



Australian Government

Overview
CCS Activities
In Australia

CSLF
Joint Policy & Technical Group
Meeting

New Delhi, India 3-5 April 2006

SUMMARY OF CCS ACTIVITIES IN AUSTRALIA

The CSLF Secretariat requested all members prepare a brief written statement and presentation on CCS related activities undertaken since the previous CSLF meeting in Berlin in September 2005.

KEY POLICY ISSUES

The Australian Government's CCS policies continue to reflect the potential role that CCS technologies will play in addressing the further growth in Australia's greenhouse gas emissions. A current policy priority is the development of regulatory regimes that are needed to be in place before major energy projects involving CCS can take place. The Australian Government's policy framework supports and facilitates Australia's comprehensive technological approach on CCS.

The \$500 million Low Emissions Technology Demonstration Fund was announced in the Australian Government's Energy White Paper, *Securing Australia's Energy Future*. It will provide support for demonstrating new low emissions technologies with significant long-term abatement potential. Eligible technologies include renewable and fossil fuel technologies as well as energy efficiency in both the stationary and transport sectors. The technologies will need to be able to achieve abatement of at least 2 per cent of national energy sector greenhouse emissions after 2030 and be commercially available by 2020 to 2030.

The fund will leverage at least \$1 billion in private sector investment. The Fund was launched on 11 October 2005, with the closing date for round one applications being 31 March 2006. The final program guidelines and policy framework incorporate the results of the consultations with industry in June 2005. Current planning is for project proposals to be assessed in April to July 2006, with funding being made available to successful projects in 2006-07.

CCS is a new technology that has not been used in Australia previously, however, a number of CCS projects have been proposed in Australia and as a result, work on regulatory issues has been underway over the last two years. In late 2005, Australia developed a set of guiding regulatory principles for CCS, in consultation with industry, research groups and community groups. The principles were developed with a view to enabling the uptake of CCS technology for commercial projects in Australia. These principles are currently being used to guide the development of legislation and to support the appropriate management of proposed, large-scale commercial CCS projects in Australia.

The Australian Government is currently working through proposed legislative changes required to enable the uptake of CCS technology. A key element to this work is the capture of CO₂ onshore and storage offshore. This work associated with onshore capture and offshore storage of CO₂ has also taken into account the international legal requirements of the London Convention and its 1996 Protocol.

KEY TECHNICAL ISSUES

Australia is continuing to undertake a major program of research and development into CCS and wherever possible is closely collaborating with international research bodies. Through a number of national road mapping exercises undertaken by COAL21, the Cooperative Centre for Greenhouse Gas Technologies (CO2CRC) and the Commonwealth Scientific and Industrial Research Organisation (CSIRO), a strongly collaborative program of R&D has been developed in Australia.

Research is being carried out into gasification by the Cooperative Research Centre for Coal in Sustainable Development (CCSD) and the Centre for Low Emissions Technologies (cLET), the latter a joint initiative of CSIRO and the Queensland Government. This is coupled with pre- and post-combustion capture research by CO2CRC and CSIRO to provide a strong basis for a future program of demonstration of oxy-fuel, integrated gasification combined-cycle (IGCC) and the post-combustion capture (PCC) option.

CO2CRC has focused on storage activity by drawing in many research groups and addressing a range of basic and applied issues relating to the behaviour of CO₂ in deep geological environments. CSIRO's research on storage covers the full range of options from storage in saline aquifers (in collaboration with the CO2CRC) to storage in coal seams. CSIRO was also a collaborator in the recently completed RECOPOOL project for CO₂ storage in coal seams in Poland.

CCS Projects in Australia

There are a number of CCS projects being proposed in Australia including the Gorgon Project in Western Australia, the Otway Basin Pilot Project in Victoria and the Monash Energy Project in Gippsland Basin, Victoria.

In particular, the CO2CRC, together with the Australian Government, the Victorian State Government and industry will conduct the first CO₂ capture and storage project, known as the Otway Basin Pilot Project, in Australia in late 2006. The CO₂ source for the project will be natural gas with a high CO₂ content. The CO₂ will be separated and compressed, transported by pipeline and then selectively injected into storage horizons potentially ranging in depth from below 1000 metres to almost 2,000 metres. A major part of this project will be an extensive modelling and monitoring program to ensure that the movement of CO₂ can be predicted and to assess different monitoring technologies.

The Monash Energy Project is a key example of a significant commercial project in Australia. Monash Energy, a subsidiary of Anglo American plc, intends to develop a brown coal drying and gasification demonstration plant as the first stage of a major electricity and liquid fuels cogeneration project. The CO₂ emissions, of approximately 13 million tonnes per year, will be captured, stored, compressed and transported to a sub-sea geological storage site in the Bass Strait, about 70 km off the Victorian coast in Commonwealth jurisdiction. The company is aiming to develop detailed plans for the demonstration plant during 2006 with a view to commencing construction in 2007, ultimately leading to the operation of the full commercial plant, complete with geological storage, by 2015.

CSIRO has also established its National PCC Facility at its Newcastle Energy Centre that will see PCC trials carried out at power generation plants using a relocatable pilot plant. In cooperation with industry and international collaborators the program will test various solvents and contactors as well as addressing materials and technology integration issues.

