

Name of submitter: Tim Dixon

Affiliated organization of the submitter (if any): IEAGHG

Contact email of submitter: tim.dixon@ieaghg.org

Date: 23 June 2013

Questionnaire for soliciting public inputs on the ‘concept note on operationalizing carbon dioxide capture and storage as a CDM project activity’

Background: The Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (hereinafter referred to as the CMP) adopted at its seventh session decision 10/CMP.7; "Modalities and procedures for carbon dioxide capture and storage in geological formations as clean development mechanism project activities" (hereinafter referred to as the CCS modalities and procedures).

At its seventy-second meeting, the CDM Executive Board (the Board) approved the ‘workplan of the CDM Executive Board for 2013’. In the workplan Board approved to launch a public call for concept note of project 160 ‘Operationalizing carbon capture storage (CCS)’. The input received from this call for input will be considered in seventy fourth meeting of the Board.

QUESTIONNAIRE

Part I: Overall assessment of the concept note

Please provide general suggestions for improvement and editorial comments on the draft document. For example, is the document:

- | | |
|---|-----|
| (a) Well written; | Yes |
| (b) Simple and accessible; | Yes |
| (c) User-friendly; | Yes |
| (d) Well-organized, with flow of logic that is clear; | Yes |
| (e) Exemplified; | |
| (f) Complete | |

Part II: Input on specific and technical issues

The concept note has discussed the main issues in CCS modalities and procedures which may need clarity for implementation. The inputs are sought on the following:

- a. **Coverage of issues:** Are the issues covered in concept note adequate? Is there any other issue which require further clarification?
- b. **Options and recommendations:** Do you propose some other option and recommendation other than mentioned in the concept note?

Regarding 3.4 Selection and characterisation of geological storage site – potable water

IEAGHG agrees with the recommendation option (b) that a decision can be made by the host party based upon the risk assessment and environmental impact assessment required by the Modalities and Procedures. It is recalled from participation at the time that recommendation option (a) was not the intention of the Modalities and Procedures, but merely to flag that the topic needs to be considered if the potential is there for that specific storage site (storage site being defined in Modalities and Procedures as series of geological formations of high and low permeability suitable to trap injected CO₂). This coincidence of uses

of the same aquifer will be a relatively rare occurrence, as generally drinking water is extracted from aquifers at a shallower depth than will be used for CO₂ storage. In any case, it should be left to the host Party to decide on use of its resources, which will depend upon its specific national characteristics and policies.

It should also be noted that the geological subsurface is a 3-dimensional environment, and it is not uncommon practice to have multiple uses of the subsurface at the same location, but at different depths. It would be possible for both CO₂ injection and drinking water extraction to occur at the same location without compromising the potable aquifer. The CO₂ injection well integrity would need to be appropriate through the potable aquifer, and this requirement exists in the Modalities and Procedures in Appendix B, sections 4.d.ii and 5.e, and 7.a.i and 7.b.i. Such protection of potable aquifers is also routinely regulated and practiced in well construction practices for other applications. It is also possible that there will be cases where CO₂ injection may assist with drinking water extraction, where CO₂ injection occurs in formations which have pressure-connectivity to the drinking-water formation and can so assist in re-pressurisation of the potable aquifer which would be beneficial to the water extraction (References (1) IEAGHG 2011/11 and (2) IEAGHG 2013/08).

Regarding 3.5 Monitoring - definition of significant deviation.

IEAGHG recently held a meeting of two of its research networks, the Modelling Network and the Risk Management Network, in Trondheim on the 10-13 June 2013. The attendees (approximately 65) were leading experts on these subjects from a range of countries across the world, including North America, EU, Australia and Japan. The subject of definition of a 'significant deviation' was intentionally discussed in this consultation context (reference 3). Note that this topic has been significantly discussed previously in the context of storage site transfer, including in the UNFCCC workshop in Abu Dhabi in September 2011 (reference 4). Based upon those discussions in Trondheim, Abu Dhabi and elsewhere, and based upon the growing evidence-base from experience at real projects, the IEAGHG suggest that recommendation 3.5.2 parag 25 would not be a good solution because history-matching will inevitably show some deviations between predicted and actual behaviours for CO₂ plume migration, and whether these deviations constitute a 'significant deviation' should be based upon a risk assessment and expert judgement which will be specific to the project and the site and the stage of the site's activity. Therefore it would be wrong to assign a quantitative % value to a plume migration parameter on an individual project (and across projects) to define a significant deviation. IEAGHG therefore suggests that recommendation 3.5.2 parag 25 be changed to: "The definition of what is "significant" may vary, as it depends on the model used, the input values and other site specific parameters. Whether any deviations constitute a 'significant deviation' should be based upon a risk assessment and expert judgement which will be specific to the project and the site and the stage of the site's activity."

This is in the context of history-matching of the measured CO₂ plume migration behaviour. Note that for the CO₂ injection pressure and evolution of that pressure, this is a necessary operational measurement, and such a quantitative % can be applied as this will need to be known and measured to ensure that the fracture pressure of the cap-rock is not approached. This requirement already exists in the Modalities and Procedures sections 4.c, 4.d, 5.c, 8.c, 9.a.iv, 11.f, and 11.g.

IEAGHG agrees with the recommendation in parag 26 on informing the host Party immediately.

References

1. Potential Impacts on Ground Water Resources by CO₂ Storage. IEAGHG Report 2011/11. Oct 2011.
2. Interaction of CO₂ Storage with Subsurface Resources. IEAGHG Report 2013/08. April 2013
3. <http://www.ieaghg.org/index.php/?/20130201327/combined-modelling-and-risk-management-network-meeting.html>. See the presentation on 'How risk and modelling are embedded into emerging regulations, T.Dixon
4. Technical workshop on modalities and procedures for CCS in geological formations as CDM project activities, 7-8 Sep 2011. http://unfccc.int/methods/other_methodological_issues/items/6144.php. See the presentation 'Monitoring- Objective Technologies and Predictive Modelling, A.Chadwick

- c. **Additional standards/procedures:** Do you require any additional procedures/guidelines/standards which may help fulfilling the requirements for CCS project activity as mentioned in CCS modalities and procedures? If yes, kindly explain.

Part III: Other comments/inputs

Please provide comments/inputs on any other general or specific issue that you identify with the draft or any other issue which may help in operationalizing the CCS CDM project activities, using the commenting table below:

0	1	2
Para No.	Issue to be addressed (including need for change)	Proposed change (including proposed text, if applicable)