

CARBON POLLUTION REDUCTION SCHEME: IMPACT ON THE MINING AND ENERGY INDUSTRIES

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I INTRODUCTION

In its Green Paper¹ released on 16 July 2008, the Federal Government set out its proposals for an Australian emissions trading scheme. This scheme, which is to be known as the Australian Carbon Pollution Reduction Scheme ('CPRS'), will have a significant impact on Australia's mining and energy industries. The purpose of this article is to outline some of the risks and opportunities that the scheme presents to these industries.

While some industries will receive transitional assistance for the additional costs the CPRS imposes, not all will qualify under the proposed thresholds, which may result in adverse economic consequences. Conversely, renewable energy and gas-fired electricity will have considerable opportunities for expansion given their relatively low emissions intensity compared to coal-fired electricity generation. Industry participants will also need to carefully consider their existing contracts to see how they deal with the pass through of the carbon price. The mining industry in particular will need to review its joint venture and service outsourcing arrangements to assess the impact of the new reporting scheme.

In addition, it needs to be remembered that the Green Paper does not necessarily set out the Government's final position on the design of the scheme. The Government has taken submissions on the Green Paper proposals and will produce a White Paper and draft exposure legislation that will be open for consultation until some time in February 2009. Moreover it is quite likely that the passage of the legislation through Parliament will result in further changes to the scheme.

The likely economic impact of the scheme (including the carbon price) cannot be determined in the absence of information about the emissions trajectory that the Government is proposing. While the White Paper will explain the

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1 Australian Government Department of Climate Change, *Carbon Pollution Reduction Scheme Green Paper* (2008) <<http://www.climatechange.gov.au/greenpaper/report/pubs/greenpaper.pdf>> at 14 September 2008.

Government's intended approach in setting the annual emissions caps for the first five years of the scheme (2010/11 to 2014/15), the precise level of these caps and the gateways (or ranges) within which the annual emissions caps for the following 10 years (2015/16 to 2024/25) will lie will only be announced in early 2010. The setting of these caps and gateways will, in turn, be influenced by the Garnaut Climate Change Review's recommendations as to the 2020 emissions target,² the Federal Treasury's modelling of the economic impact of different emissions trajectory scenarios and the outcome of negotiations on a post-2012 international climate change agreement which will become clearer after the Copenhagen Summit in 2009.

II EMISSIONS-INTENSIVE TRADE-EXPOSED INDUSTRIES

Australia's mining and energy industries account for, or significantly contribute to, a substantial proportion of Australia's exports, such as iron ore, coal, aluminium and liquefied natural gas ('LNG'). In addition, these industries produce many products that are sold on the domestic market but compete with imports. For example, while Australian refineries produce around 34 000ML per year of petrol, diesel and aviation fuel, Australia's demand for these products is considerably in excess of this (43 000ML per annum), so the remaining 21 per cent is imported.³ Competition with these imports effectively constrains Australian refineries to accept the world price (based on the Mean of Platts Singapore price) for their output.⁴

The production of a number of these products results in substantial greenhouse gas emissions, such as fugitive emissions from mining black coal and from flaring during oil and gas extraction and gas processing. Many of the associated production processes are also energy-intensive, for example, the compression of natural gas to produce LNG requires substantial amounts of energy.

As a consequence, an emissions trading scheme will result in the costs of these industries increasing:

- they will need to acquire and acquit permits (to be called Australian emissions units) to cover their direct greenhouse gas emissions; and
- they will face increased prices for the inputs that they use to the extent that those inputs are produced using emissions or energy-intensive processes.

2 See Ross Garnaut, *Garnaut Climate Change Review: Final Report* (2008) Chapter 12 <[http://www.garnautreport.org.au/reports/Garnaut%20Climate%20Change%20Review%20-%20Final%20Report%20-%2030%20September%202008%20\(Full%20version\).pdf](http://www.garnautreport.org.au/reports/Garnaut%20Climate%20Change%20Review%20-%20Final%20Report%20-%2030%20September%202008%20(Full%20version).pdf)> at 2 October 2008.

