



CARBON SEQUESTRATION LEADERSHIP FORUM

**Carbon Sequestration Leadership Forum
Minutes of the Policy Group
Melbourne, Australia
13 and 15 September 2004**

LIST OF ATTENDEES

Official Delegates

Australia: John Ryan (Vice Chair), Tania Constable
Brazil: Eduardo Carvalho
Canada: Mondher Benhassine, Teresa Marty
China: Kong Xiangwen, Lu Xuedu
Colombia: Carolina Villafane Garcia
European Commission: Peter Horrocks, Angel Perez Sainz
France: Bernard Frois, Richard Lavergne
Germany: Hanns-Joachim Neef, Gunter Brandes
India: R.V. Shahi, R.K. Sethi
Italy: Sergio Garribba (Vice Chair), Marcello Capra
Japan: Hiroshi Yamagata, Makoto Akai
Mexico: Juan Mata Sandoval
Norway: Odd Sverre Haraldsen, Sverre Bjelland
Russia: Sergey Mazurenko
South Africa: Anthony SurrIDGE, Roger Wicks
United Kingdom: Bronwen Northmore, Mathew Coyne
United States: Mark Maddox (Chair), Justin Swift

Chair of the Technical Group

Peter Rozelle

Secretariat

Barbara McKee
Jeffrey P. Price
Robert Gentile
Robert Donovan
Kathryn Paulsgrove

SUMMARY OF PROCEEDINGS

Monday, 13 September, 2004

1. Opening Remarks/Welcome

The meeting of the Policy Group was chaired by Mark Maddox. France was welcomed as a new CSLF Member

2. Introductions

Following the opening remarks, the Policy Group delegates present for the session introduced themselves. Delegates from all seventeen of the CSLF Members were present.

3. Adoption of Agenda

The Draft Agenda was adopted without change.

4. Review and Approval of Minutes of Rome Meeting

The Draft Minutes of the previous Policy Group meeting held in Rome in January 2004 had been circulated to the Policy Group prior to the meeting. These Draft Minutes were approved.

5. Report from Technical Group and

6. Consideration of Technical Group Recommendations

Dr. Peter Rozelle, Chairman of the Technical Group, presented the report from the Technical Group. This report described the Technology Roadmap developed by the Technical Group and projects recommended by the Technical Group to the Policy Group for CSLF recognition. Approval of both the Technology Roadmap and the ten projects was requested from the Policy Group.

Technology Roadmap. Dr. Rozelle described the process through which the Technology Roadmap was developed, its objectives and content. The Draft Roadmap was approved with a change in terminology from the use of the term “deployment” to “development to the commercial stage.” In addition, the Policy Group directed the Technical Group to produce a document explaining relationships among the Technology Roadmap, proposed projects and the CSLF Charter.

Projects Recommended. Ten projects were recommended for recognition by the CSLF:

- ARC Enhanced Coal Bed Methane Recovery Project (Canada, United States and United Kingdom)

- CANMET Energy Technology Centre (CETC) R&D Oxyfuel Combustion for CO₂ capture (Canada and the United States)
- CASTOR (European Commission, France and Norway)
- CO₂ Capture Project, Phase II (United Kingdom, Norway, Italy and United States)
- CO₂ Separation from Pressurized Gas Stream (Japan and United States)
- CO₂SINK (European Commission and Germany)
- CO2STORE (Norway and European Commission)
- Frio Project (United States and Australia)
- ITC CO₂ Capture with Chemical Solvents (Canada and United States)
- Weyburn II CO₂ Storage Project (United States, Canada and Japan)

All ten projects were approved by the Policy Group.

Meeting Schedule. Several delegates suggested decoupling the meetings of the Policy and Technical Group in order to give the Policy Group more time to consider Technical Group proposals. This suggestion will be considered for future meetings as it may be necessary to maintain flexibility.

7. Report of the Legal, Regulatory and Financial Issues Task Force

John Ryan, Vice Chair of the CSLF Policy Group, presented the Legal, Regulatory and Financial Issues Task Force report. He noted that considerable work had been conducted in several areas over the fifteen months since the taskforce was established. In specific:

- Regulatory Issues. This work identifies the key issues which countries may wish to take into consideration when designing their own regulatory regime for CO₂ capture and storage. The work of the Task Force has been completed and the report on this topic is ready for Ministerial consideration.
- Legal Issues. This work seeks to clarify how relevant international conventions might apply to CO₂ capture and storage. Results so far mostly come from a joint International Energy Agency (IEA) Working Party on Fossil Fuels/CSLF workshop in Paris arranged by the CSLF Secretariat. The IEA has prepared a draft report on these issues and this work will be continued through the IEA Working Party on Fossil Fuels and in other fora.
- Economic Modeling. A report on economic modeling has been prepared. This report includes various recommendations for a future work program in economic modeling by the Policy Group. Transfer to the Technical Group of those aspects of economic modeling work related to estimating the cost and performance of CO₂ capture was proposed. It was also decided that economic modeling activities should be differentiated from work on financing issues.

