



CSLF-T-2007-01

**Carbon Sequestration Leadership Forum
Minutes of the Technical Group Meeting
London, United Kingdom
14-15 November 2006**

LIST OF ATTENDEES

Technical Group Delegates

Australia:	John Bradshaw, Annette Patchett
Brazil:	Paulo Rocha
Canada:	Bill Reynen (Vice Chair), Stefan Bachu
Denmark	Niels Peter Cristensen, Søren Frederiksen
European Commission:	Denis O'Brien, Lars Strömberg, Estathios Peteves, Derek Taylor
France:	Christian Fouillac, Pierre Le Thiez
Germany:	Jürgen-Friedrich Hake
India:	Malti Goel (Vice Chair)
Italy	Giuseppe Girardi, Claudio Zeppi
Japan:	Makoto Akai
Korea	Chang-Keun Yi
Netherlands:	Erik Lysen, Henk Pagnier, Ton Wildenborg
Norway:	Trude Sundset (Chair), Jostein Dahl Karlsen
Russia	Gurgen Olkhovsky, Dmitry Volokhov
South Africa	Fred Goede
United Kingdom:	Nick Otter, Philip Sharman
United States:	Howard Herzog, Joseph Gieve

CSLF Secretariat

John Panek
Richard Lynch
Scott Miles

Invited Speaker

John Gale (IEA Greenhouse Gas R&D Programme)

Other Attendees

Alex Zapantis, Australia
Bernard Frois, France
Philippe Lacour-Gayet, France
Giovanni Ciceri, Italy
Fabio Moia, Italy
Sergio Persoglia, Italy
Jeom-In Baek, Korea
Aage Stangeland, Norway
Anatoly Rubin, Russia
Enrique Moreno, Spain
María Pérez, Spain
Claire Ball, United Kingdom
Keith Burnard, United Kingdom
Hannah Chalmers, United Kingdom
Jeff Chapman, United Kingdom
Sam Holloway, United Kingdom
Sheena Newell, United Kingdom
Bill Senior, United Kingdom
Andy Timms, United Kingdom
George Guthrie, United States
Thomas Shope, United States
Elena Nekhaev, World Energy Council

Session of 14 November 2006**1. Call to Order / Welcome**

The Chair of the Technical Group, Trude Sundset of Norway, called the meeting to order and thanked the United Kingdom for hosting this meeting.

2. Welcome by Host Representative

Claire Ball, Assistant Director of the Emerging Energy Technologies International Team in the United Kingdom's Department of Trade and Industry, delivered the welcoming address. Ms. Ball welcomed the delegates to London and stated that the United Kingdom recognizes the increased importance of clean use of fossil fuels for meeting future climate change issues and is especially supportive of the work being done by the CSLF Technical Group.

3. Statement of the Chair and Vice Chairs and Message from the Policy Group Chair

Ms. Sundset set the stage for the meeting by mentioning some of the items that would come before the Technical Group at this meeting, including planning for a technical workshop that would be held in conjunction with the Paris CSLF meeting in April 2007. She stated that the CSLF Strategic Plan, which came into effect following the April 2006 CSLF meeting in Delhi, India, could result in some new activities for the Technical Group and that there would also be consideration of possible changes in the way that projects are proposed and recognized by the CSLF.

Ms. Sundset then introduced the two Vice Chairs, Bill Reynen of Canada and Malti Goel of India, and asked them to make introductory remarks.

Mr. Reynen mentioned some of the accomplishments of the past 3+ years the CSLF has been in existence, including a series of successful task forces and measurable products such as the CSLF Technology Roadmap. He also mentioned that the visibility of the CSLF has been raised by recent activities such as the August 2006 joint IEA-CSLF Workshop in San Francisco on Near Term Opportunities for Carbon Capture and Storage (CCS) and that there has also been increased cooperation with the IEA, where both organizations are doing complementary work without duplicating effort. Finally, Mr. Reynen stated that he believed that there is a growing recognition within the Technical Group that there should be more dialog with the Policy Group as opposed to simply reporting to the Policy Group.

