



Presentation from PIRT

Technical Group Discussion
and Actions

Clinton Foster
PIRT Chairman



Points for approval

- Revision of the PIRT Terms of Reference
- New CSLF Project submission form
- Approach to increase CSLF uptake – return to members – workshops for CSLF members?
- Update schedule for the CSLF Technology Road Map – analysis method agreed
- Recommendation to form a new taskforce
 - Measuring progress on closing the technology gaps
- Recommendation to put forward the Gorgon Project for CSLF recognition

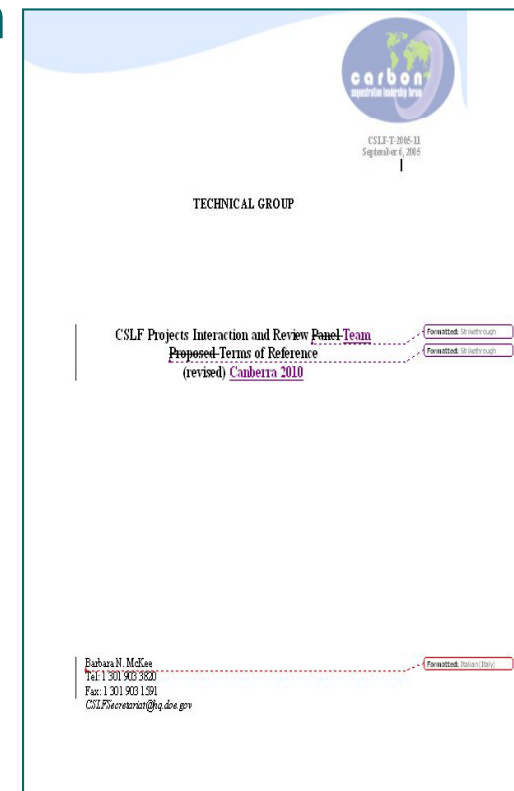


Revision of PIRT Charter and Terms of Reference

- Agreed at Technical Group in London on 11 October 2009 to review the PIRT Terms of Reference and define future action plans

✓ Revised PIRT Terms of Reference


[TAB 4]





Project Submission Form

- ✓ Updated project submission form [TAB 5]



CSLF PROJECT SUBMISSION FORM

PROJECT TITLE:

PROJECT LOCATION:
Please provide the city (or nearest town), the state/province/region, and the country.

PROJECT GOAL:
Please provide a simple and to-the-point explanation in one or two sentences that can be easily understood by someone without prior knowledge of the project.

PROJECT OBJECTIVES AND ANTICIPATED OUTCOMES:
Please provide a brief statement of the Project Goal and the contribution by comparing the whole. Use bullet points to separate the steps and indicate key anticipated outcomes. What does the project bring to facilitate CCS deployment?

PROJECT DESCRIPTION AND RELEVANCE (non-technical):
Please provide a concise synopsis of the project (who, what, why, where and how) with clearly understandable descriptions of the associated science, technology and goals. This should include a justification of your activities in relation to national objectives. Target audience: policy makers, press, non-technical community.

PROJECT DESCRIPTION (technical):
Please provide a more detailed technical description of the project with all significant information, target audience: engineers and scientists.

PROJECT ELEMENTS:
Please check all that apply:

Pre-combustion CO₂ Capture ____
Post-combustion CO₂ Capture ____
Oxyfuel Combustion ____
CO₂ Capture by Other Means (please describe): ____
CO₂ Transport ____
CO₂ Storage with Enhanced Oil Recovery ____
CO₂ Storage with Enhanced Coal Bed Methane Recovery ____
CO₂ Storage with Enhanced Natural Gas Recovery ____
CO₂ Storage with No Resource Recovery ____
CO₂ Measurement, Monitoring, and Verification of Storage (MMV) ____
Identification of Potential CO₂ Storage Sites ____
Identification of Target CO₂ Storage Sources ____
Economic Evaluation ____
Environmental Evaluation ____
Risk Assessment (HSE) ____
Risk Assessment (Financial) ____

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Detailed review of the 11th PIRT meeting

Actions for engaging CSLF recognised projects and attracting new projects

- Ask the projects what they want out of CSLF recognition
- Prompted by comments from stakeholders, developed three questions for CSLF projects:
 - What do you need to make the project succeed?
 - What advantages do you see from greater CSLF project interaction?
 - What else should the CSLF do?
- The responses will help the PIRT to develop a plan for attracting new projects

