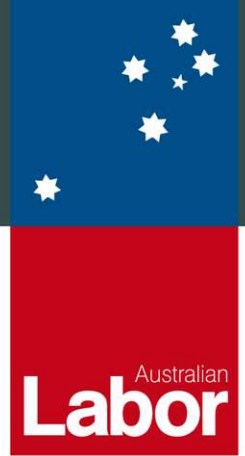




New Leadership.



Labor's Clean Coal Initiative

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ELECTION 2007

Overview

The coal industry has long been one of Australia's great economic assets.

The industry contributes enormously to Australia's economic growth, employment, regional development and national prosperity.

Coal is our single largest export commodity, worth \$22 billion in 2006-07.¹

The coal industry employs over 30,000 people directly and a further 100,000 indirectly – with many of these jobs in regional areas including the Hunter Valley in New South Wales, Central Queensland, Victoria's Latrobe Valley and Collie in Western Australia.²

Coal is also critical to meeting Australia's energy needs, and currently is used to generate around 80 per cent of our electricity. Coal provides relatively cheap power compared to other energy sources, to the benefit of both households and businesses.

However, coal fired power stations are significant emitters of greenhouse gases. The Australian Greenhouse Office has estimated that coal fired electricity generation was responsible for one-third of all greenhouse gas emissions in Australia in 2005.³

Scientists and economists now agree that the sooner we act to reduce emissions, the lower the overall costs will be to avert dangerous climate change.⁴

Clean coal technologies offer the potential to trap and safely store carbon emissions, dramatically reducing greenhouse gas emissions from our fossil fuel fired power stations. Importantly, these advanced technologies are now at the stage where they can move from the laboratory onto the ground in demonstration projects.

While an emissions trading scheme will eventually provide an incentive to research and develop these technologies, we cannot afford to wait that long.

That is why a Rudd Labor Government will establish a **\$500 million Clean Coal Fund** to accelerate the development and deployment of clean coal technologies in Australia.

Through the Clean Coal Fund, a Rudd Labor Government will invest:

- \$50 million in a **National Carbon Mapping and Infrastructure Plan**, including \$20 million to map and test carbon storage sites in Queensland, and \$5 million to undertake this work in Western Australia.
- \$75 million in a **national research program**, including \$25 million to support CSIRO research into the development of clean coal technologies.
- \$50 million in a **pilot coal gasification plant in Queensland**.
- \$50 million to **demonstrate carbon capture and storage in New South Wales**.
- \$50 million in a **large scale post combustion capture plant in the Latrobe Valley in Victoria**.

The remaining funds will be allocated to projects that bring forward the deployment of clean coal and low emission technologies in Australia.

A Rudd Labor Government will also work with State and Territory Governments, industry and research groups to ensure that our research effort is better coordinated and integrated in the future.

It is critical that Australia invests in the development of clean coal technologies now to help tackle climate change and ensure a sustainable future for Australia's valuable coal industry, Playing a leading international role in the development of clean coal technologies will help ensure the continuing economic viability of our coal mining industry and will position Australia to export these technologies and expertise into a growing overseas market.

While Labor has a plan to support the development of clean coal technologies and protect the economic viability of the coal mining industry in the future, the Howard Government has a dangerous nuclear plan – a plan that will devastate the Australian coal industry.

John Howard has declared that nuclear power is the *"cleanest and greenest power generation source of all"*⁵ and wants to build 25 nuclear reactors around the Australian coastline at the expense of thousands of jobs in the coal industry.

Labor's \$500 million Clean Coal Fund is part of its comprehensive plan to take decisive action on climate change, which also includes:

- Immediately ratifying the Kyoto Protocol.
- Establishing an emissions trading scheme by 2010 to put a price on carbon.
- Committing to a target of reducing greenhouse gas emissions by 60 per cent by 2050.
- Setting a 20 per cent renewable energy target by 2020.
- Introducing practical measures to improve household energy efficiency, including generous rebates for solar power systems and solar hot water, and low interest loans for Australian families to help them take practical water and energy saving measures in their homes.