3 Caltex Australia Limited, *Submission to Garnaut Climate Change Review Emission Trading Scheme Discussion Paper* (2008) 15

<[http://www.garnautreview.org.au/CA25734E0016A131/WebObj/D0847699ETSSubmission-CaltexAustraliaLimited/\\$File/D08%2047699%20ETS%20Submission%20-%20Caltex%20Australia%20Limited.pdf](http://www.garnautreview.org.au/CA25734E0016A131/WebObj/D0847699ETSSubmission-CaltexAustraliaLimited/$File/D08%2047699%20ETS%20Submission%20-%20Caltex%20Australia%20Limited.pdf)> at 13 September 2008.

4 *Ibid* 17.

These increased costs will put Australian industry at a disadvantage where overseas competitors do not face a similar cost impost. In order to 'level the playing field' the Federal Government is proposing that up to 20 per cent of each year's Australian emissions units be allocated for free to:

- activities that have an emissions intensity above 2000tCO₂-e/\$million revenue – these activities will initially receive units that cover around 90 per cent of their emissions per unit of output; and
- activities that have an emissions intensity of between 1500 to 2000tCO₂-e/\$million revenue – these activities will initially receive units that cover around 60 per cent of their emissions per unit of output.

On the basis of these thresholds, only some trade-exposed downstream activities in the mining and energy industries are likely to qualify for the highest level of assistance. These include, for example, aluminium smelting, lime production and integrated steel manufacturing. Activities such as alumina refining and some processes associated with non-ferrous metal smelting and the production of non-metallic mineral products are likely to qualify for the lower level of assistance. This leaves significant sectors, including coal mining, LNG and petroleum refining without any assistance, despite the fact that they face international competition and that the scheme will impose considerable costs on them.

Indeed, whether an industry meets a threshold that qualifies it for assistance may depend upon the historical period over which the emissions per unit of output or the revenue of the industry is measured. For example, exceptional increases in coal prices over the last three years mean that, if the qualification for assistance is calculated on the basis of data relating to this period, coal would miss out, largely because the industry's per tonne revenue over this period has been unusually high. This is despite its production being highly emissions-intensive in absolute terms. Equally, high revenue producing activities which nevertheless have low margins will be prejudiced by the adoption of thresholds that are based on revenue rather than value added – yet it is low margin trade-exposed activities that are likely to be most affected by any additional cost impost.

Even for those activities that qualify for assistance, that assistance will not fully insulate them from the costs of the CPRS:

- The allocation of free units is to be based on Australian industry average emissions per unit of output and only a portion (that is, 60 per cent or 90 per cent) of those emissions will be covered by these free units. This means that industry participants whose actual emissions are above the industry average will be covered for proportionately less of their emissions. However, the emissions-intensity of production processes can vary considerably depending on the technology used and the nature of the inputs.
- Aside from direct emissions, the assistance is only targeted at increases in the electricity costs that these industries face due to the internalisation of

the carbon price in electricity prices. It does not cover the carbon-induced increase in the cost of other fuels (such as gas or diesel) or the increased cost of any other energy or emissions-intensive inputs which may be used.

- The number of Australian emissions units that will be set aside for free allocation will be capped at 20 per cent of the total number of units that are issued for each year (unless the agricultural sector is subsequently included in the scheme, when this reserve will rise to around 30 per cent). This does not allow for the expected rapid growth in a number of emissions-intensive trade-exposed industries over the next few years. Rapid growth simply results in the total pie being sliced more thinly.
- Moreover, the Government is proposing to reduce the allocation of free units to emissions-intensive trade-exposed activities over time at a preset rate (that has yet to be announced), with continued assistance being reviewed every five years and ceasing if key competitor economies introduce comparable carbon constraints.