ACTION: send questions to CSLF project proponents and develop plan for attracting new projects based on responses



Detailed review of the 11th PIRT meeting

- . Analysis of CSLF projects in relation to Gaps
 - Agreed to recommend formation of a new Task Force: ***To assess progress on closing the technology gaps***
 - TF will be led by Technical Group Vice-Chair (Australia)



TF Assessing the progress of closing the gaps

- 4 Working Groups:
 - Integration [lead GCCSI, **members ...**]
 - Capture [lead USA, **members ...**]
 - Transport and Infrastructure [lead Netherlands, **members ...**]
 - Storage [lead Canada, **members** France, USA, ...]

ACTION: Recommend formation of new Task Force
“Assessing the progress of closing the gaps” to Technical Group

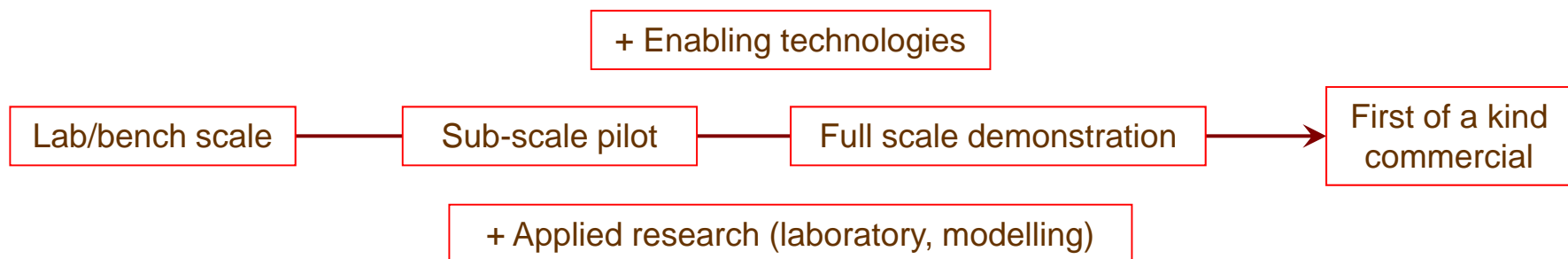
ACTION: Volunteers required for Working
Groups



Detailed review of the 11th PIRT meeting

Analysis of CSLF projects in relation to Gaps (2)

- CCS projects Technology Readiness Level analysis
- Modelled on [NASA Technology Readiness Levels](#)
- Assess CSLF CCS projects within the TRL framework



ACTION: Subgroup formed (Norway, NETL/USA, GCCSI) to undertake CSLF Project Gap Matrix and Technology Readiness assessment; estimated completion date June 2010



Detailed review of the 11th PIRT meeting

Actions for engaging CSLF recognised projects and attracting new projects (1)

- Bring projects together through a “projects workshop” to exchange technical information and learnings, address gaps, and foster greater interaction
- Inform projects about existing networks and other resources they have access to
- Visibility - use CSLF links with other organisations to promote CSLF projects
- Organise projects workshop(s) in collaboration with key CCS events

ACTION: Australia & GCCSI to complete first draft of workshop proposal
Need to coordinate with the Research Networks set up by IEA GHG



Detailed review of the 11th PIRT meeting

Actions for engaging CSLF recognised projects and attracting new projects (3)

CSLF Recognized Projects
Currently, the CSLF recognizes the following projects (click on a link for more information):

- Alberta Enhanced Coal-Bed Methane Recovery Project (Project Completed)
- CAMET Energy Technology Centre (ETC) R&D Oxy-fuel Combustion for CO₂ Capture (Project Completed)
- CASTOR (Project Completed)
- CCS Northern Netherlands
- CCS Rotterdam
- China Coalbed Methane Technology/CO₂ Sequestration Project (Project Completed)
- CO₂ Capture Project (Phase 2) (Project Completed)
- CO₂CAC Oxy-fuel Project
- CO₂ Quest
- CO₂ Separation from Pressurized Gas Stream
- CO₂ SINK
- CO₂ Storage in Limburg Coal and Sandstone Layers
- CO₂STORRE (Project Completed)
- Demonstration of an Oxy-fuel Combustion System
- Dynamics (Project Completed)
- ENCAP (Project Completed)
- European CO₂ Technology Centre Mongstad
- Feasibility Study of Geologic Sequestration of CO₂ in Basalt Formations
- Fort Nelson Carbon Capture and Storage Project
- Frio Project (Project Completed)
- Geologic CO₂ Storage Assurance at In Salah, Algeria
- Heartland Area Refiner Project (HARD)
- IEA GHG Weyburn-Midale CO₂ Monitoring and Storage Project
- ITC CO₂ Capture with Chemical Solvents
- Late CO₂ Capture and Storage Project
- Regional Carbon Sequestration Partnerships
- Regional Opportunities for CO₂ Capture and Storage in China (Project Completed)
- TX Energy Carbon Management and Gasification Project
- Zama Acid Gas EOR, CO₂ Sequestration, and Monitoring Project
- Zorothen