INTERNATIONAL COLLABORATION

The Australian Government, industry and research organisations recognise the importance of international collaboration in developing CCS technologies, assessing technologies developed offshore and in facilitating the transfer of Australian expertise and technologies.

Asia-Pacific Partnership

Through the *Asia-Pacific Partnership on Clean Development and Climate* (or AP6) announced in July 2005, key developed and developing countries will cooperate to meet increasing energy needs and associated challenges, including those related to climate change and air pollution, whilst also recognising the importance of economic development. The Partnership, involving Australia, India, Japan, China, the Republic of Korea and the United States, aims to promote the development and deployment of energy technologies (fossil, renewable and new generation technologies such as hydrogen and nano-technologies). The Partnership builds on but does not replace the UNFCCC and Kyoto Protocol and is designed to complement other bilateral and multilateral initiatives such as the Carbon Sequestration Leadership Forum and the G8 dialogue process.

Australia hosted the inaugural Ministerial meeting of the Partnership in January 2006. AP6 adopted a Charter that sets out a framework for collaboration by the partners to meet their development, energy, environmental and climate change objectives. A work plan was also developed focussing on power generation and key industry sectors of our economies under which 8 taskforces were established covering cleaner fossil energy; renewable energy and distributed generation; power generation and transmission; steel; aluminium; cement; coal mining; and buildings and appliances. The Partnership's work plan has identified CCS as one of the technologies that the Partnership will focus on developing and increasing uptake. CCS will be covered by the Cleaner Fossil Energy Task Force, chaired by Australia. The work plan identified the following Task Force objectives that are relevant to the CSLF:

- Build on the range of existing national (and other international) measures and initiatives to develop an Asia-Pacific Partnership cleaner fossil energy technology development program.
- Identify the potential for, and encourage uptake of, CO₂ geosequestration opportunities in Partnership countries.
- Build the research and development base, and the market and institutional foundations of Partners through technology supporting initiatives, such as education, training and skills transfer.

The taskforces have been directed to drive improvements with regard to best practices and ensure that a range of technologies is developed and repeatedly demonstrated so that scale is increased and costs are reduced.

As a result of the AP6 initiative, additional resources are likely to become available in AP6 member countries to support work on carbon capture and storage. The resulting increased international effort will increase the rate of technology development and technology transfer.

Bilateral Relationships – Developing Countries

China

There are a number of potential areas for continuing cooperation on low emission technologies with China. In particular there is increasingly potential for cooperation on CCS through Geoscience Australia, Stanford University (USA) and the Chinese Ministry of Science and Technology.

India

In February 2006, Australia welcomed the opportunity to collaborate with India on a CCS Workshop held to coincide with the Australia-India Coal and Mining Forum. Key outcomes from the workshop included advancing collaborative opportunities such as potential projects between India and Australia, exploring opportunities for postgraduate CCS research students to participate in Australian and US research programs and enhancing policy and technical understanding of CCS. The benefits of India hosting the April 2006 CSLF meeting and May IEA Coal Workshop were also noted and recognised.

International Energy Agency

A key initiative under the IEA's Working Party on Fossil Fuels is the development of a Legal Issues Subcommittee formed to progress legal issues associated with CCS. The Subcommittee is chaired by Australia with members including France, European Commission, the Netherlands, Norway, UK and US. The subcommittee aims to prepare discussion papers on five key priority areas for future work as highlighted in the IEA's publication *Legal Aspects of Storing CO₂* (released in March 2005). The subcommittee will also facilitate the organisation of a legal issues workshop to be held in Paris on 17 October 2006.

London Convention

Australia is a Party to the London Convention and its 1996 Protocol, which aim to prevent marine pollution caused by ocean dumping. The 1996 Protocol entered into force on 24 March 2006. It supersedes the London Convention as between Parties to both the London Convention and the 1996 Protocol. The 1996 Protocol to the London Convention potentially applies to the sequestration of carbon dioxide into the geological sub-seabed. This Protocol was drafted without specific consideration of carbon dioxide sequestration as it was not previously regarded as a viable option for greenhouse gas abatement.

The issue of CCS was first raised at the Consultative Meeting of the Parties to the London Convention in 2004. Australia is participating in a 'Working Group on CO₂ Sequestration in Geological Structures', which was established at that forum to examine CCS in the marine environment and its consistency with the London Convention and the 1996 Protocol.

At the October 2005 Consultative Meeting of the Parties to the London Convention, a resolution was reached that geosequestration does have environmental benefits in relation to climate change strategies and that they will work toward facilitating/regulating for sub-sea storage. It was agreed the preferred method to achieve this result is to amend the annex to the protocol.

Intersessional technical and legal working group meetings of the Convention (London, 3-7 and 10-12 April) will canvass options for clarifying or amending the Protocol in this regard. Australia will be represented by officials from the Department of Foreign Affairs and Trade, Department of Environment and Heritage, and Attorney General's Department. Australia has circulated a draft amendment to Annex 1 to the Protocol to specifically allow for carbon dioxide sequestration in the sub-seabed, as in the attachment and is lobbying other contracting parties and signatories for support.