



**Minutes of the Joint Meeting of the
Policy Group and Technical Group
Beijing, China
Friday, 23 September 2011**

LIST OF ATTENDEES

Policy Group Delegates

Chairman:	Charles McConnell (United States)
Australia:	Ann Boon, Margaret Sewell
Brazil:	Daniel Falcon Lins
Canada:	Marc D'Iorio, Milenka Mitrović
China:	Xin Li, Sizhen Peng
European Commission:	Wiktór Raldow
France:	Bernard Frois
Germany:	Hubert Höwener, Peer Hoth
Italy:	Liliana Panei
Japan:	Hirotsada Bessho, Shigenori Hata
Korea:	Byung Ki Park, Wonchang Yang
Mexico:	José Miguel González Santaló
Netherlands:	Paul van Slobbe
Norway:	Tone Skogen, Kristoffer Stabrun
Poland:	Janusz Michalski, Marek Wejtko
Saudi Arabia:	Abdulmuhsen Alsunaid, Abdullah AlSarhan
South Africa:	Elizabeth Marabwa, Muzi Mkhize
United Arab Emirates:	Keristofer Seryani
United Kingdom:	Jeremy Martin, James Godber
United States:	James Wood

Technical Group Delegates

Australia:	Niki Jackson
Brazil:	Beatriz Espinosa, Viviana Coelho
Canada:	Stefan Bachu, Eddie Chui
China:	Ping Zhong
European Commission:	Jeroen Schuppers
Italy:	Giuseppe Girardi, Sergio Persoglia
France:	Didier Bonijoly
Japan:	Ryo Kubo
Korea:	Chang-Kuen Yi
Norway:	Trygve Riis (Chairman)
Saudi Arabia:	Khalid Abuleif
United States:	Joseph Giove, George Guthrie

CSLF Secretariat

Barbara McKee, Jeffrey Price, John Panek, Richard Lynch, Adam Wong, Jeffrey Jarrett, Kathryn Paulsgrove

Observer Participants

Dietrich M. Gross, Jupiter Oxygen (United States)
 John Lyman, Atlantic Council (United States)
 Andrew Paterson, CCS Alliance (United States)
 David Wendt, Jackson Hole Center for Global Affairs (United States)
 Tony Wood, Clinton Foundation

1. Opening Remarks

Chairman McConnell welcomed the delegates to the last of several days of meetings. He said that the Ministerial meeting the previous day was terrific and that we would have a chance at this meeting to review the Ministerial, as well the meetings of the Policy Group and Technical Group.

The logistics of the planned site visit in the afternoon to the Huaneng Carbon Project were also discussed for the benefit for those planning to attend.

2. Adoption of Agenda

The Agenda was adopted without change.

3. Review and Approval of Minutes from London Meeting

The draft Minutes of the previous Joint Policy and Technical Group meeting held in Warsaw, Poland in October 2010, had been circulated for comment to the Policy Group prior to the meeting. The final draft, which incorporated comments received, had been posted on the CSLF website. The Minutes were approved without further change.

4. Review of Warsaw Action Items

Barbara McKee, Director of the CSLF Secretariat, reviewed the status of the Action Items. She stated that all of the Action Items had been completed, except that:

- The Policy Group needed to consider a Task Force on Closing Policy-Related Gaps;
- Members were needed for the new Task Force on Risk and Liability; and
- The Secretariat and Communications and Public Outreach Task Force needed to identify best practices to most effectively move media communications forward.

The Technical Group noted that, in addition to a final 2010 Technology Roadmap called for in the minutes, a Technology Roadmap had also been completed in 2011.

5. Report from Policy Group

Chairman McConnell of the Policy Group presented a report on the Policy Group meeting. That meeting consisted of task force reports, reports from collaborating organizations, CSLF planning and planning for the Ministerial.

Reports from Policy Group Task Forces included the following:

- Capacity Building Task Force and Governing Council. The CSLF Capacity Building Fund now totals US\$3 million and decisions have been made to fund projects in four countries. CSLF capacity building events are open to all

Members. New projects are being sought and a funding strategy is to be developed for the next three years.

- Financing CCUS Task Force. The focus of this task force is on understanding commercial-scale financing needs with activities to date including workshops, expert dialogues and reports. A number of key findings have been reached including that CCUS can be cost-competitive with other low-carbon technologies.
- CCUS in the Academic Community. This task force has identified many CCUS-related courses worldwide and developed an extensive data base of courses on all aspects of CCUS. Further work will be to validate the data base and consider creating a network of professors to accelerate and improve CCUS education.
- Communications and Public Outreach. This task force has implemented a strategic plan to address barriers to public awareness and acceptance. Positive comments were received on the work, but much more needs to be done to follow up. The key issue is how to collaborate to improve communications on CCUS.

