TECHNICAL GROUP

Action Plan Status Report

Background

At the September 2011 CSLF Ministerial Meeting in Beijing, the Technical Group approved a new multi-year Action Plan to identify priorities and provide a structure and framework for conducting Technical Group efforts through 2016. This Action Plan was updated at the Washington meeting in November 2013, the Seoul meeting in March 2014, and the Warsaw meeting in October 2014.

This paper is an update, prepared by the CSLF Secretariat, on the status of the Technical Group’s Action Plan.

Action Requested

The Technical Group is requested to review the Action Plan status report.
CSLF Technical Group Action Plan Status
(as of April 2015)

COMPLETED ACTIONS

Technology Gaps Closure

Action: The Technical Group will identify and monitor key CCS technology gaps and related issues and recommend any R&D and demonstration activities that address these gaps and issues.

Outcome: Identification of all key technology gaps/issus and determination of the effectiveness of ongoing CCS RD&D for addressing these gaps/issues.

Status: Final Report has been issued. Key findings are:
- At a high level there are no major technology gaps. CCS technologies are ready and available, and are being deployed today.
- There are many conteding capture technologies, in both current technologies and 2nd & 3rd generation technologies.
- Next generation technologies are vital for substantial cost reduction.
- However, there is no strong market pull for new technologies at the moment.
- There is a need to continue work towards low cost, high resolution MMV, particularly in the offshore environment.
- The lack of exploration for CO2 storage sites is a significant barrier to rapid deployment of CCS and, thus, learning by doing.

Technical Challenges for Conversion of CO2-EOR to CCS

Action: The Technical Group will determine technical and economic aspects that can affect moving from enhanced oil recovery (EOR) to carbon storage.

Outcome: Identification of permitting, monitoring, and reporting requirements for CO2 EOR applications that apply for CO2 credits.

Status: Final Report has been issued. Task force key findings are:
- There is sufficient operational and regulatory experience for this technology to be considered as being mature, with an associated CO2 storage rate of the purchased CO2 greater than 90%.
- The main reason CO2-EOR is not applied on a large scale outside west Texas in the United States is the unavailability of high-purity CO2 in the amounts and at the cost needed for this technology to be deployed on a large scale.
• The absence of infrastructure to both capture the CO₂ and transport it from CO₂ sources to oil fields suitable for CO₂-EOR is also a key reason for the lack of large scale deployment of CO₂-EOR.
• There are a number of commonalities between CO₂-EOR and pure CO₂ storage operations, both at the operational and regulatory levels, which create a good basis for transitioning from CO₂-EOR to CO₂ storage in oil fields.
• There are no specific technological barriers or challenges per se in transitioning and converting a pure CO₂-EOR operation into a CO₂ storage operation. The main differences between the two types of operations stem from legal, regulatory and economic differences between the two.
• A challenge for CO₂-EOR operations which may, in the future, convert to CO₂ storage operations is the lack of baseline data for monitoring, and generally monitoring requirements for CCS which are broader and more encompassing than for CO₂-EOR.

**CO₂ Utilization Options**

*Action:* The Technical Group will investigate CO₂ utilization options.

*Outcome:* Identification of most economically attractive CO₂ utilization options.

*Status:* Final report has been issued. Task force key findings are:

• A number of CO₂ utilization options are available which can serve as a mechanism for deployment and commercialization of CCS.
• EOR is the most near-term CO₂ utilization option. Non-EOR CO₂ utilization options are at varying degrees of commercial readiness and technical maturity.
• For mature non-EOR CO₂ utilization options, efforts should be on demonstration projects and on the use of non-traditional feedstocks or polygeneration concepts.
• Efforts that are focused on hydrocarbon recovery other than EOR should focus on field tests.
• Efforts that are in early R&D or pilot-scale stages should focus on addressing key techno-economic challenges, independent tests to verify the performance, and support of small and/or pilot-scale tests of first generation technologies and designs.
• More detailed technical, economic, and environmental analyses should be conducted on these options.

**Reviewing Best Practices and Standards for Geologic Storage and Monitoring of CO₂**

*Action:* The Technical Group will identify and review standards for CO₂ storage and monitoring.

*Outcome:* Identification of best practices and standards for storage and monitoring of injected CO₂. The application of such standards should inform CO₂ crediting mechanisms.
Status: Reports for Years 2012 and 2013 have been issued. Findings of the task force will be archived at the CSLF website. The task force was discontinued in part because other organizations such as the European Commission’s CO2 GeoNet Project and the ISO TC265 committee on CCS may be planning similar activities.

Review of CO2 Storage Efficiency in Deep Saline Aquifers

Action: The Technical Group will recommend the proper storage efficiency coefficients to be used when estimating CO2 storage capacity, based on the scale of the assessment, geological characteristics and other parameters of the storage operation.

Outcome: Identification of guidelines for use of appropriate CO2 storage efficiency coefficients that can be used by governments and industry in the assessment of CO2 storage resource and in site selection for CO2 storage.

Status: The CSLF Task Force for Review and Identification of Standards for CO2 Storage Capacity Estimation published reports in 2005, 2007, and 2008 before concluding its work. A task force (led by Canada) was formed in November 2013 to critically review, compile and report on relevant literature published since 2008, and is issuing its findings in a paper on “CO2 Storage Efficiency in Deep Saline Aquifers” that is being published in a special issue of The International Journal of Greenhouse Gas Control. This paper will also serve as the task force’s final report.

CURRENT ACTIONS

Best-Practice Knowledge Sharing

Action: The Technical Group will facilitate the sharing of knowledge, information, and lessons learned from CSLF-recognized projects and other CCS RD&D.

Outcome: Development of interactive references for assisting next-generation commercial CCS projects, which will include links with other CCS entities.

Status: Activity has been assigned to Projects Interaction and Review Team (led by Australia). A linkage has been established with Global CCS Institute’s low emissions technology website, decarboni.se, which now includes CSLF projects and reports. Also, Technical Group is holding annual technology workshops featuring representatives of CSLF-recognized projects.

Offshore CO2 Storage

Action: The Technical Group will provide a current assessment on the status of the global sub-seabed CO2 storage potential, including potential for offshore EOR.

Outcome: Identification of technical barriers and challenges to sub-seabed CO2 storage as well as RD&D opportunities. Also, identification of any potential opportunities for global collaboration. A previously-proposed Action on “CO2 Compression and Transport” is being incorporated into this Action.

Status: A task force (led by the United States) has been active since March 2014 and expects to have a draft of its final report at the 2015 CSLF Mid-Year Meeting.
Proposed actions in the following areas have been deferred and will be revisited at a later time:

- Energy Penalty Reduction
- CCS with Industrial Emissions Sources
- CO₂ Compression and Transport
- Competition of CCS with Other Resources
- Lifecycle Assessment and Environmental Footprint of CCS
- Carbon-neutral and Carbon-negative CCS