



## CARBON SEQUESTRATION LEADERSHIP FORUM

**Carbon Sequestration Leadership Forum  
Minutes of the Policy Group Meeting  
ENEL Conference Center, Rome, Italy  
21-22 January 2004**

### **LIST OF ATTENDEES**

#### **Official Delegates**

Australia: John Ryan (Vice Chair), Tania Constable  
Canada: Mondher Ben Hassine, Teresa Marty  
China: Kong Xiangwen  
Colombia: Paula Tolosa Acevedo  
European Commission: Peter Horrocks, Denis O'Brien  
Germany: Helmut Geipel  
India: R. V. Shahi, V.S. Ramamurthy  
Italy: Sergio Garribba, Marcello Capra  
Japan: Shigetaka Seki  
Norway: Odd Sverre Haraldsen, Tone Skogen  
Russian Federation: Sergey Mazurenko  
South Africa: Anthony Surridge  
United Kingdom: Brian Morris  
United States: C. Michael Smith (Chair)

#### **Chair of the Technical Group**

Kailai Thambimuthu

#### **Invited Speaker**

Marianne Haug, International Energy Agency

#### **Secretariat**

Barbara McKee  
Robert Donovan  
Richard Lynch  
Scott Miles  
Jeffrey Price

#### **Observers**

Richard Aldous, Australia  
Barry Jones, Australia  
Paula Matthewson, Australia  
Fiona Nicholls, Australia  
Karen Schneider, Australia

Stuart Smith, Australia  
Ross Williams, Australia  
Guenter R. Simader, Austria  
Theodor Zillner, Austria  
Paulo Jardim, Brazil  
Ajay Shankar, India  
Fiorenzo Bregani, Italy  
Marcello Garozzo, Italy  
Henri Th. Cahen, Netherlands  
Jeff Chapman, United Kingdom  
Simon Crabbe, United Kingdom  
Malcolm Key, United Kingdom  
George Marsh, United Kingdom  
Bronwen Northmore, United Kingdom  
Barbara DeRosa–Joynt, United States  
Stephen Eule, United States  
Robert Gentile, United States  
Arthur Lee, United States  
Ken Nemeth, United States  
Daniel Reifsnyder, United States  
Harlan Watson, United States  
Barry Worthington, United States

## **SUMMARY OF PROCEEDINGS**

### **1. Opening Remarks**

The meeting was opened by Chair, C. Michael Smith of the United States. Mr. Smith convened the meeting and thanked ENEL for making the meeting rooms available. He then welcomed South Africa and Germany, which were attending for the first time as Members. These countries made statements of their interest and involvement in sequestration.

### **2. Adoption of the Agenda**

The Draft Agenda for the meeting was submitted by the Secretariat to the Policy Group in December, 2003. Australia moved that the Draft Agenda be adopted. Canada seconded the motion and it was adopted unanimously.

### **3. Host Country Remarks/Welcome**

Prof. Sergio Garribba, Director General of the Ministry of Productive Activities, welcomed the Policy Group to Italy and stated that Italy was very happy to host the meeting and thanked ENEL for providing the facilities.

Prof. Garribba stated that he assumed that fossil fuels would be an option for the long term and that sequestration would be needed, along with renewables and energy efficiency. He noted that Italy has strict carbon limits and is committed to a low-carbon future. Prof. Garribba said that Italy's policy directions would be based on collaboration, particularly with the European Commission. One aspect of that collaboration is carbon trading. Prof. Garribba requested that the Policy Group consider carbon emission trading as a mechanism to support sequestration technology development and promote initiatives by different countries. He also stated that Italy believed that the involvement of industry was critical to carbon sequestration.

### **4. Review and Approval of Minutes**

The Draft Minutes of the June 2003 Policy Group Meeting had been circulated among the Policy Group prior to the meeting. Italy moved adoption of the Draft Minutes with one change, the correction of spelling of the South African delegate's name. Canada seconded, and the motion passed unanimously.

