



MEETING SUMMARY

Projects Interaction and Review Team (PIRT) Meeting
Warsaw, Poland
06 October 2010

Prepared by the CSLF Secretariat

LIST OF PARTICIPANTS

Australia:	Clinton Foster (Chair), Lila Gurba, Aleksandra Kalinowski
China:	Xiaochun Li
European Commission:	Jeroen Schuppers
France:	Didier Bonijoly
Germany:	Jürgen-Friedrich Hake
Japan:	Takeshi Hirota
Korea:	Chang-Keun Yi
Mexico:	José Miguel González Santaló
Poland:	Elżbieta Wróblewska
Netherlands:	Harry Schreurs, Bill Spence
Norway:	Trygve Riis
Saudi Arabia:	Khalid Abuleif
South Africa:	Tony Surridge, Fred Goede, Faizel Mulla, Landi Themba
United Kingdom:	Philip Sharman
United States:	George Guthrie, Joseph Giove, Ramón Treviño
Global CCS Institute:	Bill Koppe, Gwendaline Jossec
IEA GHG:	Tim Dixon
CSLF Secretariat:	John Panek, Rich Lynch

1. Welcome and Review of PIRT Activities

PIRT Chairman Clinton Foster welcomed participants to the 13th meeting of the PIRT and provided a brief summary of the PIRT mission and recent activities. The PIRT was formed in 2005 and has three major functions:

- Assess projects proposed for recognition by the CSLF;
- Review the CSLF project portfolio and identify synergies, complementarities and gaps; and
- Provide input for further revisions of the CSLF Technology Roadmap.

Besides these, the PIRT also works to attract new CSLF projects that would address identified technology gaps, fosters collaboration with other organizations, and organizes events that would facilitate the exchange of information on issues of common interest among the CSLF-recognized projects, delegates, and stakeholders. PIRT activities over the past two years have centered on updating the CSLF Technology Roadmap; the 2009 Roadmap was a deliverable a year ago at the CSLF Ministerial Meeting in London, and work on the 2010 Roadmap has been underway since the March 2010 Technical Group meeting in Pau, France.

Dr. Foster stated that the PIRT has also been actively involved with projects; ten new projects were reviewed and approved at the Ministerial Meeting, and five additional new projects are being assessed at this PIRT meeting. Additionally, the PIRT is actively engaging the sponsors of all CSLF-recognized projects to learn what they want and expect from CSLF recognition and is using this information to develop a plan for a CSLF Projects Workshop.

Dr. Foster also provided a brief update on the new Task Force to Assess the Progress in Closing the Gaps, whose meeting is incorporated into this PIRT meeting. The Task Force was formed at the Pau meeting in March and has already made significant progress in its activities.

Dr. Foster ended his opening remarks by acknowledging the efforts of everyone who had contributed to the 2010 update to the Roadmap and of the Secretariat for its strong engagement and action to ensure the update was completed in time for this meeting.

2. Introduction of Meeting Attendees

PIRT meeting attendees introduced themselves. In all, fourteen countries and the European Commission were represented at the meeting. Participants included sponsors of two new projects nominated for CSLF recognition.

3. Approval of Meeting Summaries from Canberra and Pau PIRT Meetings

Meeting Summaries from the PIRT meetings in Canberra, Australia (February 2010) and Pau, France (March 2010) were approved as final with no changes.

4. Status of Strategic Plan Implementation / Review of Action Items from Pau Meeting

John Panek reported that the CSLF Secretariat had reviewed PIRT action items from the Pau meeting and that they all had been completed or were in progress. Concerning the CSLF Strategic Plan, Mr. Panek mentioned that it contained two Action Plans relevant to the PIRT:

- Identifying potential for carbon capture and storage (CCS) technology development and deployment opportunities
- Collaborating with other international organizations

Mr. Panek stated that the first of these two Action Plans had been addressed by the PIRT through its activities to update the CSLF Technology Roadmap and by formation of the new Task Force to Assess Progress in Closing the Gaps. The second Action Plan is an ongoing activity of the PIRT and includes collaborations with the International Energy Association Greenhouse Gas R&D Programme (IEA GHG) and the Global CCS Institute.

