



# Economic Assessment of CPRS' Treatment of Coal Mining

EITE Activity Policy and the Coal  
Mining Sector

Prepared for Australian Coal Association

7 May 2009



**ACIL Tasman**

Economics Policy Strategy

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## 1 Executive Summary

The Australian Coal Association (ACA) commissioned ACIL Tasman to conduct an independent assessment of the following aspects of the proposed CPRS:

- the factual basis of the decision to exclude coal mining from eligibility for inclusion in the emissions-intensive trade-exposed (EITE) activity transitional arrangements
- the adequacy and efficacy of the coal mining industry adjustment scheme proposed in the White Paper instead of inclusion in the EITE regime
- implications of the CPRS for the Australian coal industry, taking account of cost, competitiveness and operational implications.

ACIL Tasman was also asked to compare CPRS' treatment of the coal industry with ACA's proposal for inclusion of coal mining in the EITE regime.

ACIL Tasman's modelling utilised the following main information sources:

- CPRS' features as described in the White Paper, modified to reflect the Government's 4 May 2009 announcement on scheme commencement, permit pricing, emissions targets, and EITE regime features
- forecast \$A coal prices based on an average of analysts' predictions
- Commonwealth Treasury's modelling of CPRS permit prices
- confidential information provided by companies relating to their:
  - coal mining activities – production, revenue, and profitability
  - CPRS exposure – direct greenhouse gas (Scope 1) emissions, electricity consumption (Scope 2) and relevant transport information.

The survey covered 75 mines accounting for 86 per cent of New South Wales and Queensland coal production, including over 80 per cent of coal exports and 80 per cent and 100 per cent of domestically used thermal and metallurgical coal, respectively. ACIL Tasman is confident the survey is an accurate representation of the Australian black coal industry.

### Key Findings

*Finding 1 - The decision to exclude coal mining from EITE was seriously flawed, as it was based on incorrect information.*

The White Paper (p. 12-46) said, "Since the majority of coal mines are not emissions-intensive, the Government will not provide EITE assistance to the activity of coal mining". ACIL Tasman has found that the first part of this statement is factually incorrect, and therefore the decision to exclude coal mining from the EITE scheme was flawed.

A tabular summary contrasting the White Paper's assertions about coal with the facts revealed by ACIL Tasman's survey of mines follows.

CPRS White Paper	ACIL Tasman's findings
<p>“The vast majority of coal production comes from mines that are significantly below the EITE eligibility threshold of 1,000 tonnes of CO<sub>2</sub>-e per million dollars of revenue.” (p. 12-46)</p>	<p>The <b>majority</b> of coal production is from mines <b>above</b> the lower EITE threshold.</p> <p>The average emissions intensity of surveyed production was well above the threshold, at 1,333 t CO<sub>2</sub>-e per million dollars of revenue.</p> <p>57 per cent of the mines surveyed were above the 1,000 tonnes of CO<sub>2</sub>-e per million dollars of revenue threshold, and these mines accounted for 53 per cent of surveyed coal production.</p>
<p>“The vast majority of production (nearly 90%) originates from mines which have an emissions intensity of less than 0.05 tonnes of CO<sub>2</sub>-e per tonne of coal extracted.” (p. 18-8)</p>	<p>Only 22 per cent of surveyed production was from mines with an emissions intensity below 0.05 tonnes of CO<sub>2</sub>-e per tonne of coal extracted.</p>
<p>“However, a small number of coal mines are very emissions-intensive and will face a significant cost impact from the Scheme.” (p. 12-46)</p>	<p>A <b>significant</b> number of mines are <b>very emissions-intensive</b>. Fifteen surveyed mines (19 per cent) were above the 2,000 tonnes of CO<sub>2</sub>-e per million dollars of revenue threshold for allocation of 94.5 per cent EITE permits.</p>
<p>“An allocation [of EITE permits] based on the industry average [emissions intensity] would lead to the majority of coal mines receiving significant windfall gains.”</p>	<p>A <b>minority</b> of mines (34 per cent of production) would receive <b>windfall gains</b> from EITE permit allocated according to average emissions intensity.</p> <p>Windfall gains would be eliminated if the ACA's proposed approach for coal was adopted.</p>

*Finding 2 - The decision to exclude coal mining from the EITE arrangements is inconsistent with the Government's stated objectives.*

ACIL Tasman has found that the exclusion of coal from EITE is in conflict with important Government aims in the White Paper, as summarised in the following table.

