Carbon Sequestration Leadership Forum
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MEETING SUMMARY
Projects Interaction and Review Team (PIRT) Meeting
Tokyo, Japan
03 October 2016

Prepared by the CSLF Secretariat

LIST OF ATTENDEES

PIRT Active Members

Australia:	Andrew Barrett (Chair), Max Watson
Canada:	Eddy Chui, Mike Monea
France:	Didier Bonijoly
Germany:	Jürgen-Fr. Hake
Japan:	Ryozo Tanaka
Norway:	Lars Ingolf Eide, Åse Slagtern (Technical Group Chair)
Saudi Arabia:	Fahad Almuhaish, Amar Alshehri
United Kingdom:	Brian Allison
United States:	John Litynski
IEAGHG:	Tim Dixon

Other CSLF Delegates

Japan:	Takashi Kawabata, Takuro Okajima
Korea:	Chong Kul Ryu, Chang-Keun Yi
Norway:	Stig Svenningsen

CSLF Secretariat Richard Lynch, Stephanie Duran

Invited Speakers

Hideo Nomoto, 8 Rivers Capital, LLC
Yukata Tanaka, Japan CCS Company, Ltd.

Observers

Canada:	Dave Malloy
Japan:	Junko Hirai, Kimiko Nakanishi, Jiro Tanaka
Netherlands:	Maurice Hanegraaf
United States:	Roger Aines, Sallie Greenberg, Sean McCoy

1. Welcome

Following a brief host country greeting by Ryozo Tanaka, PIRT Chairman Andrew Barrett welcomed participants to the 26th meeting of the PIRT. Mr. Barrett stated that the two major items to be taken up at this meeting were review of two projects nominated for CSLF recognition and a report and discussion on ongoing PIRT activities to engage current CSLF recognized projects. Besides these, there would also be a review of the status of the 2017 CSLF Technology Roadmap (TRM) and a discussion on possible future activities for the CSLF Technical Group.

2. Introduction of Meeting Attendees

PIRT meeting attendees introduced themselves. In all, ten CSLF delegations were represented at the meeting.

3. Adoption of Agenda

The draft agenda for the meeting, which had been prepared by the CSLF Secretariat, was adopted without change.

4. Approval of Meeting Summary from London PIRT Meeting

The Meeting Summary from the June 2016 PIRT meeting in London was approved as final with no changes.

5. Report from CSLF Secretariat

Richard Lynch provided a two-part report from the Secretariat, which covered the status of CSLF-recognized projects and outcomes from the June 2016 PIRT meeting in London.

Concerning the portfolio of CSLF-recognized projects, Mr. Lynch stated that as of October 2016 there were 34 active projects and 15 completed projects spread out over five continents, though this would change based on outcomes from the current meeting. For the current meeting, two new projects had been proposed for CSLF recognition.

Mr. Lynch reported that there were six outcomes from the London meeting, four involving the 2017 TRM and two related to projects engagement. Concerning the 2017 TRM, there had been agreement that it would incorporate outcomes from the COP21 meeting and also relevant types of technologies such as Bioenergy-with-CCS (BECCS) that were not mentioned in the 2013 TRM, and that the TRM Working Group has been empowered to change the structure of the TRM where needed. Also, a "technical needs" survey was to be completed which would obtain pertinent information from project sponsors and other stakeholders in order to assist the TRM rewrite effort. It was requested that a final draft of the 2017 TRM be ready in time for the 2017 CSLF Mid-Year Meeting.

Concerning project engagement, there was agreement that the CSLF Secretariat work with Dr. Greenberg (representing the CSLF-recognized Illinois Basin – Decatur Project) to develop a useful format (neither superficial nor onerous) for CSLF-recognized projects to report their status. And as a try-out for the new reporting format, PIRT delegates from Australia, Canada, and the United States were asked to use the new reporting format to engage a sampling of projects located in their countries and prepare short status summaries in time for the current PIRT meeting.

6. 2017 TRM Progress Report

Mr. Barrett stated that the TRM Working Group (chaired by Australia with representation from Norway, South Africa, the United Kingdom, the United States, the IEAGHG, and the CSLF Secretariat) had convened via teleconference four times since its formation at the end of 2015. In the intervening year, the Working Group has formulated a process for the TRM rewrite (i.e., refreshing the structure and content of the 2013 TRM as needed, in order to keep the overall level of effort to a manageable level), and begun updating Section 4 ("Identified Technology Needs") of the document. Mr. Barrett stated that the rewrite will include outcomes of COP21 as well as technology needs for CCS with industrial sources and BECCS, and that time horizons of the 2017 TRM will be shifted from "2020, 2030, and 2050" to "2020, 2025, and 2035".