Dr. Goel said that it was an honor for her to represent India on the CSLF Technical Group and affirmed the importance of international collaboration on CCS research and development (R&D). She mentioned India's participation in

FutureGen project, which is aiming to find potential technological solutions for zero emission coal-based energy generation, and stated her hopes that the CSLF in the next three years will provide a new dimension to R&D collaborations in the emerging area of CCS.

Ms. Sundset also introduced Thomas Shope, the Chief of Staff for CSLF Policy Group Chair Jeffrey Jarrett of the United States, who brought a message to the Technical Group from Mr. Jarrett. Mr. Shope stated that Mr. Jarrett wanted to stress the importance of the Technical Group to the CSLF – if the CSLF is to ultimately be successful, it will be because of the activities of the Technical Group. Mr. Shope also conveyed Mr. Jarrett’s suggestion of four areas for consideration by the Technical Group:

- How can we make communication work better between the Policy Group and the Technical Group?
- How can we best locate money to do the big projects? The delegates of the Technical Group may have some experience and expertise on how to encourage the private sector to participate.
- What does it really mean to have a project recognized by the CSLF? CSLF recognition needs to convey some kind of tangible meaning or value.
- How can we develop a stronger technical transfer function to other countries? This includes not only developing countries but even developed nations where there are financial issue constraints. What is the best way to spread existing knowledge throughout the world?

Finally, Mr. Shope stated that Policy Group and Mr. Jarrett in particular are extremely interested to hear back from Technical Group not only on these issues but any other type of communications, including anything the Policy Group needs to address at the April meeting.

4. Introduction of Delegates and Observers

Technical Group delegates and observers present for the session introduced themselves. Seventeen of the twenty-two CSLF Members were represented at this meeting.

5. Adoption of Agenda

The Agenda was adopted with the following changes and annotations:

- The Report by the Working Group for Review of the Policy Group Capacity Building Task Force (the fifth bullet under Item 8 on the Agenda) would be deferred until the New Business item on the second day of the meeting.

- The Presentation on CCS Activities in the United Kingdom (Item 10 on the Agenda) would be postponed to the second day of the meeting.

6. Review and Approval of Minutes of Delhi Meeting

The Technical Group minutes from the April 2006 CSLF meeting in Delhi, India, were approved with the following change that was requested by India:

In Item 7 (Reports and Updates from Technical Group PIRT and Task Forces), change the final sentence of the first paragraph by adding, at the end, “before it is put up to the Policy Group.”

7. Secretariat Reports and Updates

John Panek of the CSLF Secretariat delivered a presentation that described several areas of Secretariat activities since the Delhi meeting:

- CSLF Website Updates
- Stakeholder Registry
- Proposed Implementation of CSLF Action Plan
- Discussion Forum (Blog)
- CSLF Projects Activity

Mr. Panek stated that there have been more than 90 links added to the “Links” section of the CSLF website since the Delhi meeting and that all presentations from the Delhi meeting and two IEA-CSLF workshops have been added to the “Presentations” section of the website. Mr. Panek also mentioned that there have been more than 50 new CSLF stakeholders registered since the Delhi meeting.

8. Reports and Updates from Technical Group PIRT and Task Forces

Projects Interaction and Review Team (PIRT)

The Chair of the PIRT, John Bradshaw of Australia, delivered a presentation about the PIRT that provided background and progress to date. The PIRT governance consists of a Core Group (presently represented by Australia, Canada, Denmark, European Commission, Germany, India, Norway, the United Kingdom, and the United States) and a Floating Group that will be made up of representatives from the 17 recognized projects and subject area experts. The PIRT Terms of Reference includes the following responsibilities:

- Assess projects proposed for recognition by the CSLF;
- Review the CSLF project portfolio and identify synergies, complementarities and gaps;
- Identify technology gaps where further research, development, and demonstration (RD&D) would be required;

- Foster enhanced international collaboration for CSLF projects;
- Promote awareness within the CSLF of new developments in CO₂ Capture and Storage; and,
- Organize periodic activities to facilitate the fulfillment of the above functions.