5. Updates to CSLF Technology Roadmap

Dr. Foster provided a brief synopsis on the 2010 update to the Roadmap. An aggressive schedule was adopted at the Pau meeting for update of all five modules of the Roadmap. With the assistance of Technical Group delegates, the Global CCS Institute, and the Research Council of Norway, an initial draft of the Roadmap was completed at the end of July. In August this draft was reviewed first by the PIRT and then by the entire Technical Group. Comments received during these review cycles were incorporated into the final draft. Dr. Foster stated that the main changes from the 2009 Roadmap are a stronger emphasis on CCS integration and demonstration of complete CCS value chains (including CO₂ source and capture, transport, and storage of CO₂), a stronger differentiation between demonstration and R&D, and expanded and more detailed milestones.

There was consensus to recommend that the 2010 update to the Roadmap be approved by the Technical Group and to move forward with the 2011 update. However, the 2011 update will be limited to making incremental improvements to the existing text, rather than doing a major rewrite (as was the case for the 2010 update). In particular, country activities (Module 2) will continue to be updated as new information becomes available. There was consensus that the four Working Groups in new Task Force on Assessing the Progress in Closing the Gaps will determine what changes are needed to the “Gap Identification” module (Module 3). The PIRT will determine the schedule for the 2011 update to the Roadmap at its next meeting.

6. Results from Gaps Analysis Survey of CSLF-Recognized Projects

Mr. Panek provided a brief summary of the results from a gaps analysis exercise which analyzed the 27 active and completed CSLF-recognized projects in relation to the technology gaps listed in the CSLF Project Submission Form. The results identified technology gaps being addressed by one or more projects and also showed which gaps are not addressed. The results are intended for use in helping to identify new projects that would address any remaining gaps. Ensuing discussion centered on the relevance of the term “gaps analysis”; there was agreement that the PIRT should more broadly be examining critical technical issues, which includes more than just gaps. This carried over to the name of the new Task Force, and there was consensus that its name be changed to the “Task Force to Assess Progress on Advancing Technical Issues for CCS”.

7. Report from Task Force to Assess Progress on Advancing Technical Issues for CCS

Dr. Foster, as Task Force Chair, gave a brief presentation that described the function of the Task Force and its makeup. The Task Force consists of four Working Groups: Capture Technologies (chaired by the United States), Transport and Infrastructure (chaired by the Netherlands), Storage (chaired by Canada), and Integration (chaired by the Global CCS Institute). There are four main goals:

- Measure the progress of technical requirements to achieve 20 commercial CCS projects by 2020 (G8 goal);
- Complement the PIRT by assessing the level of CCS readiness of CSLF-recognized projects;
- Develop a focused CSLF community of users, by assessing existing CSLF-recognized projects against the respective gaps considered by each Working Group; and
- Maximize the learnings and access to information from the CSLF projects to assist the CSLF community in reaching the 2020 goal.

Stefan Bachu, the Chairman of the Storage Working Group, had experienced a travel delay during his trip to Warsaw and did not arrive in time for this meeting. Dr. Foster asked the other three Working Group Chairs to provide brief reports.

The Capture Technologies Working Group Chair, George Guthrie, gave a brief presentation about the proposed path of the Working Group. The current plan is to assess the current listing of capture-related technology gaps as shown in the Gaps Analysis Checklist and provide any recommended changes or additions to the Task Force Chairman. Once a revised Gaps Analysis Checklist was agreed to, the Working Group would then assess all CSLF-recognized projects against the revised checklist to determine what gaps are being addressed and which are not. Dr. Guthrie stated that the Working Group is currently near the beginning of this activity.