Reports were heard from four collaborating organizations: the International Energy Agency, the Global CCS Institute, the World Bank and the CCUS Action Group. Work of these organizations complements that of the CSLF. Several questions, however, need to be addressed:

- Is international collaboration adequate?
- Where can improvements be made?
- What synergies can be exploited?
- How is this reflected in outcomes or milestones in the CSLF Strategic Plan?

The Second Update of the CSLF Strategic was discussed and approved. This Update reflects the amended charter. It is goal-oriented with specific milestones. A fundamental question is raised as to how the CSLF, as a voluntary multilateral organization, can maintain clear progress toward common goals.

All six of the projects recommended for recognition by the Technical Group were approved. The total number of projects recognized since 2004 now total 36 and these projects cover all aspects of CCUS.

The Policy Group was also given an overview of plans for the September 21 Conference of Ministers as well as the four reports to the Ministers. Final edits were made to the Ministerial Communiqué.

Comments

A number of comments were made by delegates on the presentations on the reports by the Policy Group Task Forces:

- Capacity Building Task Force and Governing Council. José Miguel González Santaló of Mexico stated that the effort on capacity building has been very intensive and that he expects there will soon be more proposals and that the organizational arrangements now work. Barbara McKee of the Secretariat responded that considerable effort had to go into developing the Terms of Reference and procedures for the Task Force and Governing Council and developing criteria for approval of projects to ensure and verify that they met real needs of Members. Abudulmuhsen Alsunaid of Saudi Arabia reiterated that the process is now going forward and working. He also stated that part of the capacity building effort could also benefit developed countries, which also needed

to build capacity. Governing Council Chair Tone Skogen of Norway noted that if no more money is forthcoming the plan may end and asked how the CSLF can leverage other means of funding. Jeremy Martin of the United Kingdom agreed with the previous comments and stated that he thought that it was too early to judge results. Li Xin of China thanked the donor countries and stated that he agreed with the previous comments. He also said that there were opportunities to learn from other projects and from other countries' proposals. Chairman McConnell noted that in the Ministerial there was agreement that capacity building was one of the most important issues.

- Communications and Public Outreach. Barbara McKee asked what would be needed to accelerate work in this area. Task Force Chair John Grasser of the United States restated the need for public affairs professionals to assist in CSLF efforts in this area and made a formal request for assistance from such professionals. Mr. Grasser also said that he has been in contact with the Global CCS Institute on this issue. He also reiterated that communications activities are expensive and that funding is not adequate in this area. Such funding as is available currently comes from the United States Department of Energy's internal budget, but it is considered well spent. Chairman McConnell stated that there was a need to leverage efforts in this area, that there will always be believers and non-believers and that it is important to segment audiences. Tone Skogen said that the CSLF should consider the experience of the European Zero Emissions Platform, which has a large communications task force and has produced information for the public. The need for simplified messages and outreach to science journalists was also mentioned.
- CCS in the Academic Community. Barbara McKee asked whether it was clear what the next steps were. Task Force Co-Chair Tim Dixon of the IEA GHG responded that the Task Force now has a work plan and needs to assign responsibilities at the next task force meeting.

6. Report from Technical Group

Technical Group Chairman Trygve Riis of Norway presented the report from the Technical Group. He said that since the last meeting in Warsaw, the following meetings have been held:

- Workshop and PIRT meeting in Al Khobar, Saudi Arabia, February 2011. This was a very successful workshop on storage and monitoring of CO₂ with excellent participation from storage projects.
- Technical Group meeting with Task Force meetings in Edmonton, Canada, May 2011. Two projects were nominated for CSLF recognition: Zero Emission Porto Tolle (ZEPT) and the Jänschwalde Project. The Technical Group also visited the CSLF-recognized Quest project.

The Technical Group Executive Committee also has telephone meetings each month.

In Beijing, the Technical Group meeting consisted of a PIRT meeting, task force meeting and a meeting of the entire Technical Group. Four new projects were nominated for CSLF recognition:

- SaskPower CCS Project;
- CGS Europe Project;
- Rotterdam Opslag en Afvang Demonstratieproject (ROAD); and
- CO₂ Capture Project – Phase 3.