The PIRT Core Group has held two meetings since the April 2006 CSLF meeting in Delhi: in Trondheim, Norway, on 23 June and in San Francisco, United States, on 23 August. Dr. Bradshaw mentioned that at the Delhi meeting, the PIRT had identified two key action items:

- Completion of a comprehensive Gap Assessment with the aim of identifying where CSLF projects should be encouraged in relation to the CSLF Charter; and,
- Review of CSLF project selection criteria to ensure consistency with the CSLF Charter, the CSLF Technology Road Map, and the Gap Assessment.

Both of these key actions are now complete. Dr. Bradshaw stated that the Gap Assessment utilized input from the gap analyses work of existing Technical Group task forces and the expertise of the PIRT Floating Group. This Gap Assessment can be used as a template to help plan the Technical Workshop that will be held in conjunction with the Paris CSLF Meeting in 2007. Dr. Bradshaw also stated that an important outcome from the project selection criteria review was a streamlining and formalization of the recognition process by placing an emphasis on the project sponsors to provide adequate documentation and by linking project recognition to CSLF gaps analysis. A new Project Submission Form (attached to these minutes as Appendix B) has been developed, with the assistance of the Secretariat, for this purpose.

The PIRT provided five recommendations to the Technical Group:

- Issue an invitation for other CSLF Members to join the PIRT Core Group;
- Accept the report from the PIRT for the Strategic Plan Implementation Report;
- Accept the Gap Assessment;
- Accept and implement guidelines attached to project recognition for all new projects; and,
- Accept the new Project Submission Form to alleviate shortcomings of previous process.

All of these recommendations were accepted.

Task Force to Identify Gaps in CO₂ Capture and Transport

The Task Force leader, Lars Strömberg of the European Commission, presented a summary of the Task Force's activities since its formation in January 2005. Three types of technologies were considered: those that are well-established and can be deployed within 15 years; those that now being tested at laboratory scale; and those not yet available that will be based on next-generation physical, chemical, and thermodynamic processes. A final report had been submitted by the Task Force prior to this meeting, which was accepted with the following modification that was requested by Korea:

In Section 2 (Chemical Looping), change the first sentence of the third paragraph by deleting the words "such as iron ore, which is disposable after short use."

Following the acceptance of the report, the Task Force was officially disbanded.

Prof. Strömberg also recommended that a report by the European Commission on its Zero Emission Platform (ZEP) be introduced into the CSLF's work. After ensuing discussion, consensus was reached to add a link at the CSLF website to the ZEP website and to recommend that the PIRT consider input from the ZEP in relevant PIRT activities such as planning for the Technical Workshop.

Task Force to Identify Gaps in Monitoring and Verification of CO₂ Geologic Storage

The Task Force leader, Mr. Reynen, delivered a summary of the activities of the Task Force to Identify Gaps in Measurement, Monitoring and Verification of Storage (MMV). Rather than engage in a duplication of effort with the International Energy Agency Greenhouse Gas R&D Programme (IEA GHG), the Task Force chose to review the methodology in this area employed by IEA GHG, whose analysis was aimed at accomplishing two goals:

- Identifying the relative significance of the gaps identified in the Intergovernmental Panel on Climate Change (IPCC) Special Report on CO₂ Capture and Storage; and,
- Identifying key research needs that the IEA GHG can conduct or their members can undertake as part of their research activities.

Mr. Reynen stated that he has received approval from IEA GHG to post their analysis on the CSLF website as the Task Force's final report with recognition to IEA GHG for its work. Mr. Reynen also noted that the IEA GHG analysis is very useful in that it goes beyond MMV and also addresses other topics such as CO₂ capture. The final report had been submitted by the Task Force prior to this meeting. It was accepted and the Task Force was officially disbanded.

Task Force to Review and Identify Standards for CO₂ Storage Capacity Measurement

The Task Force leader, Stefan Bachu of Canada, presented a summary of the Task Force's activities since its formation in 2004. Dr. Bachu prefaced his remarks by stating that henceforward this group would be known as the Task Force to Review and Identify Standards for CO₂ Storage Capacity Estimation, since geologic storage capacity cannot be measured, only estimated. The Task Force has previously issued a Phase I report, which served to document the nature of the problem such as the relationship between assessment scale and the level of detail and resolution of the storage capacity. A Phase II report, targeted for completion in April 2007, will summarize the Phase I findings and provide suggested methodologies for the estimation of CO₂ storage capacity in three types of geologic structures: uneconomic coal beds, oil and gas reservoirs, and deep saline aquifers. Upon completion of the Phase II report, the Task Force will likely recommend continuation to Phase III, which will consider individual case studies and other aspects.