- Establishing a \$50 million Australian Solar Institute and investing \$50 million in the development of geothermal or 'hot dry rock' technology.
- Establishing a \$500 million Green Car Innovation Fund to help develop and build low emission cars in Australia.

A Rudd Labor Government will invest \$500 million in a Clean Coal Fund to accelerate the use of clean coal technologies in Australia, cut greenhouse emissions and secure the economic future of the Australian coal industry.

Clean coal technologies in Australia

Background

When fossil fuels such as coal and gas are burned to produce electricity, large quantities of greenhouse gases such as carbon dioxide are released into the atmosphere.

This means that coal fired power stations are significant greenhouse gas emitters, with the Australian Greenhouse Office estimating that coal fired electricity generated 190 million tonnes of greenhouse gas emissions in 2005 – around a third of Australia's emissions in that year.⁶

Traditional black coal fired power stations emit approximately between 860 and 940 kilograms – and brown coal fired power stations 1,175 kilograms – of carbon emissions for each megawatt hour (MWh) of electricity generated.⁷

Emissions from fossil fuel fired power stations are expected to grow significantly in the future. The National Generators Forum predicts that if we do not take action to reduce our emissions, electricity generators will emit over 400 million tonnes of carbon dioxide a year by 2050 – more than double current levels and largely driven by the growing demand for electricity.⁸

A Rudd Labor Government will commit to reducing Australia's greenhouse gas emissions by 60 per cent by 2050, and will lead international efforts to reduce global emissions.

Emission reductions of this magnitude will require a significant fall in emissions from coal fired power stations. While this will be an enormous challenge for Australia's coal industry, it also presents significant opportunities.

Clean coal or carbon capture and storage technologies can dramatically reduce the emissions from coal fired power stations. If these technologies can be developed in Australia and become commercially viable, not only will our coal industry grow in an increasingly carbon constrained world, but the industry could prosper from exporting this technology and its expertise to the world – earning valuable export dollars for the nation.

Clean coal technologies

Clean coal technologies (also described as carbon capture and storage technologies) trap and store carbon emissions underground. They include:

- Post combustion capture (PCC), which will capture the carbon dioxide emitted out of the flue gas of existing coal fired power stations.
- Integrated gasification and combined cycle turbines (IGCC), which gasify coal and then burn that gas to produce electricity, with carbon dioxide produced as a by product of the gasification process.
- Oxy-fuel combustion, which recycles the flue gas back into the boiler, increasing the concentration of carbon dioxide and making it easier to capture.
- Geosequestration, which involves the injection of carbon dioxide as a compressed liquid into deep and stable geological formations that will trap the carbon for millions of years.

If these technologies prove successful, it is anticipated that 85 per cent or more of greenhouse gas emissions from coal fired power stations might be captured.⁹ If applied to our existing fossil fuel capacity, emission reductions of up to 160 million tonnes a year might be achieved.

Importantly, clean coal technologies are now at the stage where they can move from the laboratory onto the ground in practical demonstration projects.

There are already a number of small scale PCC units being installed at existing coal fired power stations in Australia. These will be used to test the various solutions used to capture carbon dioxide from the flue gas, to inform the future design of full-scale PCC plants.

In the long-term, emission trading and a price on carbon emissions will provide an incentive to develop and use clean coal technologies. But it may take five to ten years before the price of carbon provides this level of incentive.

We cannot afford to wait that long.

That is why a Rudd Labor Government will actively support and assist the development and deployment of these technologies now to ensure that Australia reaps the benefits as soon as possible.

Labor's renewable energy target

A Rudd Labor Government will set a renewable energy target to ensure that the equivalent of at least 20 per cent of our electricity supply – or approximately 60,000 gigawatt hours – is generated from renewable sources by 2020.

The target will help bring forward renewable technologies that already exist over the decade 2010 to 2020, and will be phased out from 2020.

While there is a lot of promising research and development going into clean coal technologies, Labor's renewable energy target does not include these technologies as they are not yet commercially available.

Indeed, demonstration scale projects over the next decade are unlikely to meet specifications for a clean energy target. A demonstration IGCC plant for example, will emit around 350 kilograms per MWh, well below a traditional coal fired power station, but over any threshold for clean energy.