Government's EITE Objective	ACIL Tasman's findings
Avoid adverse competitiveness and carbon leakage effects (Policy Positions 12.1 and 12.2).	CPRS would have <b>significant detrimental effects on the competitiveness</b> of the coal industry. The exclusion of coal mining from the EITE scheme ignored this fact. The Coal Sector Adjustment package does not address this problem, providing only 3 per cent support compared to over 60 or 90 per cent for other comparable EITE activities with emissions above eligibility thresholds.
Ensure equitable application within and across industries (Policy Position 12.4)	The exclusion of coal mining from EITE is highly discriminatory and therefore inequitable.
Target the scheme to the most EITE entities (Policy Position 12.2)	Most Australian coal mines are trade exposed, and either emissions intensive or very emissions intensive. Exclusion of coal mining means many genuine EITE activities would not be targeted for permit allocations.

*Finding 3 – The proposed Coal Sector Adjustment package is a poor substitute for inclusion of coal mining in the EITE regime.*

In lieu of including coal in EITE, the White Paper provided a Coal Sector Adjustment package consisting of:

- \$100 million per annum for 5 years to be distributed among 'gassy' mines according to their 'gassiness'.
- \$250 million in matching grants to coal mines for 'innovative' abatement projects.

Combined these elements represent less than 4.5 per cent of the direct cost impact on the industry during the first 10 years of the CPRS, compared to support of more than 60 per cent or 90 per cent for all other EITE activities.

*Finding 4 – The CPRS would have a major impact on coal industry costs and competitiveness, with significant negative consequences for coal production, investment, employment and royalty revenue.*

One effect of the CPRS would be to shorten the lives of established mines that are emissions intensive and/or marginal in terms of their viability. ACIL Tasman has estimated that in the first 10 years of the scheme, 16 mines would close prematurely, and that by 2021 there would be 9,900 fewer people employed within and outside the coal industry as a result. Coal production would be 22 million tonnes per annum below business as usual and there would be corresponding sterilisation of resources. This would mean state governments would forego significant coal royalty revenue.

A second and more immediate effect of the CPRS is that coal mining companies would be forced to re-evaluate their current operations, potentially reducing mining at some sites and/or sterilising some coal resources.

A third effect is that CPRS' treatment of coal mining could be expected to discourage investment in expansion or extension of life of existing mines and in establishment of new mines. ACIL Tasman has not attempted to model the magnitude and consequences of these adverse investment effects.

*Finding 5 – The inclusion of coal mining in the EITE program would ameliorate, but not eliminate, these impacts.*

ACIL Tasman found that including coal mining in the EITE program in the manner proposed by ACA would result in fewer premature mine closures as a result of the CPRS. As a consequence, losses of employment and royalty revenue would be significantly reduced.

ACIL Tasman has found that windfall gains would not accrue to mine operators under this system.

Retention of Coal Sector Adjustment assistance in conjunction with ACA's proposed adjustment to EITE policy would further ease, but not remove the adverse economic effects of application of CPRS to coal mining.

## 2 Introduction

ACIL Tasman was engaged by the Australian Coal Association (ACA) to undertake an independent economic assessment of the treatment of coal mining under the Carbon Pollution Reduction Scheme, which was amended on 4 May 2009. This assessment was to include comparison of the effects of the

Government's approach with ACA's proposed method of including coal mining in the Government's emissions-intensive trade-exposed (EITE) activity arrangements.

ACIL Tasman's quantitative analysis was to be confined to impacts on individual mines, first round economic effects and indicative partial equilibrium effects on employment. Quantitative analysis was to be complemented by qualitative economic analysis.

### 3 Survey of Coal Mines

ACIL Tasman surveyed operators of New South Wales (NSW) and Queensland coal mines to collect emissions, production, financial and other data that would enable an assessment of the impact of the Carbon Pollution Reduction Scheme (CPRS) as outlined in the CPRS White Paper. Data was provided by mine operators on a strictly confidential basis because of commercial sensitivity. ACIL Tasman has presented the data in ways that maintain its confidentiality.