9. Report on Outcomes from IEA-CSLF Workshop

Mr. Panek delivered the Secretariat's presentation on the outcomes of the IEA-CSLF Workshop on Near-Term Opportunities for CCS, which was held in San Francisco, United States, on 23 August. The mission of this workshop was to identify issues and opportunities in five areas: technical, economic/financial, legal/regulatory, public awareness, and international mechanisms. Outcomes from workshop included the following conclusions:

- Interest in CCS opportunities is high and growing.
- CCS technology is advancing, but more must be done.
- The commercial challenges are large, but can be met.
- Realizing near-term CCS opportunities will require a sustained effort to develop and deploy technology, cooperation between governments and industry, viable legal and regulatory frameworks, public understanding and acceptance, and intergovernmental collaborations to address international mechanisms.

The San Francisco workshop was the first of a series of three that the IEA and CSLF are sponsoring on near-term opportunities for CCS in the fossil fuels sector. Assessment will be the topic of a June 2007 workshop in Oslo, Norway, and a subsequent workshop, to be held in Canada later in 2007, will develop recommendations that will be delivered to the G8 at its 2008 meeting in Japan. The three workshops are intended to be cumulative, building upon each other.

10. Proposed Implementation of CSLF Action Plan

Mr. Panek delivered the Secretariat's presentation on proposed implementation of the CSLF Action Plan, which is part of the CSLF Strategic Plan that came into effect following the Delhi CSLF meeting. The Strategic Plan emphasizes six different areas of involvement: CCS technology development and deployment, policy and legal framework, capacity building, public awareness and acceptability, stakeholder involvement, and collaboration with other international organizations. The Action Plan focuses on key strategies and actions in each of these areas, and contemplates activity by both the Policy and Technical Groups. Of these five areas, the Technical Group has responsibility for technology development and deployment while the other areas will be handled by the Policy Group. The technology development and deployment component has three subcomponents: research and development, collaborative projects, and technical support for policy development. Each of these subcomponents has several key outputs, many of which have due dates in the next two years.

Prior to the meeting, the Secretariat submitted a proposed implementation plan that suggested activities for various Technical Group working groups. Ensuing discussion about this proposed implementation plan led to the conclusion that even though some of these activities were already ongoing, too much activity was being requested of the PIRT and that prioritization was therefore necessary. The PIRT was requested to develop this prioritization by the next meeting.

11. Discussion of Need for New Task Forces

There was consensus that some of the activities called out by the Action Plan may be of sufficiently high priority that they should be considered at this meeting. As a result, one new task force was created:

- Task Force to Examine Risk Assessment Standards and Procedures will consist of the United States (lead), Australia, Canada, France, Japan, Netherlands, and Norway. This new task force was encouraged to interface with IEA GHG, which has a special group that is working on risk assessment.

A possible second new task force, to examine societal issues impacting CCS deployment, will be scoped out to determine if it should be formed. This new task force would examine and assess various technical and societal issues such as property access and co-management of land use (especially in the sub-surface for industries such as oil, gas, coal and groundwater) that affect the potential viability of deploying CCS sites. Australia has the lead, and will make a report at the Paris CSLF meeting.

Decision on formation of a third new task force, to develop key definitions of CCS terminology such as "capture ready," was deferred until the Paris CSLF

meeting, as there will be reports from two IEA implementing agreements soon that will deal with this topic. There was consensus that anything the CSLF produces on this topic should be consistent with the IEA and the IPCC.

12. Discussion of Technical Work Plan

A proposal was made by the European Commission that a new task force be created to examine the Technology Roadmap and identify sections that need updating. As this is already the responsibility of the PIRT, consensus was reached to create a subgroup within the PIRT, to be led by the European Commission, which would take on this activity. Upon Canada's suggestion, consensus was reached that this subgroup should also address, in its review, non-technical issues such as the need for policy and regulation (which drive the implementation of CCS), public education, and outreach.