There was also a brief summary of the previous day's TRM Working Group meeting. Mr. Eide stated that the structure of the 2017 TRM will be changed to eliminate Section 3 ("Assessment of Present Situation") with any pertinent information from that section rolled into other sections of the TRM. Mr. Lynch stated that the Working Group is on track to complete a draft final version of the 2017 TRM in time for the 2017 CSLF Mid-Year Meeting.

7. Review and Approval of Project Proposed for CSLF-Recognition: Tomakomai CCS Demonstration Project

Yukata Tanaka, representing project sponsor Japan CCS Company, gave a technically detailed presentation about the Tomakomai project. This is an integrated large-scale pilot project, located at a refinery complex in Tomakomai city on the island of Hokkaido in Japan, which is capturing CO_2 from the refinery's hydrogen production unit with a steam methane reformer and a pressure swing adsorption process, and injecting the CO_2 by two directional wells to the nearby offshore sub-seabed injection site. The overall objective is to demonstrate the technical viability of a full CCS system, from capture to injection and storage in saline aquifers. This will contribute to the establishment of CCS technology for practical use in Japan and set the stage for future deployments of commercial-scale CCS projects. The project includes capture and injection of up to about 100,000 tonnes per year of CO_2 for three years and a comprehensive measurement, monitoring and verification (MMV) regime for the injected CO_2. The project also includes a detailed public outreach effort which has engaged local stakeholders and increased community awareness about CCS and its benefits.

Outcome: After a discussion which clarified some of the details about the project, there was unanimous consensus by the PIRT to recommend approval of the Tomakomai CCS Demonstration Project by the Technical Group. Project nominators are Japan (lead), Australia, Canada, France, Norway, Saudi Arabia, the United Kingdom, and the United States. There was also general agreement that the Project Submission Form received from this project was one of the best ever, in terms of detail.

8. Review and Approval of Project Proposed for CSLF-Recognition: NET Power 50 MW_{th} Allam Cycle Demonstration Project

Hideo Nomoto, representing project sponsors 8 Rivers Capital and NET Power, gave a technically detailed presentation about the NET Power project. This is a capture-only large-scale pilot project, located in La Porte, Texas in the United States, whose overall objective is to demonstrate the performance of the Allam power cycle. The Allam Cycle

is a next-generation gas turbine-derived power cycle that uses high-pressure CO_2 instead of steam to produce power at low cost and with no atmospheric emissions. The project includes construction and operation of a 50 MW_{th} natural gas-fueled pilot plant and also design of a much larger proposed commercial-scale project. The anticipated outcome of the project is verification of the performance of the Allam Cycle, its control system and components, and purity of the produced CO_2 with learnings being used in the design of a future commercial-scale project using this technology. The pilot plant is currently under construction with commissioning commencing by the end of 2016 and operation anticipated in the first half of 2017.

Outcome: After a discussion which clarified some of the details about the project, there was unanimous consensus by the PIRT to recommend approval of the NET Power 50 MW_{th} Allam Cycle Demonstration Project by the Technical Group. Project nominators are the United States (lead), Japan, Saudi Arabia, and the United Kingdom.

9. Proposed Revision to CSLF Project Submission Form

Mr. Lynch gave a short presentation which provided a short history of the Project Submission Form and a proposal to revise it. The current version of the Form has been in use since April 2014 and asks for 12 different pieces of information, including signatures of project nominators. However, in the past few years the CSLF has gone over almost entirely to paperless documents, and the need to obtain signatures from both primary and secondary nominators has slowed down the procedure for getting projects nominated for CSLF recognition. Mr. Lynch proposed that the Project Submission Form be revised such that project sponsor can submit the completed Form without a signature, and that CSLF delegations nominating the project can inform the Secretariat via email or at a PIRT meeting of their intention to do so. After a brief discussion, there was consensus to make these changes to the Form.