Respondents accounted for 75 coal mines, representing 86 per cent of production of saleable coal and 70 per cent of coal mines in Queensland and NSW. Responses covered 89 per cent of export coking coal, 100 per cent of domestic-use coking coal, 77 per cent of export thermal coal, and 60 per cent of thermal coal used in Australia.

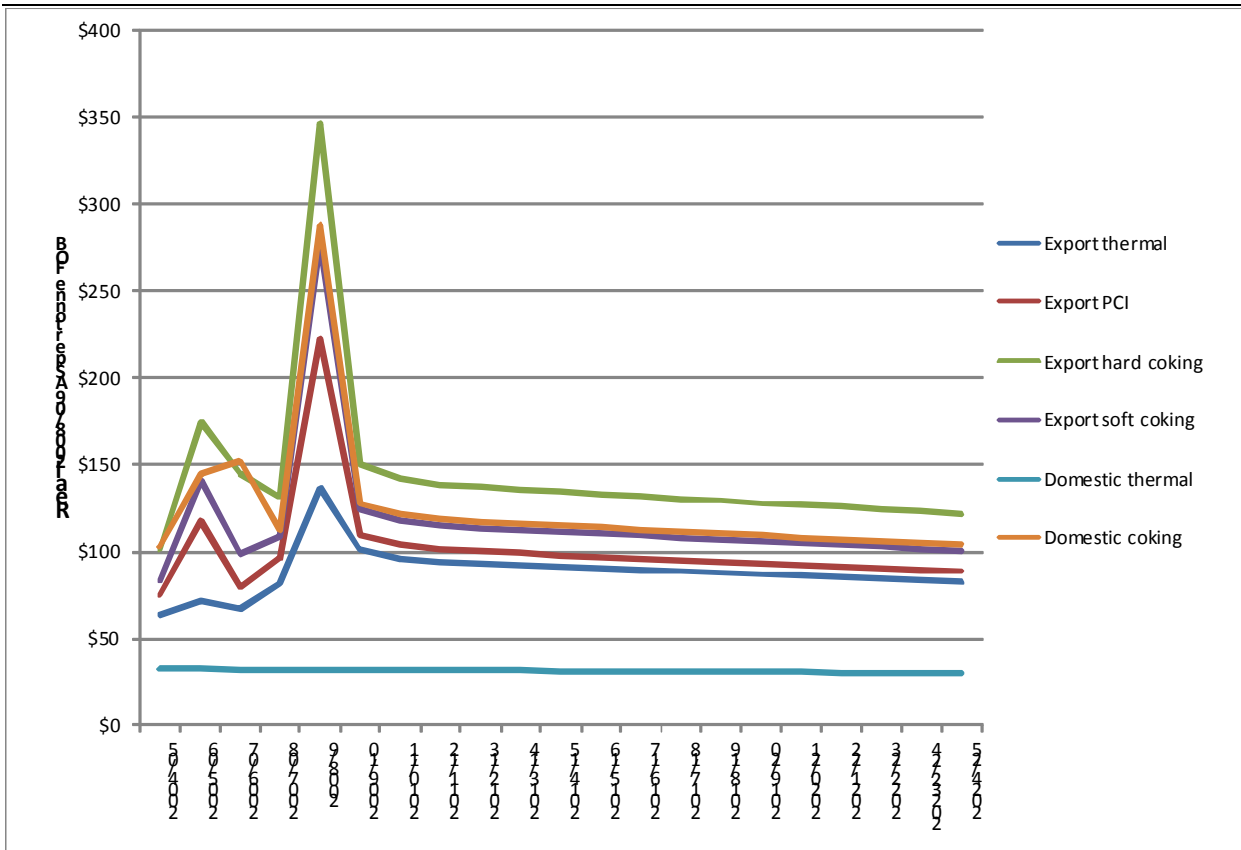
### 4 Reference Case

ACIL Tasman established a reference case as a basis for assessment of effects of the CPRS. Key assumptions for this scenario related to future coal prices, the trajectory of emissions permit prices, future electricity prices, and a discount rate.

Reference case prices for various types of export coal were based on forecasts by ABARE and 13 investment banks. ABARE forecasts and the average of the investment banks' forecasts each received a 50 per cent weighting.

Real coal prices used in the reference case have been depicted in Figure 1.

