The Secretary
House of Representatives Standing Committee on Science and Innovation
PO Box 6021
Parliament House ACT 2600

by email: scin.reps@aph.gov.au

CLIMATE ACTION NETWORK AUSTRALIA

18th August 2006

Dear Dr Dacre

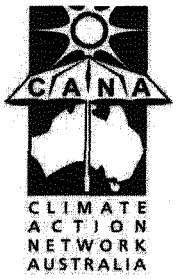
Submission on Inquiry into Geosequestration Technology

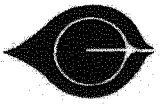
Please accept the attached paper on geosequestration as a submission to your Inquiry. This paper was compiled by Climate Action Network Australia (CANA) members and reflects the members position on geosequestration and the range of issues this technology raises.

If you have any questions about the issues raised in our submission, please do not hesitate to contact me on 02 8202 1215.

Yours sincerely

Julie-Anne Richards
CANA Coordinator





Conservation Council
of South Australia Inc

TOTAL ENVIRONMENT CENTRE

Conservation Council of South East Region and Canberra

GEOSEQUESTRATION POLICY

Introduction

All countries that have ratified the United Nations Framework Convention on Climate Change (UNFCCC), including Australia, have an obligation to take action to prevent dangerous climate change.

To prevent dangerous climate change the global average warming needs to be limited to a peak of less than 2 degrees Celsius[1] above pre-industrial times and should be reduced as fast as possible from this peak. To prevent an increase in temperature of 2 degrees Celsius, industrialised countries need to reduce greenhouse emissions by 60-80% by 2050, with further reductions in global emissions by 2100.

CANA considers that these cuts are challenging but achievable, given political will, through much greater utilisation of renewable energy, energy efficiency, demand management and a reduction in the use of fossil fuels. They are necessary if we are going to prevent dangerous climate change and avoid its significant economic, social and environmental costs.

Renewable energy, energy efficiency and demand management are the safest, fastest and most environmentally and socially acceptable ways to achieve greenhouse emission reductions in the energy sector.

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[1] Impacts associated with a 1-2°C global mean warming include:

- Heat waves will damage crops and livestock will suffer from heat stress
- Decreased water supply and quality will occur in regions already suffering from water scarcity and drought
- More flood damage will result from intense storms
- Increasing frequency and intensity of extreme weather events will result in increased insurance costs and decreased insurance availability (coastal areas, floodplains)
- Increased heat related deaths and illness, particularly affecting the elderly, and sick
- Increased risks to human health due to floods, droughts and bushfires, and risk of infectious disease epidemics
- Increased disturbances of ecosystems by fire and insect pests
- Coral bleaching events will increase in frequency and duration
- Loss of up to 10% of coastal wetlands globally from sea level rise

Fossil fuel industries and some governments have been advocating the application of geosequestration as a climate policy, both for the long term and as a 'transitional' technology. Geosequestration of greenhouse gases carries with it a range of environmental, technological, social and economic risks.

Geosequestration is an end of pipe response which raises the fundamental issue of intergenerational equity and shifts the responsibility to manage our waste to future generations. In terms of certainty and efficiency it is far better to respond to climate change by not creating greenhouse emissions in the first place. Renewable energy, energy efficiency and reducing demand allows us to do this.

Widespread application of geosequestration would require considerable new investment in fossil fuel based infrastructure. Continued investment in fossil fuel investments will have a range of environmental and social impacts besides increasing Australia's greenhouse emissions, such as air pollution and reduced employment opportunities, compared to investment in renewable energy, energy efficiency and demand management.

In addition, geosequestration of coal fired power stations emissions is not expected to be widely available for use before at least 2015.[2] More generally, it seems likely that some decades will be required to commercialise geosequestration technologies, and answer present uncertainities regarding its safety, technical feasibility, costs and potential scale of application. Critically, it has not yet been shown that CO2 injected into geological reservoirs will remain there for the thousands of years required if it is to help protect the climate. If we are to prevent dangerous level of climate change, significant emission reductions are required to happen before this date. The implementation of policies to rapidly accelerate the uptake of renewable energy and energy efficiency whilst reducing energy demand must therefore be the absolute priority for governments.

Given the range of risks and uncertainties associated with geosequestration, it remains to be proven that geosequestration can permanently reduce greenhouse.

CANA calls for an informed public debate on geosequestration focusing on the key issues listed below.

Key Issues

Limited coverage: Large areas of Australia, including some major centres for energy generation, do not have geological formations suited to geosequestration. Existing major electricity generators in the states of NSW and South Australia are in regions currently considered economically and technically unsuitable for geosequestration.[3]

Timeframe: Even if all the uncertainties and problems of geosequestration can be successfully overcome, geosequestration in coal fired power stations will not be widely available until 2015 at the earliest. If we are going to achieve the deep reductions in emissions necessary to prevent dangerous climate change then greenhouse emissions have to be significantly reduced before then.

Permanence: Of paramount importance for geosequestration is the issue of permanence. Clearly, if the sequestered greenhouse emissions leak back into the atmosphere, then geoseqestration will have failed as a climate policy because the leaked emissions will cause more global warming. In addition, if the leakage is rapid it can asphixiate humans and animal life in the vicinity.