As part of the discussion of economic modeling, India raised the issue of financing of projects in developing countries and proposed a fund coupled with economic incentives under the Clean Development Mechanism. It was generally agreed that

this issue was important. The Chair suggested establishing a taskforce on project financing in developing countries to be led by India and that further discussion of this issue take place on Wednesday, September 15.

8. Stakeholder Involvement

Sergio Garribba described the process used to consider how stakeholders should be involved in the CSLF and the conclusions of the Stakeholder Concept Paper prepared for the Policy Group. Two methods of stakeholder involvement are proposed: a Stakeholder Engagement Register and regular stakeholder meetings. This proposed approach was approved by the Policy Group.

Two stakeholder workshops were conducted concurrent with this session of the Policy Group. One was a Technical Perspectives Workshop and the other was a Policy Issues Workshop. A presentation summarizing the views of the stakeholders expressed in these workshops was presented the following day to the Ministerial Meeting. This presentation is incorporated in these Minutes as Annex A.

9. Ministerial Communiqué

An ad hoc committee met to resolve remaining issues related to the Ministerial Communiqué and to complete its drafting prior to the end of the day's session. These issues were resolved by the ad hoc committee and the final draft Communiqué was approved by the Policy Group. The Ministerial Communiqué is incorporated in these Minutes as Annex B.

Wednesday, 15 September 2004

The session was opened by the Chair of the Policy Group, Mark Maddox, who called upon the Secretariat to review the first day's session.

1. Review of Policy Group First Day

Barbara McKee of the Secretariat noted that the key decisions of that session were:

- Approval of the technology roadmap and the ten proposed projects,
- Acceptance of legal and regulatory work with discussion in the present session of future work and that economic modeling work is to continue,
- Recognition of the importance of financing issues in developing countries, and
- Acceptance of the report on Stakeholder Involvement with a Stakeholder Register and regular thematic meetings.

2. Report on Terms of Reference and Procedures

The CSLF Terms of Reference and Procedures were agreed to at the Policy Group meeting in January 2004 and went into effect 45 days thereafter. The section of the CSLF Terms of Reference and Procedures on involvement of stakeholders had been held in abeyance at the January meeting of the Policy Group pending the further work on the issue by the Stakeholders Taskforce. The Policy Group discussed this section and the following text drafted by Canada was agreed upon:

It is recognized that stakeholders, those organizations that are affected by and can affect the goals of the CSLF, form an essential component of CSLF activities. Accordingly, the CSLF will engage stakeholders paying due attention to equitable access, effectiveness and efficiency and will be open, visible, flexible and transparent. In addition, CSLF members will continue to build and communicate with their respective stakeholder networks.

3. Discussion of Openness and Transparency

The Policy Group discussed how to balance the need for openness and transparency with stakeholders and the public with the need for the CSLF Members to have frank, open and transparent discussions with each other. This issue was particularly important with reference to draft documents and sensitive material. After discussion it was decided that:

- The “Members Only” section of the CSLF Website will be continued, and
- No working documents will be released on the public part of the website without the approval of the Policy Group.

4. Secretariat Reports

Barbara McKee of the Secretariat presented two Secretariat reports that were requested by the Policy Group during its January 2004 meeting, one on Public Outreach and the other on Developing Countries.

Public Outreach. Several actions were proposed in this report including establishment of a Public Awareness Outreach Taskforce and an initial outreach workshop involving communications experts. The report also stated that any CSLF public outreach activities should be designed to support and not supplant Members’ activities in this area.

It was decided that Canada will lead an effort to consider what further activities the CSLF should conduct in the area of public awareness outreach. The European Commission, France and the United States expressed interest in participating in the taskforce.

At this point, the chairmanship of the meeting was turned over to John Ryan, Vice Chair.

Developing Countries. Three methods of involvement were proposed and different actions were taken on each as follows:

- Capacity Building. The Secretariat was tasked with writing a report on creating a framework for CSLF work in this area.
- Opportunity Assessment. This activity would involve identifying and matching sources and sinks. It was decided that this activity will be left for the Technical Group.
- Financing Initiatives. This issue will be addressed by a Financing Taskforce led by India.