The Transport and Infrastructure Working Group Chair, Harry Schreurs, gave a brief presentation that echoed the Capture Technologies Working Group's proposed path. Mr. Schreurs also stated that the Working Group is recommending that five new gaps be added to the Gaps Analysis Checklist. Mr. Schreurs also suggested that more interaction with CSLF-recognized projects is needed quickly to assist the Working Group in completing its mandate.

The Integration Working Group Chair, Bill Koppe, gave a brief presentation about the proposed scope of the Working Group. The current plan is to be more broadly focused on project development issues of integration, e.g., the efficient phasing of storage, transport and capture assessment in integrated project development. Mr. Koppe stated that the Working Group also intends to look more at developing example project schedules, economic models and project development checklists and challenges.

Dr. Foster stated that the Task Force's Working Groups will need to provide comments and suggest changes to the current Gaps Analysis Checklist that is part of the CSLF Project Submission Form. There was consensus that the Secretariat would send a copy of the Form and Checklist to PIRT members for comment. Dr. Foster also stated that all Working Groups except Storage (which is oversubscribed) were still open for participation by PIRT members, and that they should notify the Secretariat if they wish to join a Working Group.

8. Status of Technology Readiness Assessment for CSLF-Recognized Projects

Trygve Riis provided a brief report on the status of this activity. At the Pau meeting there had been consensus that the PIRT should assess each CSLF-recognized project in terms of its technology readiness level, using methodology similar to that developed by NASA. For this purpose, four readiness levels are being used: laboratory / bench scale, sub-scale pilot, full-scale demonstration, and first-of-a-kind commercial. Mr. Riis stated that completing this activity will require some time, and that he is planning to bring in a consultant and may also call on the Global CCS Institute for assistance. There was consensus that Mr. Riis should provide another status update at the next PIRT meeting.

9. Review of Projects Nominated for CSLF Recognition

SECARB Early Test at Cranfield Project

Ramón Treviño of the Gulf Coast Carbon Center in the United States, representing project sponsor Southeast Regional Carbon Sequestration Partnership (SECARB), gave a presentation about the SECARB Early Test at Cranfield Project, which had been nominated by the United States and Canada. This is a large-scale project, located near Natchez, Mississippi, USA, which involves transport, injection, and monitoring of approximately one million tonnes of CO₂ per year into a deep saline reservoir associated with a commercial enhanced oil recovery operation, but the focus of this project will be on the CO₂ storage and monitoring aspects. The project will promote the building of experience necessary for the validation and deployment of carbon sequestration technologies in the United States, and will increase technical competence and public confidence that large volumes of CO₂ can be safely injected and stored. Components of the project also include public outreach and education, site permitting, and implementation of an extensive data collection, modeling, and monitoring plan. This "early" test will set the stage for a subsequent large-scale integrated project that will involve post-combustion CO₂ capture, transportation via pipeline, and injection into a deep saline formation.

After brief discussion, there was consensus to recommend that the project be approved by the Technical Group.

CO₂ Field Lab Project

Mr. Riis, representing project sponsor CLIMIT, gave a presentation about the CO₂ Field Lab Project, which had been nominated by Norway, France, and the United Kingdom. This is a pilot-scale project, located at Svelvik, Norway, which will investigate monitoring technologies for CO₂ leakage detection in a well-controlled and well-characterized permeable geological formation. Relatively small amounts of CO₂ will be injected to obtain underground distribution data that resemble leakage at different depths. The resulting underground CO₂ distribution will resemble leakages and will be monitored quantitatively with an extensive set of methods deployed by the project partners. The main objective is to assure and increase CO₂ storage safety by obtaining valuable knowledge about monitoring CO₂ migration and leakage. The outcomes from this project will help facilitate commercial deployment of CO₂ storage by providing the protocols for ensuring compliance with regulations, and will help assure the public about the safety of CO₂ storage by demonstrating the performance of monitoring systems.

After brief discussion, there was consensus to recommend that the project be approved by the Technical Group.