### **5. Discussion of Terms of Reference and Procedures**

The delegates discussed the Draft Terms of Reference and Procedures developed by the Secretariat. These had been circulated in September 2003. Canada moved to adopt the document and the EC seconded. Each Member had numerous and varied comments on this document. The Chair noted that it would be impossible to resolve so many issues relating to the Draft Terms of Reference and Procedures during this meeting. He

suggested that the Secretariat note all comments and that this issue be taken up again at the next Policy Group Meeting.

The Terms of Reference and Procedures were taken up again at the beginning of the second day of the meeting when Australia moved that a Committee of delegates from the Member countries meet in a separate room to modify the Terms of Reference and Procedures. South Africa seconded this motion and it was unanimously adopted. The Committee met in a separate room and redrafted this document. Tania Constable of Australia served as the Committee Chair and was supported by Richard Lynch of the Secretariat.

At the end of the second day of the Policy Group Meeting, Tania Constable of Australia, the Committee Chair, reported that a revised Terms of Reference and Procedures had been produced by the Committee and presented the revised document to the Policy Group. Upon motion by Australia, agreed to by Canada and the European Commission (which moved and seconded the original motion), and seconded by South Africa and India, the Policy Group agreed unanimously that the revised Terms of Reference and Procedures, as developed by the Committee, would go into effect in 45 days if no changes have been recommended by a Member. The revised document is incorporated in these minutes as Annex 1.

## **6. Report on Ongoing Activities**

Barbara McKee of the Secretariat described the activities of the Secretariat since the inaugural meeting in June. She noted that since that meeting, the Secretariat has:

- Created and maintained the CSLF website,
- Drafted and circulated for review documents such as the Stakeholder Guidelines,
- Facilitated communications among members,
- Compiled a list of country representatives,
- Facilitated the activities of the Policy and Technical Groups, and
- Prepared for this second meeting of the CSLF.

She also noted that the Secretariat had difficulty compiling the list and requested that each country identify the head of its delegation to the Secretariat.

## **7. Reconfirmation of Vice Chairs**

The Chair noted that at the Inaugural meeting, Australia and Italy were selected as Vice Chairs to serve until the present meeting, at which time permanent Vice Chairs would be elected. Canada nominated Australia as a permanent Vice Chair. The United Kingdom seconded Australia. The European Commission nominated Italy as the second permanent Vice Chair. Australia seconded Italy. Australia and Italy were reconfirmed unanimously.

## 8. IEA Presentation-World Energy Investment Outlook

Marianne Haug, Director, Energy Efficiency, Technology and R&D, International Energy Agency, gave a presentation on the recently-published IEA report on this topic. She made the following key points:

- World energy investment needs from 2000 to 2030 are US \$16.5 trillion, not including the investment required to meet any kind of carbon dioxide reduction objectives.
- The largest share of investment, 60 percent, will go to electric power and 54 percent of this 60 percent for the Transmission and Distribution.
- Direct government intervention as a lender or investor will continue to diminish worldwide with the role of governments being more to set enabling conditions for appropriate investments.
- Almost half of this investment will be required in developing countries, where financing will be most difficult.
- Total investment requirements are modest relative to world GDP, but energy will be a larger share of developing country investments.
- An illustrative case of carbon sequestration for 250 GW of new coal-fired plants and 50 GW of new gas-fired plants cost roughly US \$400 billion and reduced carbon dioxide emissions by 3 Gigatons per year.
- Worldwide, about half of existing power plants will need to be rehabilitated or repowered by 2030 and this is an opportunity for carbon sequestration.
- Carbon sequestration will have to compete with other energy-related infrastructure for scarce investment funds and policy makers will tend to favor investments that increase reliability over sequestration.

## 9. CSLF Website Presentation

At the June 2003 CSLF meeting, the Technical Group tasked the Secretariat with the creation of a CSLF website. This website was presented to the Policy Group by Scott Miles of the Secretariat. Mr. Miles projected an image and described each page of the website. He noted that the country-specific information was lacking for many members and he requested that Members review the website and provide information and links that could be added to the website.

Policy Group delegates responded overall that the website appeared to meet the needs of the CSLF. A number of specific suggestions were offered by delegates:

- Change the term “Country” to “Member,”
- Add links to other websites that discuss greenhouse gas issues,
- Add links to Member country websites, and
- Show source of information for country pages on website.