During the discussion, it was pointed out that the completed Forms received from projects seeking CSLF recognition have been somewhat uneven in terms of the amount of detail provided. There was consensus to provide a good example of a completed Project Submission Form to projects seeking CSLF recognition so that future project sponsors would know the amount and type of detail needed by the PIRT. The Tomakomai project volunteered to allow its completed form to be used as such a model.

10. Engaging CSLF-recognized Projects

Mr. Lynch gave a presentation in follow-up to the action item from the previous PIRT meeting that the CSLF Secretariat and Dr. Greenberg (representing the CSLF-recognized Illinois Basin – Decatur Project) jointly develop a useful format (neither superficial nor onerous) for CSLF-recognized projects to report their status. The reporting form was finalized in July and requests the following information:

- Name of project
- Brief non-technical description
- Project status (Active? Ended? If ended, when and why? If still active, what are the important factors for its continued progress and why?)
- Overall timeline, emphasizing next six months
- Description of sharable information that has been produced
- Description of any interesting outcomes or gains in knowledge
- Project's main point-of-contact for CSLF

PIRT delegates from Australia, Canada, and the United States subsequently used this format to engage project sponsors in their countries and information was obtained from ten projects. Mr. Lynch stated that overall, every project update provided useful information, though the amount of detail that was provided by the projects was variable. Mr. Lynch also provided that there were some immediate conclusions that can be drawn from this exercise. Overall, the format seemed good in that the information received was, for the most part, of sufficient quantity and quality to keep better track of projects' activity and progress. CSLF delegates are the right people to engage project sponsors in their countries, as they are better positioned to know what is going on and they can use the opportunity to solidify bonds that already exist between the projects and the CSLF.

Ensuing discussion led to a plan for broadening this effort to include all CSLF recognized projects on a biennial basis (in years where there is a CSLF Ministerial Meeting). The delegates who obtain information from the project sponsors will be asked to do quality control on the information they receive, and go back to the project sponsors for more if necessary. The Secretariat was asked to coordinate with CSLF delegates at the beginning of 2017 to set this plan into motion. There was also agreement that project information, once it is available, should be utilized for future TRM updates and to prepare a report as an input to the 2017 CSLF Ministerial Meeting, but discussion on specifically what to do with the information was postponed until the next PIRT meeting.

11. Open Discussion on Possible New Technical Group Activities

The CSLF Technical Group Chair, Åse Slagtern, made a short presentation that summarized existing Technical Group activities and possible new ones in advance of a more detailed discussion during the next day's full Technical Group Meeting. There are currently three active task forces besides the PIRT: Improved Pore Space Utilization (co-chaired by Australia and the United Kingdom), Bioenergy with CCS (chaired by the United States), and Offshore CO_2-EOR (chaired by Norway). Didier Bonijoly stated that France would report at the Technical Group meeting on its decision to chair a new task force on Industrial CCS.

Ms. Slagtern also stated that the Mission Innovation initiative, where 20 participating countries are working to double their state-funded clean energy R&D investments, incorporates CCS as a topic of interest. In that regard, the CSLF may have a role of some kind. There was no immediate action on this topic by the PIRT, but Stephanie Duran stated that there would be more about Mission Innovation at the CSLF Policy Group meeting later in the week.

12. Open Discussion and New Business

There was no new business offered or further discussion on any topic.

13. Adjourn

Mr. Barrett thanked the attendees for their interactive participation and adjourned the meeting.

Summary of Meeting Outcomes

- The PIRT has recommended approval by the Technical Group for both the Tomakomai CCS Demonstration Project and the NET Power 50 MW_{th} Allam Cycle Demonstration Project.

- The PIRT has implemented a project engagement strategy where CSLF-recognized projects will be contacted for updates on their progress and accomplishments during years when there are CSLF Ministerial Meetings (i.e., every two years). The CSLF Secretariat will oversee this activity. Information received from projects will be utilized for future TRM updates and to prepare a summary document as an input to the 2017 CSLF Ministerial Meeting.
- The PIRT has approved a small revision to the CSLF Project Submission Form and will use the completed Form from the Tomakomai CCS Demonstration Project as a model for future project sponsors to use as an example of the kinds of project information being requested.
- The TRM update is underway and on schedule for roll-out in time for the 2017 CSLF Ministerial Meeting. The structure of the new TRM will be slightly different than the 2013 TRM and will include information about recent developments in CCS, including COP21 outcomes, and areas such as CCS with industrial sources and BECCS.