13. Development of Technical Workshop

One of the activities agreed to by the Technical Group at the Delhi CSLF meeting was to begin planning for a Workshop on Identifying Key Obstacles to Implementation of CCS. Pierre Le Thiez, representing France's Organizing Committee for the 2007 CSLF meeting, provided the information that the Workshop had initially been planned for the final day of the Paris meeting. However, since one of the objectives of the Workshop is to attract Policy Group delegates to observe or participate, there was consensus that a better time for the Workshop would be the middle day of the Paris meeting. The Chair will work with the CSLF Executive Committee to establish an acceptable timeframe for the Workshop within the structure of the Paris meeting.

Mr. Reynen, speaking for the PIRT, described the vision for the Workshop, which is intended to bring Technical and Policy delegates together in one forum. To encourage Policy Group delegates to attend, a change of scope for the event to emphasize CCS deployment has been proposed. Similarly, it would appear beneficial to recast some of the issues that the Workshop will address with titles more meaningful and relevant to the Policy Group delegates; for example, the session on MMV could be recast as "Public Safety and Health or Economic Issues," while a session on Capacity could be recast as "Inventory." In general, the Workshop should not be technically oriented except at a high level, perhaps involving the gaps analyses that have been done. Specifically, the Workshop should not include individual reportage of all 17 recognized projects such as had been done at the Berlin meeting in 2005. Instead, a "Lessons Learned" session or poster session might be useful, which could include a means for the recognized projects to identify any value-added benefits that have come from CSLF recognition. Overall, the emphasis should be on quality, not quantity, and there should also be concepts involving developing countries in some of the sessions.

Dr. Goel disagreed with the emphasis on deployment and said that renaming the Technical Workshop as a Deployment Workshop is too early, as such CCS technologies are in R&D and/or demonstration stage and there is no implementation yet in India. Her objection was not agreed to and there was consensus that the PIRT should continue planning the Workshop within the context described by Mr. Reynen. Mr. Reynen stated that the PIRT will revisit the planning activities in January.

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14. Call to Order

Ms. Sundset called the meeting to order, and thanked the host organization, the United Kingdom's Department of Trade and Industry, for arranging the dinner that concluded the previous day's activities.

15. Invited Presentation on CCS Activities in the United Kingdom

Philip Sharman of the United Kingdom delivered a presentation that summarized many of the United Kingdom's CCS-related activities that are underway or in planning. These included policy-related activities such as legal and regulatory work and development of a carbon abatement strategy, and technology-related areas such as R&D, component demonstration, and commercial project activity.

16. Discussion of Project Selection Methodology

At the Delhi meeting, two key actions identified by the PIRT were an examination of CSLF project selection criteria and a gap assessment that identified technology areas where CCS projects should be encouraged. As stated in the PIRT update in Item 8, above, both of these actions are now complete. The Secretariat has developed a new Project Submission Form, which will streamline and formalize the project recognition process. This Form was earlier accepted by the Technical Group as one of the recommendations from the PIRT. There was no further discussion.

17. Introduction and Review of Possible Projects

Ms. Sundset called upon Dr. Goel to introduce this item. Dr. Goel delivered a presentation that described the current CSLF project recognition process and also some of the activities in India related to CCS and energy. India's approach to climate change is related to energy security in that it emphasizes alternate energy utilization, nuclear power, energy efficiency, and promotion of clean coal technologies. The objective of India's participation in the CSLF is to develop cost-effective technologies by organizing collaborative R&D within legal, financial and regulatory framework of the CSLF.

Dr. Goel's presentation included descriptions of three possible applied research projects currently under consideration by India and a brief update on the CSLF-recognized project for CO₂ storage in basalt formations in India:

- Oxy-Fuel Combustion. This project would include establishment of an oxy-fuel combustion test rig at BHEL in the city of Tiruchirapalli for studying the suitability of Indian coals using this technology for pulverized coal combustion and to determine any changes in boiler efficiency.
- Feasibility Study of Underground Coal Gasification. This project would perform a study on technologies such as Controlled Retractable Injection Point (CRIP) technology that could lead to utilization of large deposits of deep-seated coal and lignite in India that are not amenable to extraction by conventional mining methods.
- Development of Materials for High-Temperature Ultra Supercritical (USC) Power Generation. This project would be sited at India's Power Research Institute, and involves small-scale materials science R&D.