While these mechanisms are intended to encourage emissions-intensive trade-exposed industries to adapt over time to a carbon-constrained environment, the risk is that, if these mechanisms are too aggressive, they will act as a disincentive to new investment in those industries. This may even encourage the relocation of existing activities overseas to countries that do not have a carbon constraint.

A Coal-Fired Electricity Generation

Australia is heavily dependent on coal-fired electricity generation which accounts for around 83 per cent of its current electricity generation capacity of 45 000MW.⁵ Ready access to cheap domestic coal has translated into relatively low electricity prices. However, Australia's coal-fired electricity generation is also very emissions-intensive. Indeed, the carbon dioxide intensity of Australia's electricity supply is the highest of any Organisation for Economic Cooperation and Development ('OECD') country and is 98 per cent higher than the OECD average (it is 74 per cent higher than the world average).⁶

In the longer term, the continued viability of the coal-fired electricity generation industry in a low carbon economy is reliant on the introduction of efficiency measures (such as coal drying and gasification) and on the development of carbon capture and storage.

In the shorter term, the imposition of a carbon price on coal-fired electricity generators has the potential to severely impact upon their profitability and asset values. This is because they face a significant carbon liability due to their high emissions-intensity and (at least in the shorter term) have few economically viable abatement opportunities. In addition, to the extent they compete with less

5 'Special Report on Climate Change, Electricity Sector Raises Cost Spectre', *The Weekend Australian* (Australia), 29–30 March 2008.

6 Garnaut, *Garnaut Climate Change Review: Final Report*, above n 2, 160.

emissions-intensive generators, particularly gas-fired generators,⁷ they are unlikely to be able to pass through the full carbon impost to consumers. In these circumstances, the Federal Government considers that a failure to provide some adjustment assistance to coal-fired electricity generators will increase the perceived risk of investing in the energy sector. Accordingly, it has determined to provide an as yet unspecified amount of assistance to coal-fired electricity generators through a proposed Electricity Sector Adjustment Scheme. At this stage it is unclear what form this assistance may take. For instance, it could conceivably be provided by way of a free allocation of units, cash payments, or increased funding for research and development into emissions abatement technologies. However, the Government has indicated that it will be alert to ensuring that the provision of this assistance does not result in generators making windfall gains. This presumably means that the Government will be factoring in, among other things, the fact that such generators will benefit from a higher electricity price (on the basis of a \$20/tCO₂-e carbon price, the Government has suggested that average retail electricity prices for domestic users may rise by up to 16 per cent).

The risk of providing insufficient transitional assistance to coal-fired electricity generators is that they will be forced to bid higher prices for the dispatch of their electricity to recoup their carbon costs. This, in turn, might reduce their dispatched output, as lower cost generators are dispatched in preference to them, and so prejudice their ability to recover their fixed costs. At the extreme this may lead to the 'wounded bull' scenario, under which a major generator withdraws capacity from the market, in an attempt to dramatically increase electricity prices and recover its sunk costs over a much shorter period of time than it otherwise would.⁸ The consequence would be volatile electricity prices and, potentially, a reduction in the security of electricity supply.

B Renewable energy

The commercial viability of renewable energy generation projects will increase with an increasing carbon price. For example, wind energy is generally considered to require a carbon price of \$35 to \$45/MWh before it can be regarded as comparable in cost to coal-fired electricity generation. It seems unlikely that the initial carbon price will be at this level, and the fact that the Green Paper proposes that the carbon price be capped for at least the first five years of the CPRS – albeit at a fairly high level – suggests that this price might not be achieved for some time.

7 The average emissions intensities of different generation fuels (in tCO₂-e/MWh) are zero for hydro, 0.45 for gas, 0.85 for black coal and 1.10 for brown coal: Investor Group on Climate Change, Hastings Funds Management and Monash University, *Potential Earnings Impacts from Climate Change – Energy Infrastructure* (2007) 10
<<http://www.igcc.org.au/resources/igcc%20potential%20earnings%20impacts%20from%20climate%20change%20-%20energy%20infrastructure.pdf>> at 12 September 2008.