## 10. Legal, Regulatory & Financial Issues

At the Inaugural meeting of the Policy Group, Australia was appointed to take the lead in the Legal, Regulatory and Financial Issues Task Force with the assistance of Canada, the United Kingdom and the United States. John Ryan of Australia, the Policy Group Vice Chair, presented the draft discussion paper prepared by the Task Force. This discussion paper was prepared following the International Sequestration Regulatory Workshop, held in Brisbane, Australia on 7 November 2003.

Three substantive issues were covered: regulation, legal and financial. Regulatory issues addressed the development of principles that could assist countries in developing their domestic regulatory regimes and focused on a gap analysis. International issues were addressed in the legal section. The financial issues covered included financial and economic costs and economic modeling. The report proposed a work plan and made the following recommendations:

- Further work should be conducted on regulatory issues, particularly three or four case studies, and the output should be proposed principles for the CSLF Ministers to consider in Melbourne in September 2004.
- A gap analysis should be conducted by Members to consider which legal issues are most important, to identify where further work needs to be done, and as a means of sharing information. Details should be forwarded to the CSLF Secretariat by mid March
- Legal issues should be addressed jointly with IEA to avoid duplication of effort. Proposals for major joint activities should be presented to the CSLF before consideration.
- Analyses of how to advance the financial (cost and economic modeling) elements relating to carbon capture and storage should be conducted by the CSLF.

Delegates' comments on the presentation generally stressed the high quality of the work performed, the necessity of proceeding with the issues addressed, the different situations of each country, and the need to avoid duplication of effort.

## 11. Discussion of Draft Guidelines for Involvement of Stakeholders

The Policy Group discussed the Draft Guidelines for Involvement of Stakeholders. Delegates agreed that stakeholder involvement was critical and should be an integral part of the process. Many issues, however, were raised with respect to the Draft Guidelines and a variety of different ideas were presented on how to proceed.

The United States moved that a working group to be led by Italy be appointed to address the issue and that countries who want to participate notify the Secretariat within the next 30 days. The working group will identify the best path forward to ensure that stakeholder involvement is an integral part of the CSLF process and how to best utilize stakeholder involvement and input. The goal would be to have a very-considered and

well-thought-out report by mid-year for circulation to the Policy Group for decision. Australia seconded the motion and the Policy Group approved the motion. Italy accepted the role of Chair of the working group.

## **12. Report from Technical Group Chair**

Kailai Thambimuthu of Canada, Vice Chair, acting as Chair of the Technical Group in the absence of the Chair, described the deliberations and results of the work of the Technical Group over the previous two days. Some of these results were discussed by the Policy Group throughout the day, including:

- Vision statement,
- Project approval guidelines,
- CSLF database and template,
- Roadmap, and
- Proposed projects.

One item discussed by the Technical Group was the CSLF project database. The Technical Group noted that the IEA Greenhouse Gas Programme already had a comprehensive project database and decided to ask the IEA to work together with the CSLF on this activity. The CSLF would derive summary information from this database and CSLF projects would be denoted with a CSLF logo. Information on major studies of carbon sequestration would also be added to the CSLF database. The template for CSLF database was also discussed and it was agreed that all contacts for project information would be the appropriate Technical Group representatives.

With regard to the proposed projects, Mr. Thambimuthu noted that the Technical Group would recommend a final list to the Policy Group by the end of April.

Mr. Thambimuthu next chaired the discussion of those items presented by the Technical Group.

## **13. Approval of the Vision Statement**

During the June 2003 CSLF Meeting, the Secretariat had been tasked with the development of a Draft CSLF Vision Statement. This draft statement had been developed by the Secretariat and circulated to the Technical and Policy Groups prior to the meeting. The Technical Group recommended a modification of the original Draft Vision Statement.

A motion was made by Australia and seconded by Canada to accept the Vision Statement with some modification. This motion failed. Upon motion of Norway, seconded by the European Commission, the Policy Group decided that a CSLF Vision Statement would not need to be drafted; that the Charter would serve as the fundamental basic document.