Figure 1 Real Coal Prices – Reference Case



<sup>a</sup> Data source: ABARE, various investment banks, ACIL Tasman

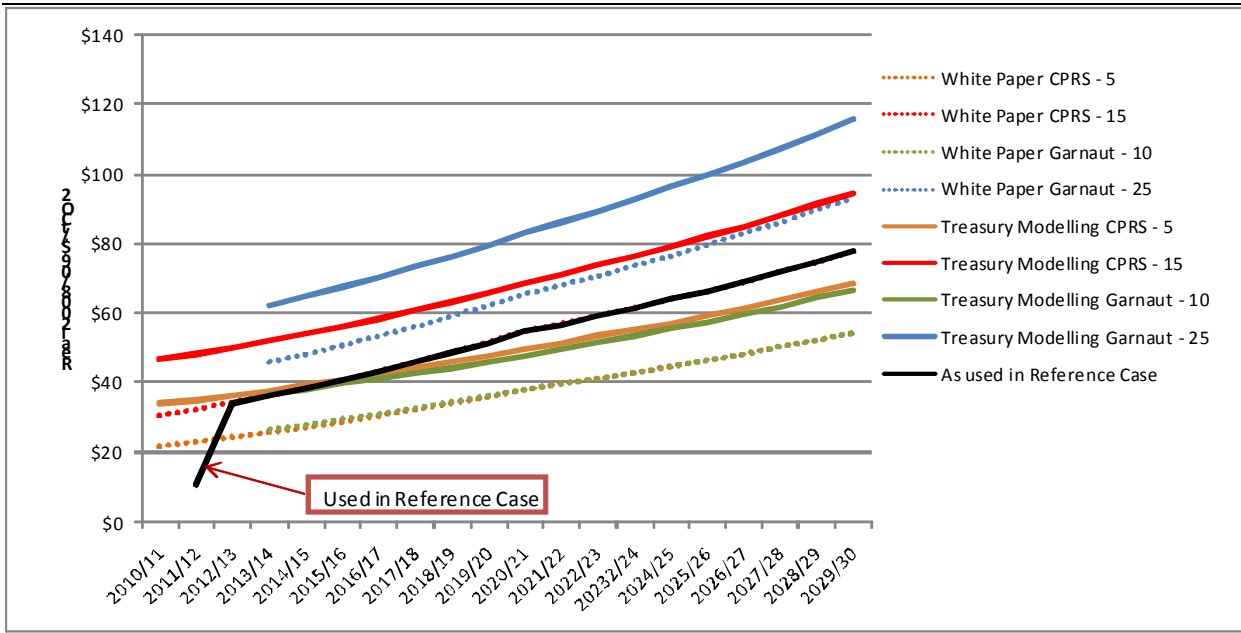
The emissions price trajectory in the reference case was derived from the White Paper’s CPRS-15 case. This trajectory has been depicted in Figure 2 along with other emissions price trajectory scenarios in the White Paper and Commonwealth Treasury’s report on results of its climate change modelling. It should be noted that Australian dollar price trajectories in these documents were influenced by Treasury’s use of an exchange rate of \$A1=US\$1.

The emissions price trajectory associated with the CPRS-15 scenario, rather than the CPRS-5 scenario, was chosen for ACIL Tasman’s reference case as a result of the Government’s shift towards tighter emissions constraints announced on 4 May 2009. The original trajectory was modified to allow for the changed timing of commencement of the emissions pricing regime and the capping of the price at \$10 per tonne of CO<sub>2</sub>-e in 2011-12.

It is noted that a 2020 emissions target 15 per cent below 2000 emissions would be conditional on advanced economies taking on commitments comparable to Australia’s, and major developing economies making substantive commitments. But, the Government did require that such

commitments by major developing economies should deliver significant emissions reductions until after 2020.<sup>1</sup>

Figure 2 Emissions Permit Price Trajectories



a Data source: CPRS White Paper, Commonwealth Treasury, ACIL Tasman analysis

Future electricity prices were derived from application of ACIL Tasman’s electricity price model. ACIL Tasman’s electricity modelling was one of the sources of electricity price information in the White Paper and the Treasury report.

A real discount rate of 8 per cent was used in the reference case.