The 2011 Carbon Sequestration Leadership Forum Technology Roadmap (TRM) provides a pathway to the commercial deployment of integrated CO₂ capture, transport, and storage technologies. The current TRM update also reports on project and country activities. A major revision will be done every three year, with the next in 2013, which coincides with Ministerial meetings. Module 2 with projects and country reports will be web-based and on the CSLF website and will be updated at least once a year. The Technical Group Executive Committee will propose a revised format for the TRM.

The Task Force on Assessing Technical Issues has four working groups:

- Capture Technologies (United States lead);
- Transport and Infrastructure (Netherlands lead);
- Storage and Monitoring (Canada lead); and
- Integration (Global CCS Institute lead).

In particular, there is good progress in the Storage and Monitoring Working Group, chaired by Stefan Bachu with substantial resource support from Norway. The Transport Working Group needs a new Chair. Discussions about compression are being considered, but it is unclear whether this should be in the capture or transport working group.

The Risk Assessment Task Force endorsed the work plan for a new Policy Group/ Technical Group Task Force on Risk and Liability Assessment for Geological Storage of Carbon Dioxide.

The Global CCS Institute asked CSLF to cosponsor a workshop on integration in London, which will be held on 3 November 2011. Several CSLF recognized projects may attend. Invitations to projects are to be sent out Wednesday.

A possible technical workshop on capture may be held in June 2012 in conjunction with the next Technical Group meeting in Bergen, Norway, with a visit to TCM Mongstad. The Technical Group is also exploring the potential for a workshop on transport. The intention is to hold a technical workshop at least once a year.

The Technical Group has set out a five-year plan consisting of 12 Action Plans:

- Action Plan 1: Technology Gaps Closure
- Action Plan 2: Best-Practice Knowledge Sharing
- Action Plan 3: Energy Penalty Reduction
- Action Plan 4: CCS with Industrial Emissions Sources
- Action Plan 5: CO₂ Compression and Transport
- Action Plan 6: Storage and Monitoring for Commercial Projects
- Action Plan 7: Technical Challenges for Conversion of CO₂ EOR to CCS
- Action Plan 8: Competition of CCS with Other Resources
- Action Plan 9: Life Cycle Assessment and Environmental Footprint of CCS
- Action Plan 10: Risk and Liability
- Action Plan 11: Carbon-neutral and Carbon-negative CCS
- Action Plan 12: CO₂ Utilization Options

The plan will be revised and sent out to TG delegates. Technical Group delegates will report back on any additional actions, the most important actions for each country, coverage by other international organizations and interest in taking the lead on any of the Action Plans. The goal is to complete the program plan for at least one of the actions before Bergen and use this as a template for others.

Daniel Falcons Lins stated that Brazil will soon approach new researchers to participate in Technical Group Task Forces, but is very busy preparing for the Rio+20 conference in June 2012, for which it expects about 50,000 participants.

7. Report from the Risk and Liability Task Force

George Guthrie and Bernard Frois, Co-Chairs, presented the report of this new Task Force and then asked for discussion.

Dr. Guthrie explained the background behind the request from the Technical Group Task Force on Risk Assessment for guidance on what information was needed. He stated that the Task Force on Risk Assessment needed input from the Policy Group on how the technical risks they were looking at related to the financial issues associated with converting these risks into potential liabilities. He also said that the Task Force on Risk Assessment was looking into a number of issues associated with potential technical risks that may relate to liability. This was being considered in the context of technical issues associated with different phases on a project from planning through injection through post-injection to long-term stewardship. In considering the issue, the Task Force on Risk Assessment has reviewed and supports the proposal made by the Secretariat.

Dr. Frois noted that there was discussion in the past on cooperation on this important issue. He said he understood that the new Task Force should link the risks, both financial and technological, to liability. The Task Force on Financing CCS has already achieved significant progress that can be a direct input into the new Task Force. He then stated that the Policy Group Task Force was pleased to respond to the request. He also stated that he wanted to produce a concrete result.

Dr. Guthrie then requested participation in the new Task Force.

After the discussion, Chairman McConnell asked the Secretariat to work with the co-chairs to explore what resources might be available for this project. The Co-Chairs were also asked to put together a communication on requesting input from the Members. Tone Skogen stated that she will take this idea home and will report back. The Co-Chairs were also to identify within 30 days the types of expertise necessary to carry out this project.

Dr. Frois also stated that the work of the Financial Task Force would continue and that Task Force would hold a workshop on 20 January 2012, in Paris at the offices of Société Générale.