Project Title	Project Overview	Location
International Test Centre (ITC) for CO ₂ Capture	The project is examining improvements to the chemical absorption process (using a variety of solvents) as well as developing new technology and carrying out technology screening studies.	Boundary Dam Power Plant University of Regina
In Salah Project	The field is being developed by In Salah Gas, a 50/50 joint venture between IP and state energy company Sonatrach, and is scheduled to come on stream in 2003-4. Ultimately, In Salah Gas aims to supply a billion m ³ of gas to the southern European market. A component part of the project will include the facility to remove CO ₂ from the gas produced, followed by large-scale reinjection into an underground formation.	Algeria
CO ₂ -Enhanced Coal-Bed Methane Recovery Project (Alberta EOR)	The project aims to reduce greenhouse gas emissions by reinjecting the product of CO ₂ into deep coal beds and to enhance methane recovery rates as a result of CO ₂ injection.	Various Locations
Development of Coal bed Methane Technology/Carbon Dioxide Sequestration Project (CO ₂ CS)	The project is addressing a number of issues leading to an EOR/CO ₂ sequestration demonstration project in China via transfer of Canadian technology. The goal of the project is to promote environmentally sustainable development in China by enhancing its capacity to manage its environment.	Qinshui Basin, China
Field Test of CO ₂ sequestration into the Frio Formation, Texas, U.S.A. - Component of the GPO-REG project	The project demonstrated the process of sequestration in a brine formation setting in Texas where very large scale sequestration may be needed to significantly offset anthropogenic CO ₂ releases.	Liberty County, Texas, U.S.A.
CO ₂ STORRE	The CO ₂ STORRE project utilized the knowledge gained from the SACS project to study new CO ₂ storage opportunities in Europe. It investigated the properties of new storage regions in Denmark, Germany, Norway, and the UK. The project also predicted the long term fate of CO ₂ at Sleipner (Utstein reservoir) and did further work on seismic and gravimetry as monitoring techniques.	Europe
CO ₂ SINK	This project is located at Ketzen, some 25 km west of Berlin, Germany. It is planned that approximately 30,000 tons of CO ₂ will be injected into an aquifer which underlies a residual gas storage reservoir. The target reservoir lies between 1000 and 1500 m depth. A variety of techniques will be deployed to characterise the site prior to CO ₂ injection and some novel down-hole monitoring techniques will be developed and tested. A detailed risk	Ketzen, Germany

Assessment of outcomes from completed projects

ACTION: Secretariat to complete summaries of projects

ACTION: a summary of completed projects is to be completed for the CSLF website, modelled on IEA GHG website / matrix



Detailed review of the 11th PIRT meeting

Recommendation to extend CSLF charter beyond 2013

CSLF Charter: 2013 and beyond

7. Commencement, Extension, Modification, Withdrawal, and Termination

- *7.1 Commencement and Modification*
 - *7.1.1 This Charter will commence on June 25, 2003 and will continue for 10 years unless extended or terminated.*
 - *7.1.2 This Charter may be modified in writing at any time by unanimous consent of all Members.*
- *7.2 Extension, Withdrawal and Termination*
 - *7.2.1 By written arrangement, the Members may extend this Charter for additional periods.*
- Many new and existing projects are projected to commence or be completed after 2013
- Enhance potential for additional CCS projects by extending CSLF beyond its current termination date of 2013

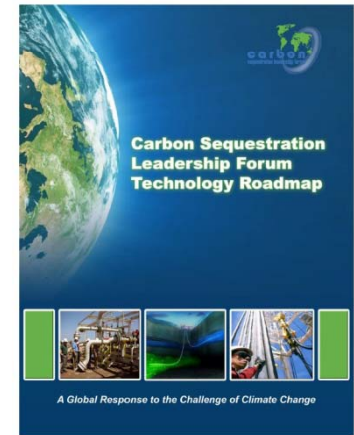
ACTION: that PIRT recommends extension of CSLF beyond 2013 to Technical Group