## **14. Approval of Technology Roadmap**

Mr. Thambimuthu stated that the Technology Roadmap was still being developed and invited Policy Group comments on a work in progress. Further work will be based on a framework to be developed by the United Kingdom by the end of January. This roadmap will identify gaps that need to be closed by the CSLF with complementary national and regional efforts. Work will continue on the Roadmap through the spring and summer and a work product will be presented to the Policy Group no later than August for discussion by the Policy Group in September. Mr. Thambimuthu also made the following points:

- The roadmap needs a more integrated framework that reflects national and CSLF needs.
- The current roadmap is too project specific and needs to be more generalized.
- National plans need to be reflected in the CSLF roadmap.
- There is a need for guiding principles on how collaboration would work and identification of core collaborative R&D challenges unique to CSLF.
- There is a need to show real added benefit from the CSLF.
- There is a need to identify gaps that can be closed by CSLF complimentary to national and regional efforts.
- Consistency of wording should be sought.
- Mapping of geological storage potential is seen as essential starting point.
- The current roadmap is too geographically and geologically specific.
- Need to identify “low hanging fruit” which will be country specific
- Retain 2013 as a timeline, but as a key milestone and not as an end date of the roadmap.

## 15. Discussion of Project Recommendation Guidelines

The Project Recommendation Guidelines as recommended by the Technical Group were discussed. Various issues were raised with each of the points in the Project Recommendation Guidelines and the Policy Group agreed upon a number of changes. The final Project Recommendation Guidelines as approved by the unanimous consent of the Policy Group is as follows:

### CSLF Project Recommendation Guidelines

1. The proposed project should be nominated by at least two CSLF Members.
2. The proposed project should be consistent with the CSLF Charter.
3. Project sponsors should be willing to share non-proprietary project information with other CSLF Members.
4. Visits to the project site should be allowed for representatives of CSLF Members.
5. The expected information from the project should be sufficient to allow others to make improved estimates of the technology’s potential technical performance, costs and benefits for any future applications.
6. The project should be started and major milestones reported prior to the expiration of the CSLF Charter (currently 2013).
7. Summaries should be made available, in English, for the CSLF website.

In addition, the Secretariat is to develop an appropriate disclaimer statement on compliance with national and international laws, rules and regulations. Following the discussion of the Project Recommendation Guidelines, concerns were raised by Members about the amount of effort it might take to review projects based on these Guidelines. The Chair of the Technical Group was instructed to inform the Policy Group if problems arose in the review of projects.

Mr. Thambimuthu requested that the Policy Group provide guidance to the Technical Group regarding whether it should consider ocean sequestration projects. The Policy Group provided such guidance, summarized by the Chair, as follows: ocean sequestration is within the framework of the Charter but that the priority for the Technical Group at this time should be on geologic sequestration. This does not mean that other types of sequestration should be automatically excluded for consideration, particularly regarding the science, the research and technology in accord with other resources that might aid the CSLF efforts. Any such projects proposed need to meet the Project Recommendation Guidelines.

The role of the CSLF in facilitating collaborative projects was discussed. Based on this discussion the Policy Group decided not to use the word “endorse”, but rather to use “recognize”.

## 16. Presentation and Recommendation of Proposed Projects

The Acting Chair of the CSLF Technical Group noted that the following projects had been proposed for endorsement by the CSLF:

Canada:	CETC R & D Oxyfuel Combustion for CO <sub>2</sub> Capture ITC - CO <sub>2</sub> Capture with Chemical Solvents ARC – Enhanced Coal Bed Methane Recovery Project
European Commission:	CO2SINK Castor
Japan:	CO <sub>2</sub> Separation from High Pressure Gas Stream Estimate of CO <sub>2</sub> Storage Potential in East Asia Feasibility Study on CO <sub>2</sub> Storage in a Geothermal Field
United Kingdom:	CO <sub>2</sub> Capture Project (Phases I and II)
United States:	IEA Weyburn II CO <sub>2</sub> Storage Project ( <i>also nominated by Canada</i> ) Frio Brine Sequestration Project
Norway:	CO <sub>2</sub> Store
Japan:	Ocean CO <sub>2</sub> Perturbation Experiment

Review of these projects by an ad hoc committee of the Technical Group will be underway over the next several months consistent with the newly-approved Project Recommendation Guidelines. The goal will be to have projects that can be announced by the Ministers in September.