It is generally expected that clean coal technologies will not be available on a full scale prior to 2020. By then emissions trading is expected to be well established and providing a price signal on carbon.

Once clean coal technologies are ready for deployment, Labor will review conditions in the emissions trading market, to ensure that there are sufficient market incentives to accelerate the use of clean coal technologies.

If additional measures are necessary, Labor will take the most appropriate measures in consultation with the industry.

These technologies deserve substantial and direct support to assist with their development. But at this stage, the coal industry needs support for early stage research and development and clean coal technology trials.

The role of natural gas as a transitional fuel

Australia has vast reserves of natural gas, including coal seam methane in Queensland and offshore fields in the Bass Strait and North West Shelf.

Current technology, through combined cycle gas turbines, allows gas to be used to generate electricity at very high efficiency and with lower greenhouse gas emissions when compared with coal, around 575 kilograms per megawatt hour of electricity generated over the lifecycle.¹⁰

This is higher than the likely emissions from future clean coal technologies but lower than current coal fired power stations.

As such natural gas provides Australia with a 'transitional fuel' to help meet growing energy demands over the next decade while we develop clean coal technologies.

There is also the potential to apply many of the clean coal technologies to gas in the future. For example, carbon dioxide that is separated from natural gas could be geosequestered or post combustion capture technologies could be applied to gas fired turbines.

Positioning Australia as a world leader

It is not only our domestic interests that are at stake.

Like Australia, many other countries also use coal as their primary source of electricity generation.

The International Energy Agency estimates that 38 per cent of the world's electricity is generated from the burning of coal, with some countries including India and China sourcing more than half their electricity from coal.¹¹

As those countries look to limit or reduce their greenhouse gas emissions in the future, there will be an increased demand for clean coal technologies.

By playing a leading international role in the development of these technologies, Australia will be well-positioned to export both the technology itself and its expertise into a growing overseas market.

If Australia successfully demonstrates the viability of clean coal technologies, we can then export these technologies to the world. In this way Australia can help to reduce greenhouse gas emissions around the world and at the same time ensure the future economic viability of our coal industry.

John Howard supports nuclear power over clean coal

The Howard Government has no national plan to support the development of clean coal technologies, and no plan to protect the future of the Australian coal industry.

Earlier this year the Department of Industry, Tourism and Resources confirmed that the Howard Government had spent just \$3.4 million to support the research, development and demonstration of clean coal technologies.

In contrast to his failure to support the coal industry by investing in the development of clean coal, John Howard has been consistent in his support for a nuclear industry in Australia.

John Howard thinks that nuclear power is *“the cleanest and greenest power generation source of all”*¹² and has plans to build 25 nuclear reactors along Australia’s coastline and nuclear waste dumps as well.

John Howard’s nuclear reactors – to be built across the country – will replace coal fired power stations. This would result in the loss of many thousands of jobs in the coal industry – particularly in regional Australia where many of these jobs are located.

Earlier this year an independent study identified the following sites as suitable for nuclear reactors, on the basis of access to electricity infrastructure, demand centres, transport and water:¹³

- Townsville, Mackay, Rockhampton, Gladstone, Bundaberg, the Sunshine Coast and Bribie Island in Queensland.
- Port Stephens, the Central Coast, Botany Bay, Port Kembla and Jervis Bay/Sussex Inlet in New South Wales.
- South Gippsland, Western Port, Port Phillip and Portland in Victoria.
- Mt Gambier/Millicent, Port Adelaide and Port Augusta/Port Pirie in South Australia.

When asked about where the nuclear reactor power plants would be built, John Howard said he would not *“rule out power stations anywhere in this country”*.¹⁴ He also told Parliament that the location of reactors was *“a decision for commercial investors”*.¹⁵

John Howard has also said that he will repeal federal environmental laws that prohibit nuclear reactors, and that he will seek to overturn State Government bans on nuclear reactors. This would give John Howard complete control on where nuclear reactors are built in Australia.