Detailed review of the 11th PIRT meeting

Schedule for updating Technology Roadmap

- ✓ Developed schedule for next update of Technology Roadmap:
 - **1 June 2010:** Complete revision of technology gaps section and circulate to PIRT
 - **1 July 2010:** Receive updates on national programs and projects
 - **31 July 2010:** Revised Technology Roadmap circulated to PIRT
 - **October 2010:** Table updated TRM
 - **November 2010:** present updated road map at annual CSLF meeting



ACTION: Norway and NETL (USA) to complete revision of technology gaps by 1st June with help from GCCSI

ACTION: delegates to provide country updates (section 2.5) by 1st July

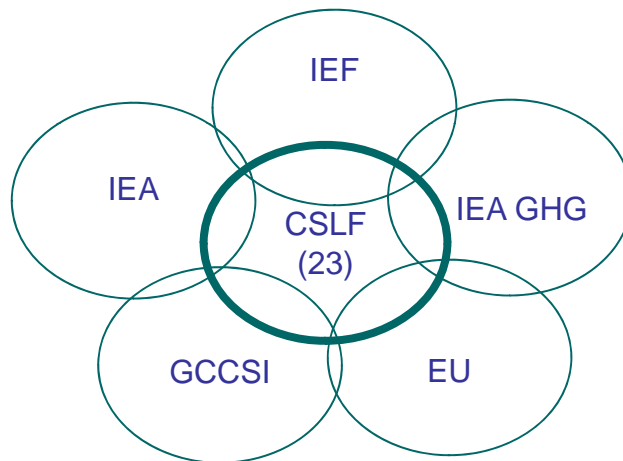
ACTION: projects to provide updates by 1st July

ACTION: GCCSI to provide updated sections 2.1, 2.3, 2.4. **New economics needed**



Detailed review of the 11th PIRT meeting

Review of current collaboration and opportunities for new collaboration



ACTION: Canada to lead preparation of proposal to IEA GHG for study updated study of storage in unconventional geological media: scope may include assessment of resource conflict.

ACTION: Delegates to consider proposing research projects for IEA GHG and other opportunities
Timetable May/November 6 monthly cycles

1. Update on CSLF Collaboration with IEAGHG
2. Update on IEAGHG Activities
3. Learnings from Large-Scale Operational Projects

Tim Dixon
IEA GHG R&D Programme
CSLF PIRT Meeting 1-3 Feb 2010
www.ieaghg.org

EU-supported Research, Development and Demonstration Activities in Clean Coal and CCS

Prepared by:
European Commission, DG Research
Jeroen SCHUPPERS

Presented by:
Nils A. Røkke, SINTEF



Detailed review of the 11th PIRT meeting

Prioritisation of PIRT activities / PIRT action plan

Near term (next 6 months)

- Populate technology gaps matrix and technology readiness level
- Develop plan for attracting new projects using input from new project questions
- Develop plan for implementing a projects workshop
- Prepare summaries of completed projects for web
- Update Technology Roadmap (October 2010)
- Develop and submit project proposals for study of storage of carbon dioxide in unconventional geological media (examples basalts, shales); project scope may include analysis of resource conflict



Detailed review of the 11th PIRT meeting

Prioritisation of PIRT activities / PIRT action plan

Long term (next >18 months)

- Complete periodic assessments of gaps and upgrades of the TRM
- Promote awareness of activities among the CSLF members and stake holders
- Project engagement workshops, events, networks
- Collaboration with other organisations



Recommendations to the Technical Group

- Extend the CSLF Charter beyond 2013
- Complete roadmap update by October 2010
- Undertake extensive gaps analysis (in context of projects)
- Form new Task Force “Assessing the progress of closing the gaps” ***Identify the participating countries.***
- Implement action plan to engage CSLF projects
- Pursue opportunities for collaboration
- Prioritised near and long term activities for PIRT / PIRT action plan
- TG accept the PIRT recommendation that the Chevron JV Gorgon Project becomes a CSLF recognised Project.

Signed Letter of Nomination

CSLF - Gorgon CO2 Injection Briefing - March 2010