



The CSLF: Where We Are Today, What We Have Learned Thus Far, What Remains to be Done

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Canada



Outline

- **CSLF**
 - Objectives, Members, Structure
- **Meeting Summaries**
- **Key accomplishments to date**
- **Benefits of CSLF Membership**
- **Conclusion**



The CSLF: An international climate change initiative

- **Framework for international cooperation in research and development for the separation, capture, transportation and storage of carbon dioxide**
- **Policy Issues**
 - Stakeholder Engagement
 - Public Communications and Outreach
 - Regulatory Development
 - Financial Issues
 - Legal Issues
- **Technical Issues**
 - Standard methodology for storage capacity estimates
 - Gap analysis on MMV
 - Common metrics on CO₂ Capture costs
 - Criteria for CSLF project recognition





Member Countries



Australia



Germany



Russian Federation



Brazil



India



South Africa



Canada



Italy



United Kingdom



China



Japan



United States



Columbia



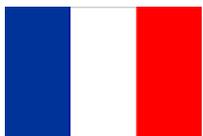
Mexico



European Commission



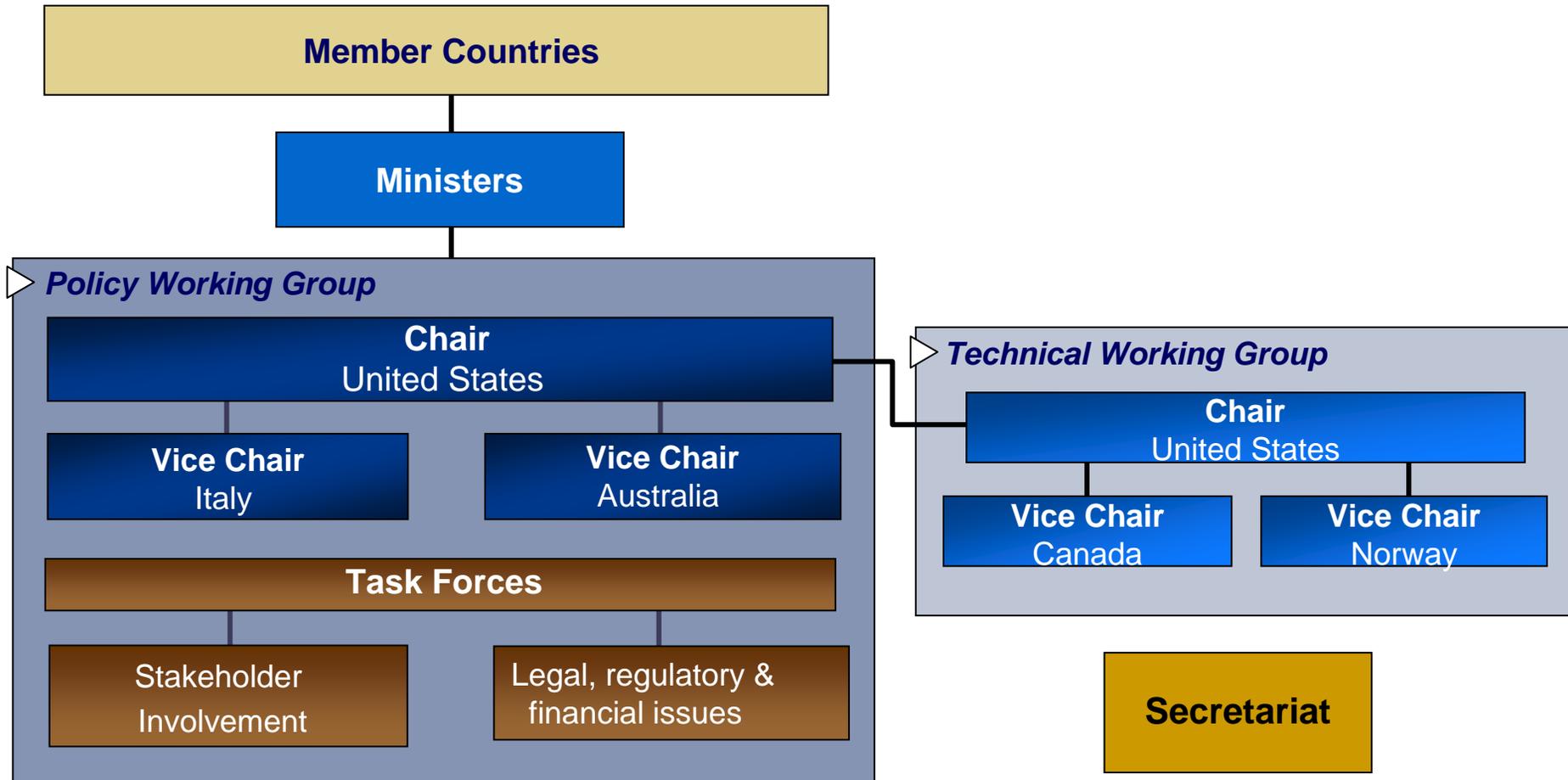
Norway



France



CSLF Structure



Meeting Summaries

- June, 2003, Washington – Inaugural Ministerial Meeting
- January, 2004, Rome – Technical and Policy Working Groups
- June, 2004, London – Stakeholder Engagement Meeting
- July, 2004, Paris/London – Regulatory, Legal and Financial Issues
- August, 2004, Salvador – Technology Roadmap Meeting
- September, 2004, Melbourne – 2nd Ministerial Meeting
- April 30, 2005, Oviedo – Meeting of Technical Group
- September 27-30, 2005, Berlin – 3rd Ministerial





Key Accomplishments to Date

- Recognized Projects Making a Significant Impact on Advancing CC&S
- Developed a CC&S Technology Roadmap
- Gap Analysis on:
 - Monitoring Measurement and Verification
 - Storage Capacity Measurement
 - CO2 Capture and Transport
- Developing new criteria for project recognition



CSLF Recognized Projects

- ARC Enhanced Coalbed Methane Recovery Project – Canada
- CANMET Energy Technology Centre (CETC) R&D Oxyfuel Combustion for CO₂ Capture – Canada
- CASTOR – European Commission
- CO₂ Capture Project – Phase 2 – United Kingdom
- CO₂ Separation from Pressurized Gas Stream – Japan
- CO₂SINK – European Commission
- CO₂STORE – Norway
- Frio Project – United States
- ITC CO₂ Capture with Chemical Solvents – Canada
- Weyburn II CO₂ Storage Project – Canada & United States





Gap Analysis on MMV

- Reduced cost to seismic surveys
- Improved vertical resolution of seismic surveys
- Improvements in resolution of non-seismic techniques
- Improved recognition and interpretation of faults and fractures
- Improved remote sensing
- Improved wellbore monitoring techniques to allow interpretation of activity outside the casing but in the immediate wellbore area
- Guidelines to assist in effective pre-injection surveys
