



MEETING SUMMARY

Monitoring of Geologic Storage for Commercial Projects Task Force Meeting
Bergen, Norway
11 June 2012

Prepared by the CSLF Secretariat

LIST OF PARTICIPANTS

Chairman: Lars Ingolf Eide (Norway)

CSLF Delegates

Australia:	Clinton Foster, Richard Aldous
Brazil:	Paulo Negrais Seabra
Canada:	Stefan Bachu
China:	Ping Zhong
Denmark:	Niels Peter Christensen
European Commission:	Stathis Peteves, Jeroen Schuppers
France:	Didier Bonijoly
Germany:	Jürgen-Friedrich Hake
Italy:	Sergio Persoglia
Japan:	Ryo Kubo
Netherlands	Paul Ramsak
Norway:	Trygve Riis
Saudi Arabia:	Ahmed Aleidan
United Kingdom:	Philip Sharman
United States:	Joseph Giove, Grant Bromhal

CSLF Secretariat: John Panek, Richard Lynch

Observers

China:	Mingyuan Li, Xiaochun Li, Wu Xiuzhang
Germany	Martin Streibel
Norway:	Arne Graue, Åse Slagtern, Aage Stangeland
United Kingdom:	Mark Crombie, Vince White
United States:	Chris Babel, Robert Finley, Jeff Jarrett, Scott McDonald

1. Welcome and Summary of Task Force Formation

Trygve Riis introduced Lars Ingolf Eide as the Chair of this task force, and also provided a short summary of how the task force was formed. “Storage and Monitoring for Commercial Projects” was one of the twelve Actions in the new Technical Group Action Plan, and received the highest ranking in terms of importance from a poll of Technical Group delegates. At the previous meeting of the Technical Group, in September 2011 in Beijing, Norway had volunteered to chair a new task force on this Action.

2. Discussion of Objective and Scope of Task Force

Mr. Eide proposed that the objective of the task force would be to perform regular identification and review of new and updated standards for storage and monitoring of injected CO₂. The application of such standards should inform CO₂ crediting mechanisms. The proposed scope of the task force would include:

- Identifying and reviewing new and updated standards for geological CO₂ storage and monitoring on an annual basis;
- Identifying and reviewing new and updated guidelines for communication with and engagement of involved communities and regulators on an annual basis;
- Keeping track of the work within ISO, where a CCS working group has been established and has recommended global standards on CCS to be elaborated;
- Producing annual summaries of new as well as updated standards, guidelines and best practice documents regarding geological storage of CO₂ and monitoring of CO₂ sites; and
- Following the work of other task forces related to CO₂ storage

After ensuing discussion from many of the CSLF delegates present, there was consensus that the task force should review but not produce standards and guidelines, and that the objective of the task force be slightly changed (by substituting “initial” for “regular”) to show that it will not go on indefinitely. Also, there was agreement that the original name of the task force (“Storage and Monitoring for Commercial Projects”) was not accurate, as the activities of the task force are related to monitoring and not storage. There was consensus that henceforward, the name of this task force is “Monitoring of Geologic Storage for Commercial Projects”.

Additional discussion centered on the proposed interaction with the ISO. It was pointed out that the ISO covers many standards and that this task force should not try to duplicate any outside work. There was agreement that it would be beneficial if the CSLF had a voice within the ISO, but being involved with the ISO requires being appointed. However, the ISO does have a provision for organizations being recognized as associates. There was consensus that Norway should take the lead in trying to find out if the CSLF can become an associate member of the ISO. The task force will provide input as needed. In the interim, there was consensus that the Chairman Eide, with the assistance of the Secretariat, should revise the objective and scope of the task force as needed to make it clearer that the task force will not duplicate outside work and to make other changes as suggested by task force members.

3. Discussion on Activities and Deliverables of Task Force

Mr. Eide proposed that deliverables from the task force include interim reports for the next four years, with a final report in 2016. The first interim report is being planned for later in 2012. After ensuing discussion, there was agreement that deadlines for these reports coincide with CSLF meetings. Besides the intention of engaging the ISO, this task force would also maintain a compilation of standards and guidelines, as provided by other organizations, which would be updated annually. There was consensus that the Chairman Eide would take the lead in producing a list of important standards for review by the task force. It was noted that Australia’s CO₂CRC has produced a report that may be useful in that regard. It was also suggested that there should be a decision gate at the 2013 CSLF Ministerial Meeting to decide continuation or termination of the task force, depending on, e.g., the progress made by ISO.

The relevance of including communication with and engagement of involved communities and regulators was raised during the discussion, as this could be considered as being policy. The issue was not resolved.