Several Members indicated that they were interested in participating in various aspects of developing country activities. These were: South Africa, Germany (capacity building), the European Commission (capacity building and financing initiative) and the United States (financing initiative).

5. Future Work Program

The meeting was opened to a discussion of the future work program. John Ryan reminded delegates that the Chair had circulated a paper suggesting possible directions for future work as a stimulant to discussion. This letter served as a basis for the ensuing discussion.

The conclusions from the discussion of the future work program were as follows:

- The Technical Roadmap was recognized as needing to be updated from time to time, but concern was expressed about the proposal to update it annually. The consensus was that the Technical Roadmap should be updated as needed on a regular basis.
- Members requested a concise CSLF action plan so they could understand and explain Policy and Technical Group activities, responsibilities and schedule.
- The European Commission suggested that a broad-based panel be formed to identify and review CSLF projects and aimed at providing advice on synergies, gaps, and opportunities to enhance cooperation within and across projects. This suggestion drew some questions and comments and the European Commissions agreed to write a paper for the Policy Group explaining its proposal. This will be done in cooperation with the group led by the EC in the Technical Group.
- Intellectual property is very project specific and will probably be a task for the Technical Group to address as it undertakes specific projects.

- Technology cost and performance estimation aspects of economic modeling will be moved to the Technical Group, with policy-related aspects of economic modeling remaining with the Policy Group.
- The Technical Group was requested to prepare a check list of those steps necessary to establish a sequestration project for countries new to sequestration.
- Canada will coordinate an effort on public outreach and, working with other members, will recommend to the Policy Group a proper designation for this effort.
- The Legal, Regulatory and Financial Taskforce is terminated. Further activities to examine legal issues will be carried out with the IEA Working Party on Fossil Fuels as well as other competent fora and the Policy Group will monitor this work.
- Expansion and updating of the CSLF Website was discussed. The Secretariat stated that expansion and updates were planned and this was approved.

6. Next Meeting

Germany invited the CSLF to hold the next joint meetings of the Policy and Technical Groups in Berlin, Germany, during September 2005.

ACTION ITEMS ARISING FROM THE MEETING OF THE POLICY GROUP

Item	Lead	Action
1.	Technical Group	Produce document explaining relationships among the Technology Roadmap, proposed projects and CSLF Charter.
2.	Policy Group	Consider decoupling meetings of Technical and Policy Groups as necessary to maintain flexibility.
3.	Policy Group	Monitor IEA Working Party on Fossil Fuels work on legal issues.
4.	Technical Group	Conduct economic modeling activities as they relates to estimating technology cost and performance.
5.	Secretariat	Implement a Stakeholder Register.
6.	Canada (Lead) with France, the European Commission and the United States	Consider what actions the CSLF should take on public awareness outreach.
7.	Secretariat	Write report on capacity building for sequestration in developing countries.
8.	Technical Group	Consider sequestration opportunity assessments in developing countries.
9.	India	Organize and lead a taskforce on financing initiatives for sequestration in developing countries.
10.	Technical Group	Update the Technology Roadmap on a regular basis.
11.	Secretariat	Write a concise paper outlining Policy and Technical Group activities, responsibilities and schedules.
12.	European Commission	Write a paper to explain proposal for a broad-based project review panel.
13.	Technical Group	Address intellectual property issues as they arise in specific projects.
14.	Policy Group	Continue policy-related economic modeling activities.
15.	Technical Group	Prepare a check list for countries new to sequestration of those steps necessary to establish a sequestration project.
16.	Secretariat	Expand and update the CSLF website.

ANNEX A

Presentation on Stakeholder Perspectives

*Carbon Sequestration
Leadership Forum*

September 13-15, 2004

Melbourne, Australia

Stakeholder Workshop

Barry Worthington

United States Energy Association



Stakeholder Perspectives

- Importance of stakeholder involvement
- Promoting technology awareness and information sharing
- Technology transfer to developing countries
- Project recognition – industry viewpoint



Stakeholder Role in CSLF

- Significant support has been expressed for substantive involvement of a broad group of stakeholders in the CSLF
- CSLF will only be successful if supported by a broad coalition of stakeholders



Stakeholder Participation Can Be As Follows:

- Stakeholders are welcome to attend all committee meetings and workshops
- The role for stakeholders can be defined for each meeting on an individual meeting basis
- It is envisioned that opportunity will exist for stakeholders to express their views



