling and simulation. The monitoring is based on measurement.	Project emissions as well as leakage can occur over a long time after the crediting period. Instead of a precise monitoring plan, only a dynamic monitoring approach may be defined.

		The quantification of the project emissions in the form of seepage might introduce a challenging uncertainty issue.
Project emissions, baseline emissions and leakage emissions are to be determined (estimation or measurements) during the crediting period (Annex of Decision 3/CMP.1, paragraph 53 (a), (b) and (c)). The CDM modalities and procedures include no provisions in order to enforce post-crediting period monitoring;	The monitoring techniques are already available for a majority of possible storage sites. Post crediting period monitoring and endorsement of liability is possible.	Protocols for long-term monitoring are not established. Time period for the monitoring activity is not determined.
Verification is the periodic independent review and the ex-post determination by the designated operational entity of the monitored reduction in anthropogenic emissions by sources of greenhouse gases that have occurred as a result of a registered CDM project activity during the verification period (Annex of Decision 3/CMP.1, paragraph (61).	It is possible to determine the project emissions through modelling and simulation. The monitoring is based on measurement and the verification of monitored emissions is possible.	The time period for the verification and the dynamic nature of the monitoring make the verification challenging. Furthermore, only the quantity of carbon captured and injected can be monitored and verified.
Legal issues		
The CDM modalities and procedures do not provide provisions in order to enforce post-crediting period liability because either the crediting concerns permanent emissions reduction already achieved either temporal credits expiring after a given period of time.	The host country may assume long-term liability via, *inter alia*: (i) Buffer credit; (ii) Temporary credit; or (iii) Long term institutional arrangement. Investor countries can also assume the long-term liability.	The transfer of liability to host countries may not be guaranteed because they may not accept to assume the long-term liability. Actions required to ensure liability of the host country in the long term after the crediting period of the CDM projectare not defined. Stable political, economic and institutional structures are required to be liable for surrendering credits. Stability does not necessarily exist in the liable institutional structure in the long term.

		It is not clear how liability transfer will be handled in the event of a change in political administration. An international regulatory and institutional framework may be required to deal with the international implications.
Market issues		
Risk of unbalancing the carbon market.	There is no indication that CCS under CDM would introduce a risk of unbalancing the carbon market. CER prices would only be affected if CCS projects would affect the marginal price in the market.	There are no studies to assess possible impacts of CCS in the CDM market but credits from CCS coming to the market may affect the CERs prices. It may also affect the development and deployment of renewable energy and energy efficiency technologies.
Impact on regional distribution of CDM projects.	CCS impact on regional distribution of CDM projects is not yet known. However, it is likely that it will benefit mainly countries that are fossil fuel producers and/or users, some of which are currently underrepresented in the CDM.	CCS impact on regional distribution of CDM projects is not yet fully known.However, it is likely that it will benefit mainly countries that are fossil fuel producers and/or users.
Economic aspects.	For the power sector in developing countries, additional financial incentives combined with market-based mechanisms are needed to stimulate investments in CCS . For the other sectors, market-based mechanisms might be sufficient to stimulate investments in CCS.	The only mature market technology for geological storage listed by IPCC in the Special Report on CCS is the enhanced oil recovery and this type of projects may not depend on CDM incentives and/or may not be additional. EOR may result in breakthrough of CO2 and may bias site selection against more stable geological sites. Inclusion of CCS within the CDM may place less emphasis on finding other more suitable financial mechanisms or government policies, including those within the UNFCCC. Policies to promote CCS may be challenging to be considered under (E+/E-) CDM rule.

EB 50, Annex 11 16 October 2009	**Decision Class:** Regulatory **Document Type:** Recommendation **Business Function:** Methodology, Registration