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[2] I MacGill, H Outhred, R Passey . **Climate Change and the Australian Electricity Industry: What Role for Geosequestration?** ERGO Draft Discussion Paper, Sydney, 2003.

[3] J Bradshaw, G Allinson, BE Bradshaw, V Nguyen, AJ Rigg, L Spencer, P Wilson. **Australia's CO2 Geological Stortage Potential and Matching of Emission Sources to Potential Sinks.** (http://www.co2crc.com.au/PUBS/sciencepubs.html)

This means that sequestered greenhouse emissions must be stored permanently in locations that do not allow any leakage for at least 100,000 years. The more geosequestration is relied on as a response to climate change, the greater the impact if leakage does occur.

Recognising the precautionary principle in determining proper risk management, governments and proponents of geosequestration must unambiguously prove permanence of storage.

The government and proponents of geosequestration must ensure independent scientific review and monitoring of geosequestration projects on a site- by-site basis and provide full public disclosure of data.

The government and proponents of geosequestration must undertake to develop and implement Emergency Management Plans for site-specific projects.

Liability: Fossil fuel projects normally have lifetimes of 30-40 years. Yet to effectively reduce greenhouse emissions, the sequestered emissions from these projects would have to remain underground for at least 100,000 years. This raises the significant issue of who is liable for the sequestered greenhouse emissions, particularly once the project which originally emitted the greenhouse pollution is no longer operational.

Governments must establish a stringent legal framework for regulating geosequestration that ensures that the proponents of geosequestration assume complete legal liability for the full economic, environmental and social costs of leakage over the lifetime of the storage. This framework must ensure that future corporate insolvency or restructuring should not diminish the effectiveness of the liability regime.

Ecological impacts: *There are risks of negative ecological impacts on subterranean biodiversity* and water supplies from geosequestration.

The proponents of geosequestration must guarantee no significant impact on subterranean biodiversity and water supplies. This must be confirmed through independent and publicly available sceintific review and monitoring.

Diversion of resources: Geosequestration takes investment away from renewable energy, energy efficiency and demand management, which are sustainable, create more jobs than fossil fuels, are lower risk alternatives, more proven and mature technology, less costly and deliver equal or better greenhouse emission reductions at source. Geosequestration will instead mean investment in new fossil fuel infrastructure.

Cost: Authoritative published studies estimate the cost of geosequestration at $46-$140/tCO2.[4] Research shows it is "clearly possible" that electricity generated from coal with geosequestration may be more expensive than other less polluting sources, such as gas and wind power.[5]

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[4] I MacGill, H Outhred. **Beyond Kyoto – Innovation and Adaptation: A critique of the PMSEIC assessment of emission reduction options in the Australian stationary energy sector.** ERGO Discussion Paper, Sydney 2003.

[5] K Tarlo. **Comparing the roles of coal and sustainable energy in reducing greenhouse gas emissions.** Sydney 2003

CANA Principles

- Australian Governments must set a national target and roadmap to reduce greenhouse emissions by at least 60% below 1990 levels by 2050[6] with a 20% target by 2020 to show real progress.

- Governments must give immediate and top priority to rapidly expanding renewable energy, energy efficiency and reducing energy demand to achieve the deep cuts in emissions that are required to prevent dangerous climate change.

- No commercial geosequestration projects should be approved at this stage in time given the range of risks and uncertainties around geosequestration, not least that it remains to be proven whether geosequestration can permanently reduce greenhouse emissions. No R&D geosequestration projects should go ahead until stringent and unambiguous regulatory principles are in place which have involved full public consultation.

- Federal and state governments should increase research funding for renewable energy, energy efficiency and demand management. Recognising the polluter pays principle, research in areas advocated by the fossil fuel industry, including geosequestration at this stage, should be funded by the fossil fuel industry and should be subject to independent scientific evaluation.

- Governments and proponents of geosequestration must unambiguously prove permanence of storage, for a lifetime of at least 100,000 years. There must be full public disclosure and independent scientific review and monitoring of geosequestration projects on a site-by-site basis.

- Governments must establish a stringent legal framework for regulating geosequestration facilities that ensures that the proponents of geosequestration assume complete legal liability for the full economic, environmental and social costs of leakage over the lifetime of the storage. This framework must ensure that future corporate insolvency or restructuring should not diminish the effectiveness of the liability regime.

- The government and proponents of geosequestration must undertake to develop and implement Emergency Management Plans for site-specific projects.

- Geosequestration projects must be guaranteed not to have significant impact on subterranean biodiversity and water supplies. This must be confirmed through independent and publicly available scientific review and monitoring.

- There should be a fully informed public debate on geosequestration. If any geosequestration projects do go ahead at some stage in the future there should be full public consultation during the assessment process.

CANA will actively monitor the development of this technology and will further consider the potential role of geosequestration if and when the principles raised in this paper are adequately addressed and resolved.

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[6] CAN International (2002) **Preventing Dangerous Climate Change: Position Paper on the Adequacy of Commitments,** released at COP8 New Delhi, India