8 Paul Simshauser, 'Emissions Trading, Wealth Transfers and the Wounded Bull Scenario' (Paper presented at the Oz Carbon Trading Conference, Sydney, 1 June 2007).

The Federal Government has therefore announced that it will be implementing a national renewable energy target which will see 20 per cent of Australia's electricity supply provided from renewable energy sources by 2020. This scheme is to subsume or replace existing State-based schemes such as the New South Wales Greenhouse Gas Abatement Scheme,⁹ Queensland's 13 per cent Gas Electricity Scheme,¹⁰ and Victoria's Renewable Energy Target Scheme. The major beneficiary of this incentive, at least initially, is likely to be wind generation (which currently only accounts for less than 1 per cent of Australia's electricity generation capacity). However, as 2020 approaches, it is expected that other technologies (such as solar, geothermal and tidal) will be brought into commercial operation, although quite how much they will be able to contribute to the 2020 target remains unclear.

While it is desirable to diversify Australia's generation mix – for example, because water shortages as a result of drought impact on the ability of coal-fired generators to operate – there is a tension between the national renewable energy target and the CPRS. As recognised by both the Garnaut Climate Change Review¹¹ and the Productivity Commission,¹² a renewable energy target subsidises zero emissions (but higher cost) renewable energy generation at the expense of low emissions (but lower cost) alternatives, such as gas-fired electricity generation. As a consequence, electricity prices are likely to be higher than they would be in the absence of the national renewable energy target. In this regard it has been estimated that the national renewable energy target will add \$6 to \$8/MWh to wholesale electricity prices.¹³

C Gas

Gas can be viewed as the transitional fuel in a move towards a low carbon economy. However, in order for gas-fired electricity generators to become competitive with coal-fired baseload generators, a carbon price in the region of \$20 to \$30/tCO₂-e is probably required. This means that the domestic gas industry will only be able to realise its substantial potential as a transitional fuel if the design of the CPRS does not result in too low a carbon price (for example, through a low price cap, relatively lax annual emissions caps or the allocation, rather than auctioning, of a substantial portion of Australian emissions units). Indeed, the opportunities for gas are potentially very significant: Australia is

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- 9 See New South Wales Department of Water and Energy, *Transitional Arrangements for the NSW Greenhouse Gas Reduction Scheme Consultation Paper* (2008) <http://www.dwe.nsw.gov.au/energy/pdf/sustain_greenhouse_gas_consultation_paper_nsw_ggas_reductio_n_scheme.pdf> at 12 September 2008.
- 10 To be increased to up to 18 per cent: see *Clean Energy Act 2008* (Qld) s 67, inserting new s 135ELA into the *Electricity Act 1994* (Qld).
- 11 Garnaut, *Garnaut Climate Change Review: Final Report*, above n 2, 354.
- 12 Productivity Commission, *What Role for Policies to Supplement an Emissions Trading Scheme?: Submission to the Garnaut Climate Change Review* (2008) <[http://www.garnautreview.org.au/CA25734E0016A131/WebObj/ProductivityCommission/\\$File/Productivity%20Commission.pdf](http://www.garnautreview.org.au/CA25734E0016A131/WebObj/ProductivityCommission/$File/Productivity%20Commission.pdf)> at 12 September 2008.
- 13 'Business Baulks at Energy Targets', *The Australian Financial Review* (Australia), 18 August 2008, 1.

forecasted to require an additional 8 000MW of baseload generation capacity by 2020, and each 1 000MW of this that is gas-fired will require about 70PJ of gas per annum.¹⁴ Conversely, an increased demand for gas, and the fact that the construction of one or more LNG terminals on the east coast will result in Australia's domestic gas industry being opened up to the higher world gas price, is likely to put upward pressure on the domestic price of gas. This in turn will detract from the price advantage that gas (as a lower emissions fuel) might otherwise have over coal.