John Howard’s nuclear dreams were unanimously supported by the Liberal Party’s Federal Council meeting in June 2007, which resolved that the Liberal Party:

“Believes that nuclear power is the most significant component of an immediate response to climate change and calls on the Australian Government to introduce a technical and regulatory scheme, including appropriate environmental and operation safeguards, and any other measures necessary for the development and provision of nuclear power on a market driven basis.”

Resolution of the Liberal Party Federal Council, June 2007

Labor's National Clean Coal Initiative

Summary

A Rudd Labor Government will establish a **National Clean Coal Initiative**, committing \$500 million to support the development of clean coal technologies in Australia.

In May 2007, the coal industry responded to Labor's plan and committed a further \$1 billion over ten years to the development of clean coal technologies, to be raised by a voluntary levy on coal producers. This funding will be administered by COAL21.

In addition, some State Governments are already funding clean coal research and demonstration projects.

Given the importance of these technologies it is in Australia's economic and environmental interests for a coordinated and integrated national approach to their research, development and deployment.

Under the National Clean Coal Initiative, a Rudd Labor Government will establish a **\$500 million Clean Coal Fund** that will invest:

- \$50 million in a National Carbon Mapping and Infrastructure Plan, including \$20 million to map and test carbon storage sites in Queensland, and \$5 million to undertake this work in Western Australia.
- \$75 million in a national research program, including \$25 million to support CSIRO research into the development of clean coal technologies.
- \$50 million in a pilot coal gasification plant in Queensland.
- \$50 million to demonstrate carbon capture and storage in New South Wales.
- \$50 million in a large scale post combustion capture plant in the Latrobe Valley in Victoria.

The remaining funds will be allocated to projects that accelerate the development and deployment of clean coal and low emission technologies.

National Carbon Mapping and Infrastructure Plan

The development of clean coal technologies cannot succeed unless we identify large scale geological storage sites for carbon dioxide.

Under the Howard Government there has been little detailed work done to identify and assess potential carbon storage sites.

The Howard Government has failed to make the legislative changes that are needed to give certainty to industry on carbon storage – delaying investments and jeopardising the viability of projects.

That work is now becoming urgent.

A Rudd Labor Government will commit \$50 million from the Clean Coal Fund towards a National Carbon Mapping and Infrastructure Plan.

This funding will form the basis of a national pool of funds, with contributions from State Governments and industry.

Nationally we need to map out suitable areas and conduct detailed seismic and drilling work to test their geology. Only then can trials be run to inject and then monitor carbon dioxide in those formations to confirm that they are stable and secure.

All of that work has to be done before we can start planning and constructing the pipeline infrastructure needed to transport carbon dioxide from emission sources to the identified sites.

Of this funding, \$20 million has been committed to map and plan the deployment of clean coal technologies in Queensland. This funding is on top of the \$10 million committed for this task by the Queensland Government earlier this year.

A Rudd Labor Government will work with the States and industry to establish a robust regulatory framework for carbon capture and storage to provide long-term certainty to both industry and the community.

The National Carbon Mapping and Infrastructure Plan will:

- Map and test suitable large geological storage sites that are stable and secure.
- Map and assess the infrastructure needed to transport captured carbon to those sites.
- Create the necessary regulatory framework to govern carbon storage.

A Rudd Labor Government will commit \$5 million from its National Carbon Mapping and Infrastructure Plan to work with the Western Australian Government and industry to identify and test possible geological carbon storage sites in Western Australia.

As with other states there will be a need to identify possible large scale carbon storage sites in Western Australia if clean coal technologies are to be deployed. Finding sites in the vicinity of coal resources in Collie would be a priority.

There is already a proposal from Rio Tinto and BP to build a 500 megawatt IGCC power plant at Kwinana that would need a site to store the captured carbon dioxide.

National research program

The current ad hoc and short term funding arrangements for research into clean coal and related low emission technologies has the potential to delay their development and deployment.

A Rudd Labor Government will invest \$75 million in a national research program to develop clean coal and related low emission technologies. This will include \$25 million for the CSIRO to support its research efforts into clean coal technologies.

Labor will work with senior representatives from State Governments, industry and research institutions to set out national research priorities for the development of clean coal and related low emission technologies in Australia, and a roadmap to guide their deployment.