## 17. Discussion of CSLF Policy Group Action Plan

Barbara McKee of the Secretariat gave a presentation on the CSLF Group Action Plan that was developed by the Secretariat. She emphasized that it was a document intended to stimulate thinking and focus attention on the most important policy issues rather than a definitive action plan. This action plan had five components:

- Regulatory and legal activities,
- Financial issues,
- Stakeholder involvement,
- Public awareness and outreach, and
- Project Endorsement.

The Members all responded that they thought that an Action Plan was necessary to stimulate thinking and that it raised important issues that should all be addressed, although related organizational issues may need to be resolved. For example, it was noted that the financial issues identified in the Policy Group Action Plan were different from those that the Task Force had addressed and concern was expressed whether these should be addressed in a separate group or at all.

The Secretariat was tasked to prepare issue papers and an integrated action plan for both the Policy and Technical Groups. Possible specific issue papers could be produced on:

- Public outreach,
- Financing sequestration projects,
- Sequestration and carbon trading,
- Sequestration in developing countries, and
- Economic modeling.

## **18. Selection of Date/Venue for the Next Meeting**

It was noted by the Chair that there may be a need for an interim meeting of the Policy Group. That possible meeting would be considered and a recommendation made by the Chair as work evolved, but in order to avoid meetings, as much business as possible would be transacted through e-mail.

The next Ministerial meeting of the CSLF is currently planned for Melbourne, Australia in September 2004. The exact date has yet to be determined. The Australian delegate stated that the meeting will be either immediately before or after the World Energy Congress, which is to be held in Melbourne on September 5 to 9. The Australians stated that they would confirm specific dates with the Secretariat within two weeks.

The Chair also noted that no Member had as yet offered to host the first CSLF meeting of 2005 and invited Members to volunteer to host that meeting.

## **19. Other Business**

Japan reiterated the necessity of positive contribution of CSLF members to the ongoing IPCC work to prepare a special report on carbon sequestration. Japan pointed out the

importance of GGCT7 in September as the reports to the conference would be the last input to the special report.

**ACTION ITEMS ARISING FROM THE MEETING OF THE POLICY GROUP**

<b>Item</b>	<b>Lead</b>	<b>Action</b>
1.	Policy Group	Consider carbon trading to support sequestration
2.	Policy Group Members	Identify all delegates and the heads of delegations
3.	Secretariat	Draft Policy Group Minutes
4.	Secretariat	Modifications to CSLF Website
5.	Secretariat	Send revised Terms of Reference and Procedures to Members
6.	LRF Task Force <sup>1</sup>	Propose regulatory principles to Ministers
7.	Members	Gap analyses of regulatory issues
8.	LRF Task Force	Proposals for joint work on legal issues with the IEA
9.	Technical Group	Coordinate data base with IEA Greenhouse Gas Programme
10.	Technical Group	Submit Technology Roadmap to Policy Group
11.	Technical Group	Submit Proposed Projects to Policy Group
12.	Policy Group	Approve projects for Ministers to Announce
13.	Policy Group Members	Nominate participants for Stakeholder Working Group
14.	Italy	Organize Stakeholder Working Group
15.	Italy & Secretariat	Draft and circulate and agenda for Stakeholder Working Group
16.	Stakeholder WG	Report on Stakeholder Involvement
17.	Policy Group	Decision on stakeholders for Melbourne meeting
18.	Secretariat	Facilitate communications among members to achieve actions
19.	Secretariat	Send proposers Project Recommendation Guidelines
20.	Secretariat	Prepare requested issue papers
21.	Australia	Confirm date of ministerial meeting in Melbourne
22.	Members	Volunteer to host first 2005 CSLF meeting

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<sup>1</sup> Legal, Regulatory and Financial Task Force