D Liquid Fossil Fuels

While petrol will be covered by the CPRS, the initial impact of the scheme on petrol prices will be offset through a reduction in the fuel excise. However, the refiners, importers, distributors and blenders of liquid fuels such as petrol, diesel and aviation fuel will be required to acquire and surrender sufficient Australian emissions units to cover the downstream combustion of the fuel that they produce or sell, except where that fuel is used for international aviation or sea travel. This exposes the four major Australian petroleum refiners to a potentially significant liability. For example, Caltex has estimated that the liquid fuels it supplies account for around 35mtCO₂-e per annum. At a carbon price of, say, \$40/tCO₂-e, Caltex will be required to spend about \$1.4 billion per annum in acquiring the units that it needs to acquit its obligations under the CPRS.¹⁵

Aspects of the scheme that are intended to assist in managing this cost, which will also be faced by large direct emitters, include:

- periodic unit auctions, which enable unit requirements to be bought throughout the year rather than only at one time;
- freely tradeable units, which mean that a liable entity can also satisfy its unit requirements by buying them on the secondary market; and
- the development of financial markets, which enable liable entities to enter into forward contracts and options so as to lock in the price at which they are able to obtain units in the future, and thus factor that price into the price of their goods and services.

However, where a small number of liable entities need to acquire a substantial volume of units, it is critical that there is a deep and liquid market for units, or there is the risk that they may be 'held to ransom' by traders who buy up units that those entities require. Equally, there is a greater incentive for the liable entities to collude in buying, or seeking to manipulate the market price of, units.

14 'Special Report on Climate Change: Rosy Picture for Gas Sector', *The Weekend Australian* (Australia), 29–30 March 2008, 2.

15 Caltex Australia Limited, above n 3, 1.

III PASS THROUGH OF CARBON PRICE

Participants in the mining and energy industries, like other affected industries, will seek to pass through the carbon price that they incur to those who buy their output. However, whether this is possible will depend on the terms of their sale contracts – at one extreme a truly fixed-price contract will not permit such a pass through, whereas at the other extreme, a broad change in law provision may permit a total pass through. In between there are a number of permutations. A CPI-indexed price will capture some of the cost increases attributable to the imposition of a carbon price, although a price uplift for inflation will probably result in the supplier recouping a smaller proportion of its carbon-related costs than if the indexation factor was more closely related to the cost of inputs that are specific to the relevant supplier. It is also worth noting that inflation might spike as a result of the introduction of a carbon price and result in purchasers facing a significant once-off price increase where the price is indexed to CPI. Conversely, a purchaser might agree to share a part of the increased carbon cost with the supplier, with the cost allocation between them perhaps depending on the degree to which the purchaser can pass on the cost increase to its own customers.

In drafting carbon pass through provisions it needs to be remembered that there are a number of ways – each with different associated costs – in which a business can seek to meet its carbon liability: it could acquire units, opt to pay the penalty for having an emissions unit deficit or install emissions abatement technologies. A carbon pass through provision will have to be able to accommodate all of these options, and do it in such a way as to minimise the likelihood of a dispute over the appropriate cost that is to be passed through. This cost may vary with factors such as the price of emissions units, the supplier's carbon hedging strategy, and the supplier's emissions-intensity.

So, for example, the introduction of emissions trading will result in increases in the price of electricity and gas, at least over the longer term. However, in the shorter term, the size of this increase will depend upon whether wholesale transactions for gas and electricity are structured under fixed-price long term contracts or under contracts that allow the carbon cost to be passed through. It will also depend upon the hedging portfolios of electricity and gas retailers, and whether any jurisdictional price caps on electricity and gas that is supplied to small consumers are sufficiently flexible to accommodate the pass through of the carbon price to those consumers.

