

BRIEFING

Greenpeace Australia Pacific Ltd

www.greenpeace.org.auPh +61 2 9261 4666 | Fax +61 2 9261 4588 | greenpeace@au.greenpeace.org | ABN 61 002

“In terms of sequestration.... essentially I see that as a public works employment for companies like Bektel and Halliburton. This is essentially an effort by the fossil fuel industry to stave off that inevitable transition.”

Ross Gelbspan
Author
Lateline
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Pipe Dreams - why Australia is playing a dangerous game by pretending it can clean up coal

Why the plan to capture greenhouse emissions from coal pushed by big corporations won't stop the climate crisis. And why Australia's politicians shouldn't be fooled.

The scientific community agrees that industrialised countries need to make deep cuts in greenhouse emissions of at least 30% by 2020 and 80% by 2050 in order to avoid dangerous climate change.

Furthermore, these major cuts must be made without delay; the next 10 to 15 years offer a crucial but fast-closing window of opportunity to prevent dangerous and permanent changes in the global climate system. It is critical to cut emissions today and that means deploying proven technologies that are commercially available now, such as energy efficiency, solar, wind, bioenergy and geothermal.

Yet, in Australia, a country identified by the UK Government's recent Stern Report as particularly threatened by climate change, the production and use of coal still dominates energy supply. Neither of Australia's major political parties, nor its big industry players, provide a vision for a future beyond this polluting fossil fuel. This failure has led to a dangerous gamble, in which all of Australia's energy eggs are being placed in the unproven geosequestration/carbon capture and storage (CCS) basket.

Why CCS is not a route for Australia

1. It is unproven and unavailable for at least 15 years, at a time when climate scientists are calling for immediate cuts in emissions. Meanwhile, Australia's halted mandatory renewable energy program came in over-supplied and under budget showing that low cost zero emissions projects are ready to go now.
2. CCS cannot capture all emissions from a power station nor can it be applied to all power stations, so that even it were used widely in Australia and overseas, greenhouse emissions would not fall or stabilise but actually continue to increase.
3. CCS is not necessarily safe or secure from leakage. Emissions must be kept secure for centuries, far longer than any of the companies promoting the technology have even been in business. It is most secure for fossil fuels to be left underground.
4. Even if CCS becomes technically accomplished, it will be more expensive than a plethora of zero emission renewable and energy efficiency options.

Background

CCS, also known as geosequestration or sequestration, is a theoretical plan to capture CO₂, a potent greenhouse gas, from coal and gas fired power stations. It then aims to permanently bury the CO₂, theoretically preventing this pollution from entering the atmosphere and changing the climate.

Despite the Australian Government's promotion of this as a solution to climate change, there is as yet no coal plant anywhere in the world which captures and sequesters greenhouse gases. It is a solution on paper only.¹ And CCS, even if it can be proven to work and be cost effective,

The World Coal Institute

conceded that by 2020 it was likely that only nine projects using CCS would exist.

would not be commercially available during the next critical decade, as the United Nation's expert panel on climate change (IPCC) stated in its recent special report on CCS.

Can CCS really deliver?

Recently, the World Coal Institute conceded that by 2020 it was likely that only nine projects using CCS would exist. The IPCC estimates the deployment of CCS would not take place until the second half of this century. That is nearly 50 years away.² That's too little, too late. In other words, we cannot rely on CCS to tackle climate change.

In Australia, the use of CCS would reduce cumulative emissions by only 2.4% from 2005 to 2030 (compared to the most recent ABARE projections which were taken as the base case for energy demand).³ Continued fossil fuel use in the Asia Pacific region would see greenhouse pollution rise by over 70% by 2050 even if geosequestration captured 85% of emissions.⁴

Research by ABARE supports this. Its most optimistic scenario, an implausibly rapid and comprehensive uptake of CCS, forecasts greenhouse emissions doubling by 2050 in the economies of the Asia Pacific Partnership for Clean Development and Climate countries.⁵ ABARE arrived at this figure by modelling the outcome of "global technology and CCS" with CCS for all new coal and gas fired power plants from 2015 in the US, Australia and Japan, and from 2020 in China, India and South Korea (note this model does not include renewable energy).

CCS is far from a 'magic bullet' solution to greenhouse pollution from coal power. Furthermore, the IPCC's CCS report found that up to 70% of emissions from electricity generation in 2050 may not be technically suited to CCS.

Risks and pitfalls of CCS

CCS has many pitfalls aside from the inability to significantly cut global greenhouse emissions. Storage sites will limit CCS use. For example, no appropriate identified sites lie within 500km of coal-fired generation in NSW and South Australia – where 39% of Australia's current net CO₂ emissions are generated.⁶ This would require extensive pollution pipelines which would undermine the commercial viability of the power plants.

¹ Claims that CCS is working refer only to situations where carbon dioxide has been injected into depleted oil and gas fields.

