



COAL21 National Action Plan Backgrounder (Q&As)

What is COAL21?

COAL21 is an initiative of the Australian Coal Association aimed at reducing greenhouse gas emissions arising from the use of coal in electricity generation in Australia. It is a collaborative, consensus-building program involving participants from federal and state governments, the coal and electricity industries, and research organisations. A full list of participants can be found at the front of the COAL21 National Action Plan and at the COAL21 website at www.coal21.com.au

The first phase of the program has involved the development of the COAL21 National Action Plan with input from the participants and consultation with other stakeholders. The second phase will focus on implementing the measures identified in the Plan, and on education and communication aimed at improving the level of awareness and understanding of the key technologies and the issues surrounding energy and greenhouse.

Why do we need COAL21?

To meet rapidly growing energy demand, fossil fuels, including coal will continue to meet the bulk of the world and Australia's energy needs for the foreseeable future. Renewable forms of energy may well prove to be the long-term solution to controlling greenhouse gas emissions, but will only account for a relatively modest, albeit growing, proportion of the energy mix for many decades. Part of the solution must therefore be to minimise emissions from our use of fossil fuels during the long transition to a more sustainable energy system. Technologies to reduce emissions from coal must be an essential component of the overall response to climate change along with increased use of renewables and greater energy efficiency.

What is the COAL21 National Action Plan?

The COAL21 National Action Plan is a blueprint for developing the key technologies that will allow coal to continue to be used for electricity generation in Australia with significantly lower greenhouse gas emissions.

What does it cover?

The Action Plan identifies the key emerging technologies needed to reduce or eliminate emissions, and outlines the steps Australia should take to bring forward their development and deployment. It also identifies potential abatement targets for 2030, Australia's role in RD&D and the role of government and industry.

What are the key findings?

There are opportunities for reducing emissions from all stages of the coal chain including production, utilisation and waste disposal. However, as more than 95 per cent of emissions occur

at the point of combustion at power stations, these emissions represent the best opportunity for abatement action.

A number of promising technologies have been identified as being of particular relevance to Australia. These include technologies that enable CO₂ capture and storage (the pathway to near zero emissions), higher coal-use efficiency, and hydrogen production.

What are the key technologies?

The range of technologies associated with carbon dioxide (CO₂) capture and geological storage (also known as geosequestration) are identified as the key to achieving deep cuts or even near zero emissions in coal-based electricity generation. Other technologies that meet one or more of the criteria include Integrated Gasification Combined Cycle (IGCC), Oxy-fuel Combustion, Lignite Dewatering and Drying and Ultra Clean Coal (UCC). Ultrasupercritical Pulverised Fuel (PF) technology meets the criterion of increased coal-use efficiency, but has not been included in the Action Plan because it is unlikely that Australia could play a meaningful role in its further development.

How developed are they?

Each of the priority technologies is at a different stage of development and all require further RD&D before they are likely to be available for commercial deployment. Depending on progress in each case, most could be at least technically mature enough for deployment to commence after 2015.

What does the COAL21 National Action Plan propose?

The Plan outlines actions that should be pursued in Australia to accelerate the development of each of the technologies. These actions are divided into two broad phases: an RD&D phase out to around 2015 and a subsequent deployment phase.

How much could emissions be reduced?

COAL21 assessed the levels of emissions abatement that could possibly be achieved by 2030 through the deployment of advanced technologies, in particular CO₂ capture and storage. This assessment was based on scenarios modelled for COAL21 by the Co-operative Research Centre for Coal in Sustainable Development (CCSD). Provided that the assumptions underlying the model were met, an average emissions intensity target for coal-based generation of 650 kilograms of CO₂ per megawatt hour (currently 1017) or less could be at least theoretically achievable by 2030. This would result in total annual emissions from coal being lower than they are today despite an assumed 35 per cent increase in total coal-based generating capacity. Achieving this would require the equivalent of around 20 per cent of coal-based generation to be at zero emissions by 2030 through CO₂ capture and storage.

What will it cost electricity consumers?

It is unlikely that any technology combination that includes CO₂ capture and storage will be competitive with conventional PF generation. While costs are certain to fall significantly over time, there is considerable uncertainty about both the cost of abatement and the impact on generation costs. This uncertainty applies to both the current and future costs associated with deploying the key technologies in Australia. A range of estimates have been presented in the literature, but considerable work is needed to further consolidate these and place them in an Australian context.

This uncertainty has precluded any robust identification of realistic, quantitative cost targets until more definitive technical and economic assessments are completed. However, two general cost targets can be endorsed. The first is that options for abating coal-related emissions must be

competitive with other options in the Australian generation market. The second is that any impact on the cost of generation must be consistent with the need to maintain an internationally competitive electricity supply.

What kind of RD&D should Australia be doing?

International collaboration will be essential if Australia is to play a role in the development of the key technologies. Australian RD&D activities must complement rather than replicate overseas programs wherever possible. While a full assessment of existing RD&D was beyond the scope of COAL21, a number of criteria that can be used to assess domestic RD&D programs in this context have been identified.

What role should governments and industry play?

Governments have an important role to play in supporting and facilitating RD&D, particularly for first-of-a-kind demonstrations of key technologies. Support during the RD&D phase will need to be carefully targeted and encompass both policy and various forms of direct and indirect assistance. Public/private partnerships will also be important during this phase, particularly for pilot and demonstration-scale facilities.

Will the public support these technologies?

Education and communication will be essential to increase community awareness and understanding of the key technologies and the issues surrounding energy and climate change.