



International Activities in CCS

CLEAN ENERGY TECHNOLOGIES

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**Workshop on Capacity Building for
Carbon Capture & Storage (CCS)**

May 7-11, 2007

Canada





Outline

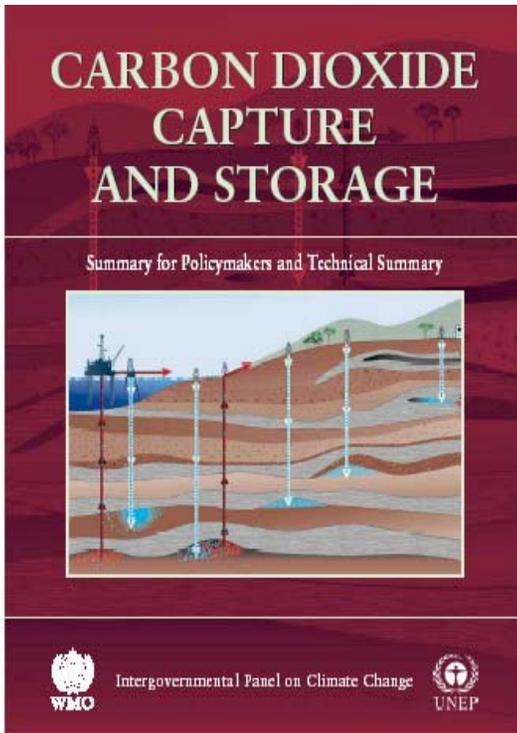
- Intergovernmental Panel on Climate Change, Special Report on Carbon Dioxide Capture and Storage
- IEA GHG R&D Programme
- Carbon Sequestration Leadership Forum
- G8-IEA-CSLF Workshops on Near Term Opportunities for Carbon Capture and Storage
- Asia-Pacific Partnership on Clean Development & Climate (APP)
- National/Regional CCS Programs
- London Protocol
- CCS and UNFCCC

IPCC Special Report on Carbon Dioxide Capture and Storage, 2005

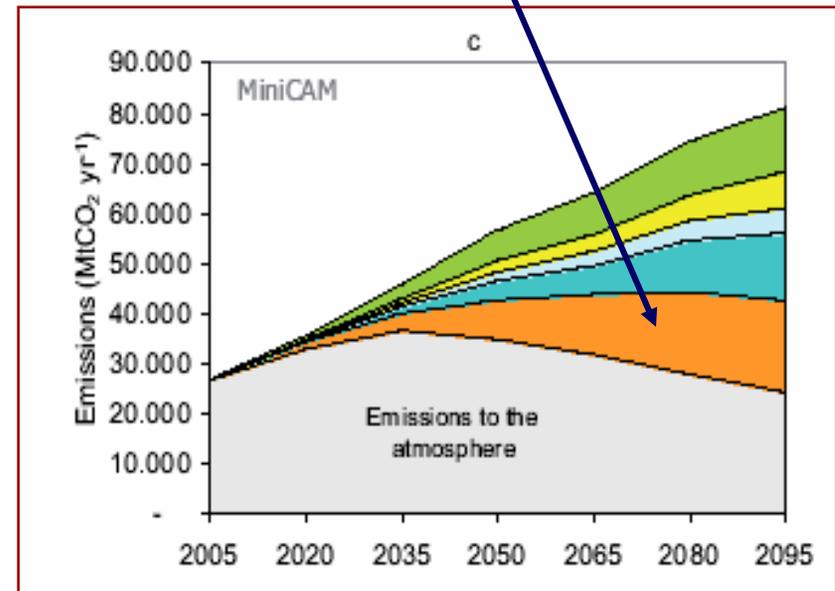


Highlights:

- Carbon Capture and Storage (CCS) will play a significant role in GHG mitigation.



- Conservation and Energy Efficiency
- Renewable Energy
- Nuclear
- Coal to Gas Substitution
- CCS





International Energy Agency GHG R&D Programme

- 19 contracting parties, 14 Multinational Sponsors
- Evaluation of technologies aimed at reducing greenhouse gas emissions
- Promotion and dissemination of results and data from its evaluation studies
- Facilitating practical research, development and demonstration activities
- Networks
 - CO₂ Capture
 - Biofixation
 - Risk Assessment
 - Monitoring
 - Oxy-Fuel Combustion Network
 - Well Bore Integrity Network
- Technical and Policy Publications, Issue Specific Workshops
- <http://www.ieagreen.org.uk/index.html>





Carbon Sequestration Leadership Forum

- International climate change initiative focused on development of improved cost-effective technologies for the separation and capture of carbon dioxide for its transport and long-term safe storage
- Emerging and Developed Economies
- 22 members, including 21 countries and the European Commission
- <http://www.cslforum.org/index.htm>





CSLF Policy Group

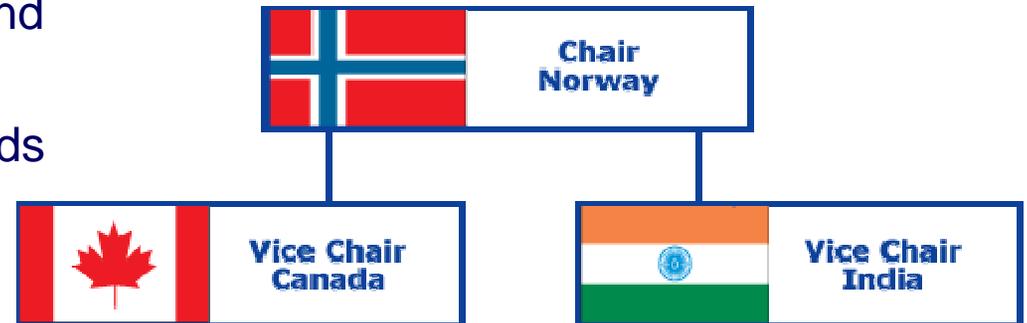
- Strategic Plan
- Policy and Legal Framework
- Capacity Building
- Financing Capture and Storage
- Public Awareness and Acceptability
- Stakeholder Involvement