There were also brief presentations on other projects:

Mr. Reynen mentioned that a pilot project on acid gas injection for enhanced oil recovery had been previously introduced by Canada at the Delhi meeting and may be proposed for CSLF recognition in the future. Mr. Reynen also mentioned that a Canadian coal-fueled utility, SaskPower, has decided to utilize oxyfuel combustion as a CO₂ capture methodology at a full-scale power plant. SaskPower is also proposing to establish an engineering technology center for disseminating results of the design and operation of the power plant, which would be a unique aspect of this project.

Jostein Dahl Karlsen of Norway provided a brief update of planned CCS-related activities in Norway. These include an assessment of possible CCS projects utilizing enhanced oil recovery (EOR) and an agreement between the Norwegian government and Statoil for construction of a CCS plant at Mongstad, on the coast of Norway, which, in an initial demonstration phase, would capture 100,000 tonnes of CO₂ annually from a planned natural gas-fueled cogeneration facility. These projects could be proposed for CSLF recognition in the future.

Denis O'Brien of the European Commission provided a brief preview of projects the European Commission may propose for future CSLF recognition. These include CO₂ReMoVe, which will evaluate MMV technologies at various sites and attempt to develop a common methodology; GeoCapacity, which will assess geologic CO₂ storage capacity throughout Europe; MOVECBM, which is the second phase of the RECOPOL project; and CACHET, which involves development of precombustion carbon capture technologies and hydrogen production.

Howard Herzog of the United States provided a brief update of the CSLF-recognized Regional Partnerships program, which will soon move to a Phase III. Included in this new phase are several projects that will result in geologic storage of about one million tons of CO₂ per year over a four year period, followed by another four year period of monitoring.

18. Areas of Possible Collaboration between the CSLF and IEA GHG

John Gale, representing IEA GHG, delivered a presentation on possible future areas of collaboration between IEA GHG and the CSLF. His presentation summarized the IEA GHG program and activities, outlined current areas where IEA GHG is collaborating with other groups including the CSLF, and presented several ideas for further collaboration. These include:

- Development of a monitoring selection tool, which would help identify appropriate techniques for monitoring CO₂ that has been injected into geologic storage reservoirs. Such a tool would reside online and be linkable from the CSLF website.
- Capacity building activities such as encouraging developing countries to participate in CCS-related conferences and developing public education processes.
- Support of CSLF-recognized projects, which could include collation of data and knowledge learned from demonstration projects.
- Risk assessment activities, with possible coordination with the new Technical Group Task Force to Examine Risk Assessment Standards and Procedures.

Ensuing discussion led to consensus that IEA GHG is a valuable resource to the CSLF and that IEA GHG presence would be welcome at PIRT meetings. The PIRT will develop a mechanism for formalizing a relationship between IEA GHG and the Technical Group prior to the Paris meeting.

19. Development of Presentation to Policy Group to Identify Permitting Issues Requiring Policy Guidance

One of the items on the Technical Group's work plan from the Delhi meeting was to develop a presentation to the Policy Group concerning permitting issues requiring policy guidance. Ensuing discussion led to consensus that, in light of the outcomes from the recent IEA-CSLF Workshop on Legal and Regulatory Issues, this was not an area where the Technical Group should be in the lead, and that this should be an item on the agenda for the Joint Meeting of the Policy and Technical Groups in Paris. The Secretariat was asked to prepare a summary of the discussions from this agenda item for a report to the Joint Meeting of the Policy and Technical Groups in Paris.

20. Improving Interactions with Policy Group

Ms. Sundset made reference to the remarks by Mr. Shope on the first day of this meeting concerning the need for improved communications between the Policy and Technical Groups. Possible ways for improving interactions would be with joint task forces, and to encourage Policy Group delegates to attend Technical Group meetings. Ms. Sundset suggested that the first milestone where we could move forward in improving interactions would be the agenda and structure of the Paris CSLF meeting and that the meeting should proceed to that item.