4. Task Force Membership

During the meeting Grant Bromhal volunteered to participate for the United States. As of June 2012, the task force has the following members:

Family Name	Given Name	Country	Affiliation	e-mail
Arts	Rob	Netherlands	TNO, the Netherlands	rob.arts@tno.nl
Bocin-Dumitriu	Andrei	EC	DG JRC Inst. For Energy and Transport, Energy Systems Evaluation Unit (EC)	Andrei.BOCIN-DUMITRIU@ec.europa.eu
Bromhal	Grant	USA	National Energy Technology Laboratory (NETL)	bromhal@netl.doe.gov
Chadwick	Andrew (Andy)	UK	British Geological Survey (BGS)	rach@bgs.ac.uk
Christensen	Niels Peter	Norway	Gassnova, Norway	npc.gassnova.no
Dixon	Tim	UK	IEA GHG R&D Programme, UK	Tim.Dixon@ieaghg.org
Gong	Bin	China	Peking University, China	gongbin@pku.edu.cn
Li	Qi	China	Chinese Academy of Sciences	qli@whrsm.ac.cn
Li	Xiaochun	China	Chinese Academy of Sciences	xcli@whrsm.ac.cn
Monne	Jacques	France	Total, France	Jacques.monne@total.com
Poulsen	Niels	Denmark	Geological Survey of Denmark and Greenland (GEUS)	nep@geus.dk
Schuppers	Jeroen	EC	DG Research and Innovation, Energy Distribution and Conversion Systems (EC)	Jeroen.SCHUPPERS@ec.europa.eu
Streibel	Martin	Germany	GFZ-Potsdam, Germany	streibel@gfz-potsdam.de
Tzimas	Evangelos	EC	DG JRC Inst. For Energy and Transport, Energy Systems Evaluation Unit (EC)	Evangelos.TZIMAS@ec.europa.eu
Riis	Trygve	Norway	Research Council of Norway	tur@rcn.no
Eide	Lars Ingolf	Norway	Research Council of Norway	lie@rcn.no

5. Closing Comments / Adjourn

Mr. Eide thanked meeting attendees for their input and enthusiasm, and adjourned the meeting.

Action Items

Item	Lead	Action	Deadline	Status
1	Norway	Determine if the CSLF can become an associate member of ISO. Task force will provide input as needed.	ASAP	E-mail was sent to Standards Norway on June 12, 2012 asking for possibilities/procedures.
2	Task Force Chair and Secretariat	Revise objective and scope of task force in response to comments from task force members.	ASAP	Completed. Revised Task Force Action Plan is attached as an Appendix to this meeting summary.
3	Task Force Chair	Produce list of important standards for review by task force. This will be incorporated into the task force's first interim report.	Early September 2012	
4	Task Force Chair	Produce an updated task force membership list.	ASAP	Completed. Revised membership list is shown in Item 4 of this meeting summary.

APPENDIX

Revised Action Plan:

Monitoring of Geologic Storage for Commercial Projects Task Force

Objective

This Task Force shall perform initial identification and review of standards for storage and monitoring of injected CO₂.

The application of such standards should inform CO₂ crediting mechanisms.

Scope

To meet its objective the task force will:

- Identify and review existing standards for geological CO₂ storage and monitoring on an annual basis;
- Identify and review existing guidelines for communication with and engagement of involved communities and regulators on an annual basis;
- Identify shortcomings and/or weaknesses in standards/guidelines;
- Communicate findings to the ISO CCS working group that has been established;
- Produce annual summaries of new as well as updated standards, guidelines and best practice documents regarding geological storage of CO₂ and monitoring of CO₂ sites; and
- Follow the work of other task forces related to CO₂ storage, e.g.:
 - Task Force on Action Plan #7 – Technical Challenges for Conversion of CO₂-EOR to CCS (Chaired by Canada).
 - Task Force on Action Plan #1 – Technology Gap Closure (Chaired by Australia)

Schedule

- Early Sept 2012: Draft of initial compilation of standards, etc.
- Mid Sept. 2012: Comments from task force members
- Late Sept. 2012: Progress/annual report completed and provided to Secretariat
- Late Oct. 2012: Report on activities to CSLF Annual Meeting
- Mid Dec. 2012: Interim report completed
- Mid May 2013: Draft report of compilation of standards, guidelines, etc.
- Early July 2013: Comments from task force members on draft report
- Mid Sept. 2013: Report finalized and provided to Secretariat
- 3Q 2013: Report on activities to CSLF Ministerial Meeting

Milestone/Decision Gate

There is a 2013 report decision gate for termination or continuation of this task force, depending on, e.g., progress made by ISO.