- Improved interpretation of cased hole logs to determine potential activity outside the casing or problems with cement bonding
- Improved integration of monitoring techniques



Gap Analysis on CO2 Capture and Transport

- Paper provided a technology overview of existing technologies, specifically
 - Post combustion capture
 - Pre combustion capture
 - Oxyfuel processes
- Recognized that capture costs are often calculated in several different ways
- Advocated scale-up of these technologies from pilot plant to large scale demonstration
- Several members had comments with respect to this paper





Storage Capacity Estimates

- Work evolved from Salvador meetings and GHGT-7
- Assessment methodologies vary at the regional, basin and local level with differing degrees of accuracy and precision
- A single trap may involve several trapping mechanisms:
 - Structural trapping
 - Dissolution trapping
 - Residual Gas trapping
 - Mineral trapping
 - Adsorption
- Governments and industry dependent on reliable estimates
- Some estimates for individual regions suggest they contain more storage capacity than some world estimates!



Stakeholder Technical Perspectives Workshop - Melbourne

- Commercialization of CO₂ capture and storage requires stronger market signals. Emissions trading is one method of sending a market signal.
- Time is of the essence! We cannot afford to wait 10 or 20 years to obtain needed information. Therefore, more demonstration projects are needed now and these projects should not be unreasonably burdened by regulatory or liability issues.
- Involvement of developing countries is critical as is technology transfer



Stakeholder Technical Perspectives Workshop - Melbourne

- **Endorsement is needed from a broad range of stakeholders.** Open and transparent communication, especially at the project-specific level, is therefore very important. **The public should be educated about various greenhouse gas mitigation options and be allowed to be fully involved in informed debate.**
- CO₂ capture and storage should not be looked on as a competitor to energy from renewables or energy efficiency in any portfolio of CO₂ mitigation responses. **We need them all.**



Benefits of CSLF Membership

- Raises awareness of CC&S to senior levels of government
- Domestic convergence on a national strategy
- Guidelines for technology roadmaps
- Medium for stakeholder engagement
- Benchmark for regulatory development
- Allow participants to work on technical issues without political pressure



Conclusions

- There are no technical barriers to CC&S
- There are technical needs to implement CC&S
- In addition there are regulatory and stakeholder issues which remain to be resolved
- Economic drivers necessary for large scale implementation of CC&S
- Stakeholder engagement is an important consideration in moving forward on this technology
- CSLF is an important vehicle to advance CC&S technology
- www.cslforum.org/