21. Development of Agenda for Next Meeting

This agenda item was discussed as a continuation of the item on improving interactions with the Policy Group. Bernard Frois, the head of France's CSLF delegation and a Policy Group delegate, presented the following proposed structure for the Paris meeting:

- Day 0: Preparation and set-up day. Committee and Task Force meetings.
- Day 1: Plenary session, followed by meetings of the Policy Group, Technical Group, and Stakeholders.
- Day 2: Plenary session followed by Technical Workshop.
- Day 3: Conclusions and decisions. Meetings of Policy and Technical Groups followed by closing plenary session.

Ensuing discussion led to consensus that, as was indicated in the proposed structure, the Workshop should be in the center of the meeting rather than on the final day. This is beneficial because the concept for the Workshop has now changed to a forum for joint policy and technical issues centered on barrier issues to deployment, and this positioning would encourage Policy Group delegates to attend. There was consensus that the title of the Workshop will be "Overcoming Barriers to Deployment" and that the Co-Chairs of the PIRT (Australia, the European Commission, and the United Kingdom) and France (as meeting host) have the lead in developing the content of the Workshop.

There was also consensus on the following:

- The Paris meeting structure should eliminate duplication in plenary sessions or joint meetings in order to optimize the time that the Policy and Technical Groups can work together.
- There should also be an agenda item or an invited presentation on the concept of "storage ready".

22. New Business

Jeff Chapman, speaking on behalf of the United Kingdom's delegation, suggested that the Technical Group may wish to examine technical aspects of health and

safety pertaining to geologic storage of supercritical CO₂. Currently, the United Kingdom has two agencies, the Health and Safety Executive and the U.K. Energy Institute, that are conducting research on the properties of supercritical CO₂ and are developing guidelines for pipelines that convey supercritical CO₂. The Technical Group could perhaps utilize or build on this knowledge base for possible application elsewhere in the world. The Technical Group may take up this item at a future meeting.

There was consensus that the review of the activities of the Policy Group Capacity Building Task Force would be tabled until the Paris meeting.

Appendix A

Technical Group Action Items Arising from London Meeting

Item	Lead	Action
1	Chair and Secretariat	Issue invitation for any CSLF Member not already represented to join the PIRT Core Group.
2	Secretariat	Add link to ZEP at the CSLF website.
3	Secretariat	Post final reports of the Task Force for Identifying Gaps in CO ₂ Capture and Transport and the Task Force for Identifying Gaps in MMV to the CSLF website.
4	PIRT	Implement the revised projection selection criteria, including the new Project Submission Form, for all new projects.
5	PIRT	Consider input from ZEP for all relevant PIRT activities.
6	PIRT	Develop prioritization for implementation of CSLF Action Plan items.
7	Task Force to Examine Risk Assessment Standards and Procedures	Prepare initial progress report.
8	Task Force to Examine Societal Issues Impacting CCS Deployment	Prepare initial progress report.
9	PIRT	Create a subgroup, to be led by European Commission, which will examine the CSLF Technology Roadmap and identify sections that need updating. The subgroup should also address non-technical issues such as the need for policy and regulation, public education, and outreach.
10	PIRT	Develop content and proposed agenda for the Workshop on Overcoming Barriers to Deployment at the January 2007 PIRT meeting. The Co-Chairs (Australia, the European Commission, and the United Kingdom) and meeting host France, have the lead.
11	Chair	Work with CSLF Executive Committee to establish an acceptable timeframe for Technical Workshop at 2007 CSLF meeting in Paris.

Item	Lead	Action
12	PIRT	Invite IEA GHG to participate as observer at all future PIRT Core Group meetings and develop a mechanism for formalizing a relationship between IEA GHG and the Technical Group.
13	Chair	Work with CSLF Executive Committee to include an agenda item at the next Joint Meeting of Policy and Technical Groups on identifying permitting issues requiring policy guidance.
14	Secretariat	Summarize discussion from the agenda item on Development of Presentation to Policy Group to Identify Permitting Issues Requiring Policy Guidance item for a report to the Joint Meeting of the Policy and Technical Groups.
15	Chair	Work with CSLF Executive Committee to include an agenda item or invited presentation at the next Joint Meeting of Policy and Technical Groups on the concept of “storage ready”.
16	Chair	Work with CSLF Executive Committee to include an agenda item at the next Joint Meeting of Policy and Technical Groups on possible involvement of Technical Group as advisor to Policy Group’s Capacity Building Task Force.