CSLF Technical Group

- Technology Roadmap
- Identifying Gaps in Monitoring and Verification of Geologic CO₂ Storage
- Identifying Gaps in CO₂ Capture and Transport
- Reviewing and Identifying Standards with Regards to Storage Capacity Measurement
- Risk Assessment Standards and Procedures
- Projects Interaction and Review Team
 - Carbon Capture and Storage Gap Assessment



G8-IEA-CSLF Workshops on Near Term Opportunities for Carbon Capture and Storage

- Response to the G8 Gleneagles Communiqué in July/05
 - *...accelerate the development and commercialization of Carbon Capture and Storage [CCS] technology*
 - *hold a workshop on short term opportunities for CCS in the fossil fuel sector, including from Enhanced Oil Recovery and CO₂ removal from natural gas production.*

- Technically and economically viable or ready for demonstration or commercialization in the near term and include both sources and sinks and all fossil fuels (5-10 yrs)
 - Technical Issues
 - Commercial/Financial Issues
 - Legal and Regulatory Issues
 - Public Education and Outreach Issues
 - International Mechanisms

- Series of three workshops on near term opportunities
 - Issues and Opportunities Workshop
 - Assessment Workshop
 - Recommendations Workshop





G8-IEA-CSLF Workshops on Near Term Opportunities for Carbon Capture and Storage

- Issues and Opportunities Workshop in San Francisco August/06
 - Assess opportunities, barriers, required policies, concerns, lessons to be learned from existing projects, etc.

- Assessment Workshop in Norway in June/07
 - Consider the options for embarking on and advancing near-term opportunities and the suite of conditions necessary for deployment of CCS
 - Review the findings regarding the issues
 - Develop options to address these issues
 - Provide timeframes for feasible implementation of these options

- Recommendations Workshop in Canada in November/07
 - Develop proposed final recommendations for presentation by the IEA and CSLF to the G8 meeting scheduled for Japan in 2008
 - Consider, evaluate and compare the findings, options and timeframes developed in the earlier workshops from a variety of policy and stakeholder perspectives;
 - Attempt to facilitate grounds for consensus among the different perspectives; and
 - Provide policy recommendations for early implementation of CCS, including further international collaboration.





Asia-Pacific Partnership on Clean Development & Climate (APP)

- Addresses clean development, energy security, and climate change, through the development and transfer of cleaner technologies
- Announced in July 2005, founding members are U.S., Australia, China, India, Japan, and South Korea
- Collectively, APP members represent:
 - 45% of World Population
 - 49% of World GDP (Purchasing Power Parity basis)
 - 50% of World CO₂ emissions (fossil fuel consumption and flaring)
 - 64% of World Coal Production and Consumption



Asia-Pacific Partnership on Clean Development & Climate (APP)

- Use a **voluntary** partnership approach, while recognizing differing national circumstances, to address development and climate issues
- Build on existing bilateral and multilateral initiatives to **enhance cooperation** to meet increasing energy needs and the associated challenges of air pollution, energy security, and greenhouse gas intensities
- Promote the development and deployment of existing and emerging cleaner, more efficient technologies and practices that will achieve practical results





Programs Addressing CCS

- **Several regions have well established CCS programs:**
 - **CATO** (CO₂ Capture, Transport and storage in the Netherlands)
<http://www.co2-cato.nl>
 - **Regional Partnerships Program** – U.S. DOE
www.fossil.energy.gov/sequestration/partnerships
 - **CO₂CRC** (The Cooperative Research Centre for Greenhouse Gas Technologies) www.co2crc.com.au - Australia
 - **Centre for Low Emission Technology**
www.clet.net – Australia
 - **European Technology Platform on Zero Emission Fossil Fuel Power Plants (ETP ZEP)**
<http://www.zero-emissionplatform.eu/website>





London Protocol

- Concerns regarding the impacts of climate change on ocean environments, including acidification of the sea
 - Contracting Parties to the London Protocol adopted amendments to the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (London Convention)
- The amendments regulate the sequestration of CO₂ streams from CO₂ capture processes in sub-seabed geological formations
- This means that a basis has been created in international environmental law to regulate CCS in sub-seabed geological formations, for permanent isolation, as part of a suite of measures to tackle the challenge of climate change and ocean acidification
- Permits for the sequestration of CO₂ under the seabed could be issued as of February 2007
- Technical guidance is currently being developed and is expected to be adopted in November, 2008





CCS and UNFCCC

- Given its potential to significantly reduce global GHG emissions, CCS has within the last few years become an increasingly prominent subject of negotiation within this forum
- Countries formally noted that the Special Report on CCS provides a comprehensive assessment of the scientific, technical, environmental, economic and social aspects of CCS and acknowledged that CCS is one of many options to reduce global greenhouse gas emissions
- Forum is now considering CCS as a CDM.
 - CDM is a market based mechanism under the Protocol which gives developed countries with targets the flexibility to seek out the least cost emission reductions by purchasing credits from emission reduction projects in developing countries
- Final decision has been postponed until the end of 2008

Figure 5.1. Location of sites where activities relevant to CO₂ storage are planned or underway