Quest CCS Project

Bill Spence of the Shell International Exploration and Production Company, representing project sponsor Shell Canada Ltd., gave a presentation about the Quest CCS Project, which had been nominated by Canada, the United Kingdom, and the United States. This is a large-scale project, located at Fort Saskatchewan, Alberta, Canada, with integrated capture, transportation, storage, and monitoring, which will capture and store up to 1.2 million tonnes per year of CO₂ from an oil sands upgrading unit. The CO₂ will be transported via pipeline and stored in a deep saline aquifer in the Western Sedimentary Basin in Alberta, Canada. This is a fully integrated project, intended to significantly reduce the carbon footprint of the commercial oil sands upgrading facility while developing detailed cost data for projects of this nature. This will also be a large-scale deployment of CCS technologies and methodologies, including a comprehensive measurement, monitoring and verification (MMV) program.

After brief discussion, there was consensus to recommend that the project be approved by the Technical Group.

CCS Bełchatów Project

Elżbieta Wróblewska, representing project sponsor PGE Górnictwo i Energetyka Konwencjonalna SA, gave a presentation about the CCS Bełchatów Project, which had been nominated by Poland, the European Commission, and the United States. This is a large-scale project, located in central Poland, which will demonstrate commercial-scale CO₂ capture, transport and storage at a new lignite-fired power plant unit. The project will demonstrate the full CCS value chain, including capture, transport, and safe geological storage of up to 1.8 million tonnes of CO₂ per year. Project components include identification of potential issues related to intellectual property, storage site selection, permitting, facilities and pipeline construction, and public engagement activities. Success of this project will expedite commercialization of CCS for large-scale fossil fuel power generation.

After brief discussion, there was consensus to recommend that the project be approved by the Technical Group.

Gorgon CO₂ Injection Project

Dr. Foster, representing Chevron Australia Pty Ltd., gave an update presentation about the Gorgon CO₂ Injection Project, which had previously been approved by the Technical Group at the Pau meeting. This is a large-scale project that will store approximately 120 million tonnes of CO₂ in a water-bearing sandstone formation two kilometers below Barrow Island, off the northwest coast of Australia. The CO₂ stored by the project will be extracted from natural gas being produced from the nearby Gorgon Field and injected at approximately 3.5 to 4 million tonnes per year. There is an extensive integrated monitoring plan, and the objective of the project is to demonstrate the safe commercial-scale application of greenhouse gas storage technologies at a scale not previously attempted. The project has already progressed through its early development stages including site selection and appraisal, and is fully funded. Injection operations are expected to commence by the end of 2014.

10. Withdrawal of the CO₂ Storage in Limburg Coal and Sandstone Layers Project

Mr. Panek reported that sponsor for the CSLF-recognized CO₂ Storage in Limburg Coal and Sandstone Layers Project had formally requested that it be withdrawn due to lack of funding. In accordance to the sponsor's wishes, the project has been removed from the listing of CSLF-recognized projects. Mr. Panek then recommended that two other CSLF-recognized projects which have not shown any activity also be de-listed and that the listing of projects henceforward show only those that are active or completed. After brief discussion, there was consensus to modify the listing of projects as had been recommended. There was also consensus that the Secretariat should contact the sponsor to the CO₂ Storage in Limburg Coal and Sandstone Layers Project to confirm the project status.

11. Develop Strategy for Attracting New Projects

Dr. Foster stated that this topic was actually part of a broader project engagement strategy and that there would be a full report during the next day's Technical Group meeting. Discussion was deferred until then.

12. Create Plan for a CSLF-Recognized Projects Workshop

Dr. Foster provided a brief report on the status of this activity. At the Pau meeting there had been consensus that contingent on a positive response from sponsors of CSLF-recognized projects, the PIRT should take the lead in developing a plan for a technical workshop that would be centered on the projects. Dr. Foster stated project sponsors had been contacted and were in general supportive of the concept of such a workshop, as long as it was focused and topic-specific. Also, project sponsors preferred that any workshops of this nature should allow sufficient time for in-depth discussion of presentations and that they avoid duplication with other conferences, meetings, and workshops about CCS that are scheduled each year.