Appendix B

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 with no prior knowledge of the project.

PROJECT OBJECTIVES:

Please provide a breakdown of the Project Goal into the constituent steps comprising the whole. Use bullet points to separate the steps.

PROJECT DESCRIPTION (non-technical):

Please provide a concise synopsis of the project (who, what, why, where and how) with easily understandable descriptions of the associated science and goals. Target audience: policy makers, press, adult non-scientific community.

PROJECT DESCRIPTION (technical):

Please provide a more detailed technical description of the project with all significant information, including the estimated greenhouse gas mitigation impact of the project. Target audience: engineers and scientists.

PROJECT TECHNOLOGIES:

Please check all that apply.

CO₂ Separation and/or Capture _____

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 Secondary Recovery _____

CO₂ Measurement, Monitoring, and Verification of Storage (MMV) _____

Identification of potential CO₂ storage sites _____

Identification of target CO₂ sources _____

Economic and/or Environmental Evaluation and/or Risk Assessment _____

Other (please describe):

PROJECT TIMELINE:

Please provide the project start date, any milestone events (listed chronologically), and the end date. Use most realistic timeline available. Use official (contract signing, etc.) start date. End date should reflect contractual timeline if possible. Use bullet points.

Please also provide answers to the following questions:

Has the project already progressed through the early phases of planning, such as (but not exclusively) documenting the project scope, outputs and outcomes? _____

Has the project management identified the magnitude of resource requirements sufficient to achieve the major milestones of the project? _____

Has the project management identified funding sources for the project? _____

Will the project be able to meet its major milestones prior to the expiration of the CSLF Charter (currently 2013)? _____

INFORMATION AVAILABILITY:

Please provide a description of the types of information that will be made available from the project and the outcomes that would be achieved by the project. Please also provide information about the relevance of the project to the overall aims of the CSLF and to carbon capture and storage technology in general.

Please also provide answers to the following questions:

Is the project management willing to share non-proprietary project information with other CSLF Members? _____

Will the expected information from the project be sufficient to allow others to make informed estimates of the technology's potential technical performance, costs, and benefits for any future applications? _____

Will English-language project summaries be available for posting at the CSLF website? _____ (Please also provide details on how, and how often, these summaries and other project information will be made available.)

DISSIMILARITY TO OTHER CSLF PROJECTS:

Please provide a short description of how the proposed project is non-duplicative of other CSLF-recognized projects, or where there are similarities, please identify how the commonality of research topics could be coordinated and shared learnings developed between the similar projects.

RELEVANCE TO CSLF GAPS ANALYSIS:

Please provide an indication of what aspects of the CSLF Gaps Assessment are likely to be addressed in the project outcomes, or if new technology gaps have been identified, list those that are planned to be addressed.

PROJECT CONTACTS:

Please provide name and contact information (including telephone and e-mail) for the project manager or coordinator. Please also provide name and contact information (including telephone and e-mail) for the person who will handle any requests for site visits by representatives of CSLF Members.

Please also provide an answer to the following question:

What restrictions, issues, or costs will be assumed by any visitors to the project site?

OTHER PROJECT TEAM MEMBERS:

Please provide a listing of all entities, with points of contact, who are participating in this project. If available, please also include a management structure diagram or otherwise indicate the role of each participating entity.

PROJECT WEBSITES:

Please provide the web address of the main project website, if one exists. If available, please also provide the web addresses of other project-related websites such as workshops, project presentations, etc.

PROJECT NOMINATORS:

In order to formalize and document the relationship with the CSLF, the representatives of the project sponsors and the delegates of Members nominating the project must sign a Project Submission Form specifying that relationship before the project can be considered.

Project Sponsor representative
(Affiliation)

Project Sponsor representative
(Affiliation)

CSLF delegate
(CSLF Member)

CSLF delegate
(CSLF Member)