8. Follow-up to the Ministerial

In order to begin the conversation, Chairman McConnell provided some of his take-away insights from the Ministerial Meeting. He stated, most importantly, that the Ministers are committed and the stakeholders want this global CCUS venture to succeed. He further summarized the discussion:

- Ambassador Jones of the IEA said that dependence on fossil fuels will continue, and so will the growth in CO₂ emissions, if unabated. The need for CCS – and CCUS – will be critical if we are to abate these emissions. The graph from Ambassador Jones' presentation showed the role of CCUS. In addition, we need to pay more attention to capture from industrial sources. CCUS is also not just about coal; it must also be applied to natural gas combined cycle plants.
- The shift from CCS to CCUS is well accepted, but a good definition of CCUS must be developed. (The stakeholder definition is a good start.) It is also clear that not everyone has the same utilization opportunities (i.e., EOR).

- From Secretary Chu of the United States: Considerable innovation is taking place; opportunities for further innovation abound. The key question is how do we collaborate to accelerate and exploit those opportunities?
- We are not on track to build the necessary demonstration projects. Too many good proposed projects are being cancelled.
- From the Global CCS Institute: Many projects are still in the pipeline; we need to make those succeed.
- Large investments are needed for demonstration projects from both the public and private sectors, but there are huge barriers. Governments will not pay the entire price tag.
- Legal and regulatory frameworks for CCUS need to be developed. We heard from industry again and again that regulatory certainty is needed. Another issue mentioned repeatedly was liability for stored CO₂.
- We all need to work together. Collaboration to develop the technology for everyone is important.
- CSLF Members have much in common, but there are clear differences in our situations and approaches. That is good; we can learn from each other.
- We need to let the public know that CCUS is safe, but getting that across can be difficult. Successful and fully transparent demonstration projects we can point to are essential to that communication.
- We heard a lot about the problems; we heard some ideas about solutions; we did not hear about agreed-upon solutions. How can we get to those solutions? What is the role of the CSLF in moving to those solutions?

Delegates were asked for their impressions and what those mean to the future work of the CSLF. Bernard Frois stated that the problem is large, but the idea is to break a large problem into smaller problems.

Observers were also invited to make comments:

- Tony Wood, Clinton Foundation: It is important to find a way to move forward with work that is both high risk and low return until commercial incentives are adequate.
- Andrew Paterson, CCS Alliance: CCS and CCUS can achieve commercial parity and the capacity is available.
- Dietrich Gross, Jupiter Oxygen: Consider monitoring any CO₂ that might reach the surface.
- David Wendt, Jackson Hole Center for Global Affairs: Emissions standards for CO₂ are important.
- John Lyman, Atlantic Council: Be sure to involve NGOs in the process.

9. New Business

Chairman McConnell asked if there was any new business. Muzi Mkhize of South Africa raised a question about whether nitrogen could be used for Enhanced Oil Recovery (EOR). Mr. McConnell responded that, in his experience, it was used under different conditions. Daniel Falcon Lins of Brazil stated that EOR has been in use in Brazil since the mid-1980s and that Brazil would be glad to discuss its experience on the matter with South Africa.

10. Closing Remarks

Barbara McKee thanked her direct and indirect staff on the CSLF Secretariat, the Ministerial Steering Committee, Chinese colleagues, and Chairman McConnell.

Trygve Riis stated that he, as Chairman of the Technical Group, and the Technical Group Executive Committee had good support from the Secretariat and thanked the Secretariat for that support.

Li Xin, on behalf of China as host country, thanked colleagues for support in making the meeting successful and useful and wished participants a safe trip back home.

Chairman McConnell stated that he saw leading the CSLF forward as a personal obligation and a privilege. He took note of all the work that needed to be done and stated that it is a privilege to represent our countries moving CCUS forward. He believed that the Ministerial created momentum for the CSLF. Mr. McConnell thanked the participants and wished them a good trip home.

ACTION ITEMS ARISING FROM THE JOINT MEETING OF THE POLICY GROUP AND THE TECHNICAL GROUP

Item	Lead	Action
1	Communications and Public Outreach Task Force	Follow up on best practices on communications on CCS.
2	Members	Provide names of public affairs professionals to Secretariat.
3	Task Force on CCUS in the Academic Community	Set responsibilities for the next steps on CCUS in the Academic Community.
4	Risk and Liability Task Force	Request input from Members and explore available resources.
5	Risk and Liability Task Force	Identify what expertise is needed for this Task Force.
6	Members	Consider participation in Risk and Liability Task Force.