- Stakeholders should cover the expenses associated with participation
- CSLF members will determine how their stakeholders will participate
- Limitations can be imposed if practical considerations, i.e., facility/accommodation constraints exist
- CSLF members are welcome and encouraged to establish stakeholder processes within their jurisdiction



- Public section of the CSLF website including opportunities for stakeholders to interact (bulletin board)
- Outreach efforts coordinated by the Secretariat
- Communication by CSLF members through relevant associations/NGO's, conferences
- Stakeholders will have dedicated sessions at any future CSLF Ministerial level meeting
- The Secretariat and other CSLF member representatives can participate in stakeholder briefings
- The CSLF policy committee will annually evaluate stakeholder participation



Promoting Technology Awareness and Information Sharing

- Public education critical to success
- CSLF should target key opinion leaders
 - Elected and appointed government officials at national, regional, provincial, municipal levels
 - Key community groups
 - Environmental NGO's
 - Educators
 - News Media



- Information should recognize general apathy of public regarding technical subjects
- Citizens expect government and industry to “take care” of energy/environmental issues
- Citizens generally do not relate to risk assessments
- Communication tools need to be developed that can be used on local, project specific level



- Stakeholder endorsement of communication tools boosts credibility
- Openness, transparency in communication processes is critical
- Generic communication tools can be adapted to national/local level
- Carbon capture and storage principles can be introduced in high school classes



Technology Development and Transfer

- Developing countries most critical
- Past failures ignore basic issue:
 - “Advanced technologies are less economic than traditional”
- Efforts to address secondary barriers will not succeed unless primary barriers are addressed
- CSLF has unique challenge/opportunity



Investment Requirements in Developing Countries 2001-2030

- \$6 trillion (U.S.) needed
(\$200 billion per year)
- \$600 billion to provide universal access
(\$20 billion per year)



How Much Is This?

- U.S. spending on health care in 2003 - \$1.7 trillion
- Uncollected U.S. taxes - \$250 billion
- Annual revenue for Coke - \$20 billion
- Sales of Lipitor in 2003 - \$9.2 billion
- 1000 MW IGCC plan – \$1.6 billion



New Financial Strategies Are Needed

- Market based concepts of “no subsidies” and “full cost pricing” are not satisfactory
- CC&S projects will not prove economical and will not attract adequate capital on a global comprehensive scale
- Result – no technology deployment to developing countries



Needed Financial Tools

- Direct loans / loan agreements
- Production tax credits
- Direct subsidies
- Capital cost buy down
- Global development bonds



Project Recognition

- Stress recognition – not “endorsement”
- Integrate stakeholder involvement in finalizing criteria
- Relate to regulating principals



Ministerial Communiqué**CARBON SEQUESTRATION LEADERSHIP FORUM****Ministerial Communiqué****14 September 2004****Meeting of the Carbon Sequestration Leadership Forum (CSLF) Ministers**

We, the Ministers of the CSLF Members, meeting in Melbourne, reaffirm our commitment to the CSLF as a framework for international cooperation in research and development for the capture, transport and storage of carbon dioxide (CO₂).

For the foreseeable future it is likely that fossil fuels will continue in widespread use throughout the world. Therefore, the considerations that stimulated the creation of the CSLF remain of vital importance. It may enable CO₂ capture, transport and storage technologies to be developed as one of the options for addressing greenhouse gas emissions and promoting sustainable development worldwide.

We warmly welcome the three new Members-France, Germany, and South Africa-that have joined the CSLF since the last Meeting of Ministers, held in Tysons Corner, Virginia, USA, during June 2003. We see their membership as clear evidence of the growing global interest in CO₂ capture, transport and storage as a means of mitigating emissions of greenhouse gases.

Projects and Technical Progress

We welcome and support the CSLF Technology Roadmap developed by the CSLF Technical Group and approved by the CSLF Policy Group. Although the roadmap does not commit the CSLF or its members to specific actions, we see it as an important framework that could guide future technical collaboration by the CSLF members. We see the CSLF Technology Roadmap evolving as more is learned. We anticipate that the CSLF Technology Roadmap should be revised from time to time to reflect this new knowledge.

We are pleased to be able to recognize ten collaborative projects proposed by Members. These projects range in scope and as a whole are expected to increase our knowledge in all areas, including technology, economics, health, safety, and the environment. Overall, they demonstrate the breadth and richness of ongoing activities around the world involving CO₂ capture, transport and storage and should lay the foundation for new and enhanced technology cooperation under the CSLF.

