



A Pathway to accelerated deployment of Carbon Capture and Storage

**Policy proposal
April 2008**

**The Australian Coal Association
Construction, Forestry, Mining and Energy Union
The Climate Institute
WWF Australia**

Overview

Stabilising concentrations of greenhouse gases in the atmosphere demands fundamental changes to our global energy system. Incremental technological improvements will not be sufficient to avoid dangerous climate change and the introduction of low emission technologies must now be accelerated. The move from a traditional fossil fuel-based industry to a low emission energy future will require significant change in cost, scale and emissions performance well beyond the usual framework for the commercial development of energy technologies.

Australia's urgent climate change response must involve the development of a National Low Emissions Technology Strategy, covering all prospective low emissions technologies from research through to demonstration and commercialisation. Carbon capture and storage technology (CCS), which allows for CO₂ separation, capture, compression, transport, injection and secure storage (see Figure 1.), is one of the most promising medium to long-term low emission technologies options. CCS can be applied to coal and gas power generation; to other large CO₂ sources such as the chemical, steel or cement industries; or to natural gas production.

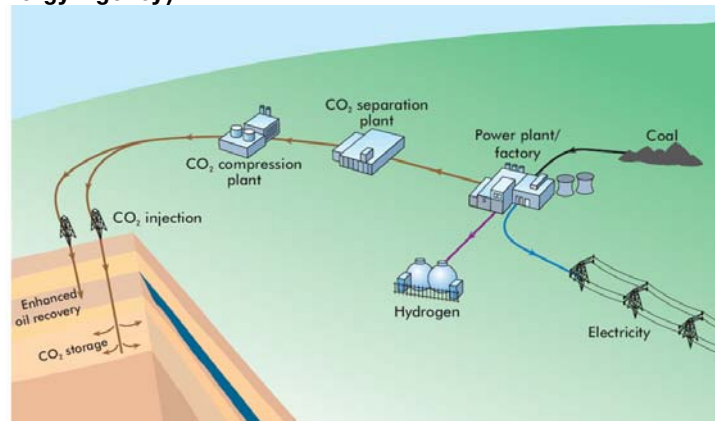
The National Low Emissions Technology Strategy needs to recognise that emissions trading alone will not drive the investment required to transform Australia's energy landscape.¹ Emissions trading will need to be supported by measures to correct market failures related to the research, development, demonstration and commercial deployment of low emission technologies.

Therefore, a key element of the strategy should be the establishment of a National Carbon Capture and Storage Taskforce under the Council of Australian Governments (COAG), led by the Prime Minister and Cabinet. It would be charged with the task of developing a coordinated national plan to facilitate the rapid demonstration and commercialisation of low emission fossil fuel power generation. This would complement a national emission trading system, the Renewable Energy Target and policies to bring Australia up to OECD standards for energy efficiency.

(over/)

¹ Australian Business and Climate Group (2006) *Stepping up. Accelerating the deployment of low emission technology in Australia*, <http://www.businessandclimate.com/>

Figure 1: CO₂ capture, transport and storage infrastructure
(Source: International Energy Agency)



Australia's role in the global effort

The International Energy Agency (IEA) notes that urgent government action is needed if the world is to avoid dangerous climate change.² The recent IEA scenario examining the energy sector's role in stabilizing greenhouse gas concentration at 450 ppm³ estimates that 28% of coal generation and 13% of gas generation installed globally in 2030 would need to be equipped with CCS. It also notes that achieving this goal would require the rapid, large-scale demonstration of the technology and for governments to put in place incentives for businesses to invest in R&D, demonstration and deployment.

The IEA and Carbon Sequestration Leadership Forum (CSLF) is calling on the G8 Heads of Government to commit urgently to a diverse portfolio of at least 20 fully integrated industrial-scale demonstration projects (>1 Mtpa) by 2010, with the expectation of supporting technology learning and cost reduction for the broad deployment of CCS by 2020.

Australia is well positioned to play a leading role in fostering global cooperation and CCS technology development. We have established several CCS demonstration projects and two dedicated research centres, have a capacity for innovation and a proven track record in developing technological intellectual property. The leadership we demonstrate in developing CCS could contribute to emissions reductions in emerging economies such as China and India – a vital role given delays in prospective CCS projects in the USA and Europe.

The current barriers to investment in CCS in Australia (and internationally) include:

- uncertainty over legal and regulatory frameworks;
- uncertainty over the availability and location of long-term storage sites;
- the expense of establishing infrastructure to access storage sites;
- the large capital and operating costs of high-risk experimental CCS facilities; and
- the inability of investors to capture all the benefits of experimental low emission fossil-fuel plants.

The successful demonstration of CCS in Australia would contribute to its deployment internationally and give Australian businesses a leading edge in the design, construction and operation of CCS technologies. Nationally, the early commercial demonstration would help build our skills base and expertise to export the know-how and reduce the long-term costs of meeting climate change targets.

² International Energy Agency (2007), *World Energy Outlook 2007*, IEA, Paris, France.