Similar issues arise in relation to electricity-related hedges that span the introduction of the CPRS. It will be necessary to ensure that such hedges contain a mechanism under which the fixed components (such as strike prices, caps, floors and premiums) are adjusted proportionately to the carbon price-induced increase in the wholesale electricity prices against which those hedges are written.

IV EMISSIONS REPORTING

The accurate measurement of greenhouse gas emissions is a critical component of the CPRS, as it is the quantity of emissions that determines a liable entity's unit surrender obligations. The Federal Government has already introduced a reporting scheme, under the auspices of the *National Greenhouse and Energy Reporting Act 2007* (Cth), with the current financial year being the first reporting year under the scheme for large greenhouse gas emitters, energy producers and energy consumers.¹⁶ Under the reporting scheme, emitters are able to choose between using 'default' emissions estimation methodologies, which are largely based on 'average' emissions from particular processes, and facility-specific emissions estimation methodologies. A difficulty is that, in some cases (such as the measurement of methane emissions from open cut black coal mines), existing measurement processes are not very accurate, yet a financial cost will attach to the quantity of emissions as estimated using these processes. Conversely, there will be an incentive for industry participants to use the higher order facility-specific emissions estimation methodologies where the default methodology might overestimate their emissions. This may occur for example in the case of LNG fields, which vary significantly in their gassiness.

The need to measure greenhouse gas emissions for the purposes of the CPRS may also necessitate measurement equipment being upgraded to enable more accurate emissions measurement. For instance, while petroleum refineries measure the emissions that they flare, the equipment used is fairly rudimentary and will probably need to be upgraded so that it can more accurately measure the composition of the emissions stream that is being flared.

Using a facility-specific emissions estimation methodology and upgrading measurement equipment will entail some expenditure and may also require the facility to be taken out of service so that the necessary equipment can be installed and commissioned.

V JOINT VENTURES AND CONTRACTING OUT

Joint ventures are common in the mining and energy industries. Under the reporting legislation, the members of a joint venture can appoint one of their number to be the responsible reporting entity. That entity will then be required to report all of the joint venture's greenhouse gas emissions, energy production and energy consumption as if it were its own.¹⁷ While the administration of the reporting scheme is simplified by having only one entity report the emissions of a facility that is controlled by a number of entities, it is quite another thing for the responsible entity to assume liability for acquiring and acquitting the units

16 Energy production includes the extraction of fossil fuels (such as coal and oil) and the use of sunlight, wind and water for electricity generation purposes: *National Greenhouse and Energy Reporting Regulations 2008* (Cth) regs 2.03, 2.23(3), sch 1.

17 *National Greenhouse and Energy Reporting Act 2007* (Cth) s 8.

necessary to cover all of the joint venture's emissions. Yet the Federal Government is considering just such an approach.

Similarly, it is common for mining operations to be contracted out to a third party. If the third party has 'operational control' over the mine – that is, if it has the authority to introduce and implement operating, environmental or health and safety policies for the mine – then that party (as opposed to the mine owner) will be required to report the greenhouse gas emissions, energy production and energy consumption attributable to the mine.¹⁸ To the extent that liability for acquiring and acquitting units under the CPRS attaches to the entity that is required to report under the reporting scheme, it may be the contract miner rather than the mine owner that has this liability. Given the significant financial consequences that may result, this is an issue that needs to be kept under close review by the industry.

VI CONCLUSION

In summary, there are a variety of risks and opportunities for participants in the mining and energy industries that arise out of the CPRS. In order to be able to identify and manage these risks, and identify and exploit these opportunities, industry participants will need to familiarise themselves with the detail of the scheme as it is developed. The comprehensive nature of the Green Paper gives a fair degree of guidance to the industry as to the likely design features of the new Australian emissions trading scheme. However, much more work remains to be done on the detail of the scheme and it will be a real challenge to have a properly functioning scheme in operation during 2010.

18 *National Greenhouse and Energy Reporting Act 2007* (Cth) s 11.