² IPCC (2005) "Carbon dioxide capture and storage" Summary for policy makers and technical summary, p.41

³ The Australia Institute (2004) "Geosequestration: What is it and how much can it contribute to a sustainable energy policy for Australia?" p. xii

⁴ Transition Institute (Jan 2005) "Excess focus on geosequestration in Asia Pacific would lead to major increase in greenhouse emissions"

⁵ ABARE (2005) "Technological development and economic growth". Partnership countries are the USA, Australia, China, Japan, India and South Korea

⁶ Refers to the Newcastle-Sydney-Wollongong area of NSW and Port Augusta in South Australia. The Australia Institute (2004) "Geosequestration: What is it and how much can it contribute to a sustainable energy policy for Australia?" p. xii

Risks and pitfalls of CCS

Leakage is a major risk. If continuous, long-term, low-level leakage occurs it would undermine the supposed benefits of reducing emissions.⁷

In Australia, little is known about the geology of the deep saline aquifers proposed for CO₂ storage, or how they would behave if used for CO₂ storage. In addition to the risks noted above, water acidification, mobilised toxic metals, leached nutrients, contamination of drinking water sources and escape of hazardous captured flue gases are also risks.⁸

Greater environmental damage due to increased fossil fuel extraction is yet another risk of CCS. Higher power demands of plants using CCS (10-40% more energy than conventional plants⁹) will result in more coal and other fossil fuel use for a given power output. Thus the major environmental problems associated with such fuels – including habitat destruction, damage to rivers and waterways (from subsidence due to longwall mining), and air pollution health impacts on local communities – would also increase.

The question of liability for leakage has not been addressed by any government. It should not be the responsibility of governments, and therefore tax-payers and future generations, to assume the responsibility for pollution management and the risk of leakage at a sequestration site after a corporation has created it. However, this is exactly what the Ministerial Council for Mineral and Petroleum Resources proposes.¹⁰

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Cost

The complexity and massive scale of proposed CCS would increase the cost of coal power. The IPCC estimates CCS would raise the cost of coal generation by up to five US cents per kWh (almost seven Australian cents¹¹).¹² This significantly increases the price of coal power, making it more expensive than renewable energy such as wind and geothermal power^{13,14}.

Not factored into the IPCC's equation are costs to monitor and maintain CCS sites “for the several centuries required before atmospheric greenhouse gas concentrations will stabilise.”

Given its higher cost, industry is unlikely to deploy CCS in the absence of policies that put a price on greenhouse pollution. As the IPCC notes, “in the absence of [financial] measures for limiting CO₂ emissions, there are only small, niche opportunities for CCS technologies”.¹⁵

Thus CCS, one of the Howard Government's main, yet experimental and unproven proposals for tackling climate change, is rendered economically unviable if a price on carbon is not imposed.

⁷ IPCC (2005) p.13

⁸ The Australia Institute (2004) p. 33

⁹ IPCC (2005)

¹⁰ Department of Industry Tourism and Resources (2004) communiqué. See

www.industry.gov.au/assets/documents/itrinternet/MCMPR4_COMMUNIQUE20060110103010.pdf

¹¹ Currency conversion based on exchange rate.

¹² IPCC (2005) p. 9

¹³ Put another way, coal power with geosequestration would cost \$104/MWh (according to the International Energy Agency) compared to current conventional coal power costs of \$35/MWh (according to the 2004 Energy White Paper).

¹⁴ Solar hot water is already cost-competitive with coal power in Australia.

¹⁵ IPCC (2005) p 41

Safe, cost-effective clean technologies are available now

The world cannot be gambled on unproven technologies which will not be available for decades. Australians should not be asked to put public money into pipe dreams when clean affordable technologies are available now.

Renewable energy and energy efficiency technologies are up to the task. Numerous studies show this is the case from Business Roundtable on Climate Change, to CSIRO's *Energy Futures Forum report* to WWF's *Clean Energy Futures*.

A recent report by Greenpeace International and the European Renewable Energy Council, *Energy [R]evolution – A sustainable world energy outlook*¹⁶, indicates that it is economically feasible to cut global greenhouse emissions by almost 50% with the next 43 years. The report indicates significantly increasing our use of renewable energy and energy efficiency, while phasing out nuclear power and reducing coal usage.

Already, 40 million homes worldwide use solar power to heat their water. As technology advances and expands, prices will continue to drop. Wind power is already cheaper than conventional power in many regions, including Texas, USA.¹⁷

Renewable energy has the ability to generate jobs and investment. In Australia, wind power has been shown to create six times as many manufacturing and installation jobs per unit of energy as equivalent coal generation.¹⁸ In Germany, the renewable energy sector has already created over 170,000 jobs and now provides more electricity in the country than nuclear power.¹⁹ Worldwide, the renewable energy industry provides 1.7 million jobs and powers over 21 million homes.²⁰

It's time to quit coal

Our long-term future lies with renewable energy, energy efficiency and demand-side management. Redirecting public money away from clean, green solutions toward CCS is a misguided attempt to protect the coal industry profits ahead of the interests of the community or any other sector in Australia, such as the tourism or agricultural sectors.

To use CCS as political cover to keep opening new coal mines, expanding our coal exports and refusing to support energy efficiency and renewable energy is unconscionable. Future generations will not thank us for it. The real question now is not whether we have to quit coal, but how quickly we can make the transition, how we can ensure those people dependent on coal for jobs and income are not left stranded and how quickly we can develop vibrant and world-class renewable energy industries to protect all of us from dangerous climate change.

“The only way the world can meet its carbon reduction targets is to burn a lot less coal.”

Professor Ian Lowe
President
Australian Conservation
Foundation

¹⁶ <http://www.greenpeace.org/international/campaigns/climate-change>

¹⁷ Los Angeles Times (2005) October 15.

¹⁸ Australian Wind Energy Association (2004) "Driving investment, generating jobs"

¹⁹ Brundesverband WindEnergie, new energy Germany: No. 5, October 2005 (Pg 10); available at <http://www.web.ca/~cfre/Newsletters/news41.htm>

²⁰ Renewable Energy Policy Network (2005) "Renewables 2005: Global Status Report". See www.ren21.net