³ Stabilizing concentrations at 450 ppm still risks dangerous climate change impacts as global temperatures have a high probability of exceeding a 2°C increase in global temperature.

Building bridges to commercialisation

Australia urgently needs to establish a long-term CCS demonstration and commercialisation plan that will allow investors to fast-track investment in new low emission power generation. Market forces will not deliver the technology in the time we have available.

Such a plan would identify sites that could potentially sequester large volumes of CO₂ over several decades (e.g. the Cooper Basin, Galilee Basin and Gippsland Basin), map the long-distance common-user pipeline infrastructure needed to transport CO₂ to them from major emission sources, and explain how and when this infrastructure might be provided. Investment in industrial-scale CCS power plants is unlikely to occur or will be delayed until viable storage sites and accompanying infrastructure have been identified.

From demonstration to commercialisation

At current rates, power companies and industrial processors will not use CCS at a meaningful level for many decades.

The key to the effective commercialisation of low emission technologies is successfully traversing the transitional period between basic RD&D (research, development and demonstration) and full commercialisation.

Many barriers to the initial development and demonstration of these new technologies can be serious impediments to project developers seeking to secure finance, warranties and insurance. These barriers include regulatory uncertainty over future emission constraints and frameworks for carbon storage and liabilities, low levels of community acceptance and understanding, high base and rising capital costs, the lack of investment returns for technology demonstration, infrastructure requirements and associated costs and logistics, and the limited deployment incentives for initial commercial-scale developments.

However, once these barriers are overcome they do not normally prevail in the subsequent stages of widespread deployment. The overall risk needs to be reduced in order to provide sufficient incentives to investors who are seeking to accelerate the deployment of low emission technologies.

Taskforce objectives

The National Carbon Capture and Storage Taskforce should be charged with developing new and coordinating existing policies and programs to facilitate the rapid demonstration and commercialisation of CCS in Australia, and ensure that Australian activities complement global efforts for the deployment of CCS. Its membership would include representatives from Federal and State Governments, the fossil fuel and broader power industry, research bodies, and other key representatives of unions, environmental groups, the pipeline industry and the finance and insurance sectors.

Government CCS policy needs to ensure that the necessary RD&D and market-pull mechanisms are in place to achieve 10,000 GWh of power generation from integrated CCS technologies in 2020.

This aspirational target is necessary to drive the required level of commitment from governments and industry. This policy framework should include goals for ensuring:

- the operation of a range of demonstration CCS projects in Australia by 2013-2015; and
- the first Australian commercial scale (>300MW) plants are operational by 2015-2020.

The taskforce Terms of Reference should include:

1. Facilitating the implementation of a national legal framework governing storage (recognising the existing efforts of Commonwealth and State and Territory governments), including appropriate legislation, regulatory regimes, approvals and institutional arrangements to accelerate CCS in both onshore and offshore jurisdictions. This legal framework should be in place by September 2008 and give urgent priority to removing barriers to demonstration projects.

2. Undertaking national mapping of geological basins, in coordination with State Governments, to identify sites with the potential to securely store large volumes of CO₂ for several decades as regional storage hubs. A detailed work program should be developed and a policy framework for commercial proponents established to accelerate the proving up of potential storage sites by September 2008.
3. Developing a detailed infrastructure strategy and blueprint for potential common-user pipelines and injection point infrastructure to link major regional storage hubs with large emission sources (e.g. the Latrobe Valley, Darling Basin and South East Queensland). Work should be completed in 2009.
4. Establishing policies, by September 2008, that will provide the necessary incentives for investment in implementing staged transport infrastructure to progressively capture and store a growing proportion of emissions.
5. Developing monitoring, evaluation, reporting and verification protocols for CCS technology by September 2008 for use in:
 - identifying future power generation investment;
 - establishing a National CCS Register to record and track storage activities;
 - emission reporting, as part of an emission trading scheme.
6. Developing an education and communication campaign to ensure that the public, policymakers and opinion-leaders develop a better understanding of CCS technologies.
7. Prioritising and fast-tracking the current demonstration projects by September 2008, including overcoming the high costs associated with CCS demonstration. Consideration could be given, but not limited to:
 - Selecting flagship projects to be recommended for funding from the approximately \$ 2 billion currently available from industry and government funds;
 - Identifying priorities for funding from other revenue streams (e.g. revenues generated from the auctioning of permits under the emissions trading system); and
 - Developing special-case liabilities and warranties for demonstration projects, whereby Government takes joint responsibility.
8. Developing a policy instrument to overcome the barriers to commercial-scale CCS deployment, by September 2008. This should complement emissions trading and other national low emission technology initiatives and aim to achieve 10,000 GWh of power generation from integrated CCS technologies in 2020. Specific policy mechanisms to be explored, but not limited to, include:
 - Expanded public/private partnerships;
 - Establishing a market-based CCS Target Scheme or Feed-in-Tariff;
 - Tax incentives and accelerated depreciation; and
 - Regulator standards/benchmarks to avoid the lock-in of high emission fossil fuel power generation.