This will ensure that our national research effort is coordinated, draws together the many different research streams currently being pursued across a number of organisations and is linked into demonstration projects that can bring forward the deployment of clean coal technologies.

The research streams to be given priority will include:

- Black coal gasification.

- Black coal post combustion capture technologies.
- Brown coal gasification and post combustion capture.
- Integrating renewable energy with clean coal technologies.

Australia has significant expertise in many areas of clean coal and related low emission technology research. This is currently spread across a number of organisations, including:

- The CSIRO.
- Universities.
- The Centre for Low Emission Technology (cLET).
- The Australian Coal Association Research Program (ACARP).
- The CRC for Coal in Sustainable Development CRC (CCSD).
- The CRC for Greenhouse Gas Technologies (CO2CRC).

New investment by a Rudd Labor Government will not duplicate these efforts, but will instead consolidate their work into a long-term research program aimed at accelerating the deployment of clean coal and related low emission technologies in Australia.

An immediate task will be to identify the most effective way to continue the research currently being conducted by the CO2CRC and the CSSD, given the funding for both bodies is due to run out within three years.

The Howard Government refused to renew funding for the brown coal or lignite CRC in 2006. This resulted in a significant loss of expertise and knowledge that had been developed over many years. Given Australia's brown coal resources, we should be a world leader in researching how to lower emissions from its use. Under Labor's National Clean Coal Initiative, one of the areas to be given priority will be lowering the emissions of brown coal.

Australia cannot afford to allow the expertise and knowledge that has grown within the two remaining CRCs to be lost.

Pilot coal gasification plant in Queensland

Researchers in Queensland are leading development of coal gasification technologies in Australia.

Coal gasification technologies will see the development of integrated coal gasification and combined cycle power generators that are significantly more efficient than traditional coal fired power stations and can be adapted to capture and store the carbon dioxide produced through the gasification process.

There is growing international interest in the potential for Integrated Gasification Combined Cycle (IGCC) power plants with carbon capture and storage as an efficient, low emission, technology for the future use of coal resources.

Australia should be active in that international research effort.

A Rudd Labor Government will commit \$50 million from the Clean Coal Fund towards the establishment of a pilot gasification plant in Queensland.

Such a plant will allow Australian researchers to further develop and perfect gasification technologies suitable for Australian coal and understand how they can be integrated into an IGCC power plant.

The qualities of coal differ by country, and even region, so it is important that we develop an understanding of how our coal will perform in gasification plants and what gasification technologies are best suited to our needs.

The pilot gasification plant and research conducted at the site will give us an understanding of the potential technical issues that may arise when using our coals in IGCC power plants, identify ways to reduce the costs of coal gasification and inform the design of any future IGCC plant in Australia.

Beyond Australia, as other countries look to use IGCC technology, they will also be looking to source coal that is suitable for gasification. If we are to ensure Australia remains a major coal exporter then it is critical that we have the information to meet those needs.

It is proposed that the pilot plant be jointly administered by the Federal and Queensland Governments and the coal industry, and operated by the Queensland-based Centre for Low Emission Technology, with researchers and the industry having access to the facility.

The pilot plant will potentially involve both the gasification of coal and related processes to treat the syngas and generate a stream of carbon dioxide.

Labor will discuss with the Queensland Government and coal industry what contributions they can make towards the establishment and operation of the pilot gasification plant.

Demonstrating carbon capture and storage in New South Wales

A Rudd Labor Government will commit \$50 million towards a \$150 million project to demonstrate carbon capture and storage in New South Wales.

The project will involve:

- \$20 million for identifying possible geological storage sites for carbon dioxide in New South Wales and testing the suitability of those sites.
- Installing a large scale post combustion capture unit on an existing coal fired power station which would capture in excess of 50,000 tonnes of carbon dioxide a year.

A Rudd Labor Government will work with the New South Wales Government and the coal industry on the implementation of the project.

The identification of suitable carbon storage sites in New South Wales is critical to the future use of clean coal technologies in that state. Currently there are no confirmed large scale sites although a number of regions may have the right geological structures to be suitable.