In that regard, Khalid Abuleif brought forth an offer from Saudi Arabia to host a one-day CO₂ storage-themed workshop in early 2011 that could perhaps be dovetailed with a CSLF meeting of some kind. Dr. Foster thanked Mr. Abuleif for his kind offer. Further discussion and consideration of Saudi Arabia's proposal was deferred until the next day's Technical Group meeting.

13. New Business

Tim Dixon informed the PIRT that the IEA GHG's Executive Committee (ExCo), at its May meeting, did not accept two proposal outlines written by Dr. Bachu on behalf of the Technical Group that covered storage of CO₂ in unconventional media. However, these would be automatically resubmitted for the next ExCo meeting. Mr. Dixon also requested that PIRT members be informed that the deadline for submission of proposal outlines is January 2011. There was consensus for the Secretariat to do so.

14. Adjourn

Dr. Foster thanked the participants for their hard work which resulted in a productive meeting, expressed his appreciation to host country Poland, and adjourned the meeting.

Summary of Consensus Reached

- The 2010 update to the CSLF Technology Roadmap is approved by the PIRT.
- The following four projects are approved by the PIRT:
 - CCS Bełchatów Project
 - CO₂ Field Lab Project
 - Quest CCS Project
 - SECARB Early Test at Cranfield Project
- The Task Force to Assess Progress in Closing the Gaps is now known as the Task Force to Assess Progress on Technical Issues Affecting CCS.

Summary of Action Items

Item	Lead	Action
1	PIRT Chair	Provide the PIRT's recommendation to the Technical Group that the 2010 CSLF Technology Roadmap be approved. <i>(Secretariat note: This was done at the October 7th Technical Group meeting.)</i>
2	Working Groups of Task Force to Assess Progress on Technical Issues Affecting CCS	Determine what changes are needed to Gap Identification module of CSLF Technology Roadmap.
3	PIRT members	Develop schedule for 2011 update to CSLF Technology Roadmap at next PIRT meeting.
4	CSLF Secretariat	Send CSLF Project Submission Form and Gaps Analysis Checklist to PIRT members for comment. <i>(Secretariat note: At the October 7th Technical Group meeting it was decided that the four Working Groups of the Task Force to Assess Progress on Technical Issues Affecting CCS would instead provide comments and updates to the Project Submission Form and Gaps Analysis Checklist.)</i>

Item	Lead	Action
5	PIRT members	Inform Secretariat if they wish to join Capture Technologies, Transportation and Infrastructure, and Integration Working Groups to the Task Force to Assess Progress on Technical Issues Affecting CCS. <i>(Secretariat note: Pierre Le Thiez of France, Harry Schreurs of the Netherlands, and Joseph Giove of the United States were added to the Integration Working Group at the October 7th Technical Group meeting.)</i>
6	Norway	Report on status of Technical Readiness Assessment for CSLF-recognized projects at next PIRT meeting.
7	PIRT Chair	Provide the PIRT's recommendation to the Technical Group that the CO ₂ Field Lab Project, the SECARB Early Test at Cranfield Project, the Quest CCS Project, the CCS Bełchatów Project, and the Gorgon CO ₂ Injection Project be recognized by the CSLF. <i>(Secretariat note: This was done at the October 7th Technical Group meeting. The Gorgon CO₂ Injection Project had previously been approved by the PIRT and Technical Group at their March 2010 meetings in Pau, France.)</i>
8	CSLF Secretariat	Update the listing of CSLF-recognized projects at the CSLF website to include only the active and completed projects.
9	CSLF Secretariat	Contact sponsor to the CO ₂ Storage in Limburg Coal and Sandstone Layers Project to confirm the project status.
10	CSLF Secretariat	Inform PIRT members about January 2011 deadline for submitting proposal outlines to IEA GHG. <i>(Secretariat note: Information about the deadline is contained in this meeting summary and also in the minutes of the October 7th Technical Group meeting.)</i>