The ten projects are:

- **ARC Enhanced Coal-Bed Methane Recovery Project (Canada, United States and United Kingdom).** The objective of this project is to evaluate, from both

economic and environmental criteria, a process of CO₂ injection into deep coal beds for simultaneous sequestration of the CO₂ and liberation (and subsequent capture) of coal-bed methane.

- **CANMET Energy Technology Centre (CETC) R&D Oxyfuel Combustion for CO₂ Capture (Canada and United States).** The objective of this project is to demonstrate oxyfuel combustion technology with capture of a high-purity CO₂ stream suitable for enhanced oil recovery and to provide information for the scale-up, design and operation of industrial and utility plants based on the oxyfuel concept.
- **CASTOR (European Commission, France and Norway).** The objective of this project is to attempt to validate, from process, economic, legal, and public acceptance perspectives, post-combustion capture and storage of CO₂ with a goal of achieving a major cost reduction in CO₂ capture cost.
- **CO₂ Capture Project, Phase II (United Kingdom, Norway, Italy, and United States).** The objective of this project is to continue the development of new technologies to reduce the cost of CO₂ separation, capture, and geologic storage from combustion sources such as turbines, heaters and boilers.
- **CO₂ Separation from Pressurized Gas Stream (Japan and United States).** The objective of this project is to evaluate processes and economics for CO₂ separation from pressurized gas streams with gas separation membranes.
- **CO₂SINK (European Commission and Germany).** The objective of this project is to test and evaluate CO₂ capture and storage in order to better understand the science and processes involved in underground storage of CO₂ and to provide experience for use in development of future regulatory frameworks for geological storage of CO₂.
- **CO₂STORE (Norway and European Commission).** The objective of this project is to demonstrate, as a follow-on to the current Sleipner project, monitoring to track CO₂ migration to undertake additional studies to gain further knowledge of geochemistry and dissolution processes.
- **Frio Project (United States and Australia).** The objective of this project is to demonstrate CO₂ sequestration in an on-shore underground saline formation in order to verify conceptual models and monitoring methods, demonstrate that no adverse health, safety or environmental effects will occur, and develop experience necessary for larger-scale experiments.
- **ITC CO₂ Capture with Chemical Solvents (Canada and United States).** The objective of this project is to demonstrate CO₂ capture using chemical solvents, with a goal of developing improved cost-effective technologies for separation and capture of CO₂ from flue gas.
- **Weyburn II CO₂ Storage Project (United States, Canada, and Japan).** The objective of this project is to utilize CO₂ for enhanced oil recovery at a Canadian oil field, including monitoring of CO₂ migration within the oil field, with a goal of determining the overall performance and risks in using CO₂ for enhanced oil recovery.

It is our expectation that the information generated through these collaborative projects will assist in the efforts to improve estimates of the potential performance, costs, and benefits of these technologies. Information on these projects will be made available through the CSLF Secretariat.

Work of the Legal, Regulatory and Financial Issues Task Force

We have received the report, “*Considerations on Regulatory Issues for Carbon Capture and Storage Projects*” from the CSLF Legal, Regulatory and Financial Issues Task Force. These considerations are based on experience with CO₂ capture, transport and storage projects and related activities in those countries that currently participate in such projects and activities. The report could represent a useful point of reference when developing legislation, regulations and frameworks for CO₂ capture, transport and storage.

Stakeholder Involvement and Public Awareness

We recognize that CO₂ capture, transport and storage will affect many types of stakeholders. We further recognize that their views and contributions are important to the success of CSLF. We value the perspectives and potential contributions of stakeholders and express our commitment to include them in our work. We are convinced of the necessity of an open and transparent operation of the CSLF. Accordingly, we welcome the proposal of the Policy Group to create and administer a Stakeholder Engagement Register and to use the CSLF website and other appropriate media to create an ongoing two-way dialogue with stakeholders. We ask the Policy Group to consider ways to make public the work of the CSLF in a timely manner.

CO₂ capture, transport and storage technologies are not widely known among the general public throughout the world. Yet, public acceptance and support based on a clear and accurate understanding of all aspects of these technologies, including the safety and environmental dimensions, is vital. Informing the public is thus a critical need for the acceptance of carbon dioxide capture, transport and storage. Therefore, we ask the Policy Group to examine public outreach programs on carbon dioxide capture, transport and storage to facilitate sharing of experiences among CSLF member countries. Public outreach programs should be based on sound scientific, technical, economic and environmental information.

Conclusion

The actions that we have taken today demonstrate our commitment to achieving the objectives of the CSLF Charter. We will work closely with our Ministerial colleagues to ensure that the CSLF achieves its purpose.