Deliverables

The work and findings of the task force will be reported in:

- An annual interim report by the end of 2012; and
- A report with recommendation on continuation or termination of the task force to the CSLF Ministerial Meeting, 3Q 2013.

Further deliverables will be decided after the decision gate in 3Q 2013. If the decision is to continue the task force, there will be annual reports that coincide with CSLF Annual Meetings in 2014 and 2015. The final report will, in any circumstance, be completed no later than by 3Q 2016.

Background

Since its inception in 2003, the CSLF has focused its efforts to facilitate the research, development, demonstration and deployment of effective, low-cost CO₂ capture and storage (CCS) technologies as a viable option to reduce greenhouse gas emissions in an effort to combat the effects of global warming. For capture, these efforts focused on a variety of technologies applicable to power and industrial plants that use or process fossil fuels. For CO₂ storage, the focus has primarily been on geological sequestration.

National and international regulations regarding storage of CO₂ in the underground are appearing. The European Commission (EC) has issued its directive 2009/31/EC, which does not provide only requirements about site characterization and monitoring but a complete set of regulations regarding CO₂ storage (Subject Matter, Scope and Definitions, Selection of Storage Sites and Exploration Permits, Storage Permits to Operation, Closure and Post-Closure Operations). Also, the EC Directive is in full process of being transposed to member states laws (see: UCL Carbon Capture Legal Programme exercise for more details and progress on the transposition for specific countries: <http://www.ucl.ac.uk/cclp/ccseutransposition.php>).

The OSPAR and London Conventions also have such requirements that will come into force when the conventions have been ratified by a sufficient number of parties. Thus, in connection with applications for underground CO₂ storage it will be beneficial to have standards, guidelines or best practice manuals to facilitate the process.

The first articles addressing the subject of site selection go back to around 2003. The first best practice manual was probably the one produced by the CSLF-recognized CO₂STORE project in 2006. It was later followed by, among others, a generic report on selection and characterizing of a storage sites by CO₂CRC; several NETL best practices; guidelines for the entire CCS chain by World Resources Institute; a technical basis for carbon dioxide storage by the CO₂ Capture Project (CCP); and guidelines from Det norske Veritas (DNV). A review of existing best practice manuals for carbon dioxide storage and regulation was published by CO₂CRC in March 2011.

At the start of 2012 there were eight large-scale integrated projects in operation and seven under construction, in addition to numerous smaller storage projects worldwide (*ref: GCCSI, 2011*). There will be lessons learned from most of these and the experience is likely to find its way into updated and new standards, guidelines and best practices for CO₂ storage and monitoring. Among the full-scale CCS demonstration projects that are under development with committed support of the Oil & Gas Industry are Lacq Project developed by Total and BGRM, Shell projects Longannet, Peterhead (using the Goldeneye offshore geological facility in the North Sea) and Quest, as well as Chevron project Gorgon. Longannet has been cancelled by the UK government due to costs of implementation that were above the established target of £1 billion. More than 70.000 hours of work were invested in the Longannet project and, despite the fact that the project was cancelled, all the experience has been migrated for the implementation of the Peterhead project. Other large-scale integrated CCS projects underway are Boundary Dam, Canada; Kemper County, USA; and ROAD in the Netherlands. Hence, the know-how and experience for implementing full chain CCS projects is there. In conclusion, the experience of the industry and scientific community needs to be abridged and that would lead to better guidelines and practices for the full CCS chain.

Mandate and History

At the CSLF meetings in Beijing, China (September 19-23, 2011) the CSLF Technical Group agreed that the Secretariat should circulate, by the end of the first week of October 2011, a listing of the twelve Actions of its five years Action Plan to Technical Group delegates with the request that that each CSLF Member provide a ranking by priority of importance. Delegates were asked to respond within three weeks and the results were then compiled by the Secretariat. Results from this survey were used to decide which Actions to undertake immediately and which ones to defer. The Secretariat was also asked to solicit ideas for additional Actions from the delegates.

Specifically, the prioritized actions of the five-year plan include Action Plan 6: Storage and Monitoring for Commercial Projects. The formation of a task force to implement Action Plan 6 was proposed and a call to all CSLF Technical Group members was issued February 24, 2012.

Membership

Norway has agreed to lead or co-lead the task force. Membership of this task force is open to CSLF member countries and interested parties. *[Note: those interested in participating on the task force as a member or co-lead should contact the CSLF Secretariat or Mr. Trygve Riis, Research Council of Norway, tur@rcn.no]*