The location of the large scale post combustion capture unit will be determined in consultation with generators, and will be at an existing power station in either the Hunter or Central West regions.

This project will build on the current pilot PCC units being installed at a number of coal fired power stations.

The large scale PCC unit will be the next step in the development of full-scale PCC capture units and will allow researchers and engineers to test how best to integrate carbon capture technology with traditional coal fired boilers.

These technologies could potentially be installed on many existing coal fired power stations in Australia, capturing millions of tonnes of carbon dioxide each year.

Post combustion capture in the Latrobe Valley in Victoria

A Rudd Labor Government will invest \$50 million to install a large scale post combustion plant on an existing coal fired power station in Victoria's Latrobe Valley. Labor will aim to have the plant installed by 2011.

The project will be critical in the development of full scale PCC technology on existing brown coal fired power stations in the Latrobe Valley.

Victoria has a large scale carbon storage site in the form of depleted oil and gas fields in the Bass Strait, which are located relatively close to existing power stations in the Latrobe Valley. The combination of the Latrobe Valley's vast brown coal reserves and its proximity to a large scale carbon storage site make the region one of the world's best potential sites for clean coal projects in the future.

Labor will seek proposals from the generators in the region as to the best site for the project and will discuss with the Victorian Government and industry their contributions.

Due to the different characteristics of brown coal and lignite, it will be necessary to test and develop PCC technologies that are specifically suited to power stations using these coal types. Once developed these technologies could potentially be installed on a full scale at all existing power stations in the Latrobe Valley.

Funding the demonstration of clean coal technologies

Beyond the projects outlined above, a Rudd Labor Government will seek advice from industry and State Governments to identify and support further clean coal projects that offer the best outcomes.

While continuing research into clean coal technologies is important, the need to actually demonstrate and test the feasibility of those technologies is becoming vital.

There are a number of proposals for projects which demonstrate clean coal technologies that have already been funded through Federal and State Government schemes.

It is important that at a national level we coordinate the funding of those projects so that Australia gets the maximum benefit from the resources we commit, to reduce duplicative effort and to focus on getting technology 'market ready'.

A priority for Labor will be to identify projects that offer the best potential to deliver clean coal technologies on the ground.

As an example of the ad hoc nature of current arrangements, the Howard Government has failed to fund a single project that demonstrates large scale PCC technology.

This technology offers perhaps the best opportunity to retrofit existing coal fired power stations and to reduce their emissions.

Similarly, the Howard Government has failed to fund a single project that demonstrates the gasification of black coal, which currently generates almost 60 per cent of our electricity.

Financial implications

Labor's National Clean Coal Initiative is fully costed and funded.

FINANCIAL IMPLICATIONS – IMPACT ON UNDERLYING CASH BALANCE (\$M):

	2007-08	2008-09	2009-10	2010-11	Total
Clean Coal Fund	0	75	75	75	225
Gross Total	0	75	75	75	225
Total Offsets	0	0	0	0	0
Net impact	0	75	75	75	225

Endnotes

- ¹ ABARE, Australian Minerals series
- ² Australian Coal Association, 2007
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- ⁷ Integrated Sustainability Analysis, *Life-Cycle Energy and Greenhouse Gas Emissions of Nuclear Power in Australia*, The University of Sydney, 2006, p160
- ⁸ National Generators Forum, *A Question of Balance*, 2007, p9
- ⁹ CSIRO, Post Combustion Capture fact sheet, available online: www.csiro.au/resources/ps3ft.html
- ¹⁰ Integrated Sustainability Analysis, *Life-Cycle Energy and Greenhouse Gas Emissions of Nuclear Power in Australia*, The University of Sydney, 2006, p160
- ¹¹ Electricity Information (2005), International Energy Agency
- ¹² John Howard, House of Representatives, Hansard, 27 February 2007
- ¹³ The Australia Institute, *Siting Nuclear Power Plants in Australia - Where would they go?*, Research Paper no.40, 2007
- ¹⁴ John Howard, House of Representatives, Hansard, 27 February 2007
- ¹⁵ John Howard, House of Representatives, Hansard, 16 August 2007