## 5 Findings on Exclusion of Coal Mining from EITE Assistance

### 5.1 Flawed Reasons for Excluding Coal from EITE Assistance

The White Paper gave three reasons to justify exclusion of coal from EITE activity arrangements. These reasons are fundamentally flawed.

<sup>1</sup> Commonwealth of Australia, Prime Minister, Treasurer, Minister for Climate Change and Water (2009a), attachment.

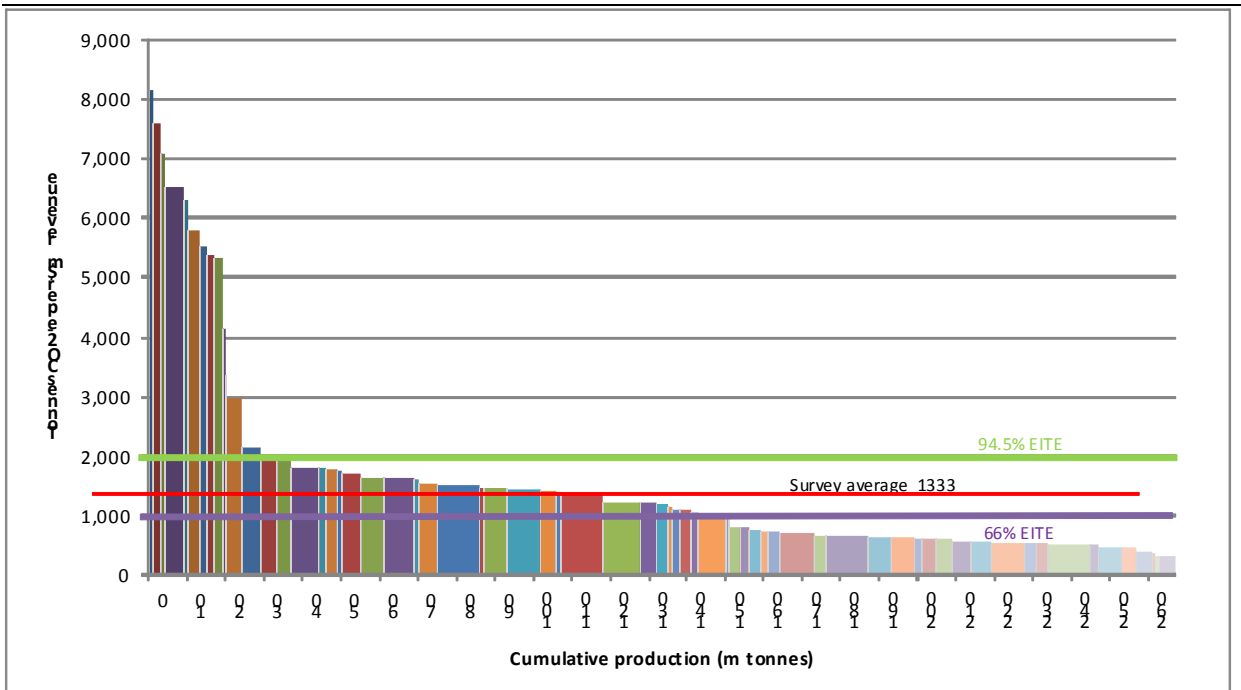
First, the White Paper claimed that the “vast majority” of coal mines generated emissions significantly below 1000 tonnes of CO<sub>2</sub>-e per million dollars of revenue, the lower EITE activity scheme eligibility threshold. The White Paper also asserted that the “vast majority of production (nearly 90 per cent) originates from mines which have an emissions intensity of less than 0.05 tonnes of CO<sub>2</sub>-e per tonne of coal extracted.”<sup>2</sup>

These statements are incorrect, as illustrated by Figure 3 and as explained in text following that figure.

The emissions intensities depicted in Figure 3 are net of early abatement programs already in place at a significant number of coal mines. These programs have included abatement of:

- pre-drained methane from underground mines
- post-mining release gas
- emissions associated with very low quantities of methane (below one per cent) in mine ventilation air.

Figure 3 Emissions Intensities of Coal Mines and EITE Scheme Eligibility Thresholds



<sup>a</sup> Data source: ACIL Tasman research, CPRS White Paper, Fact Sheets on CPRS changes 4.May 2009

<sup>2</sup> Commonwealth of Australia (2008c), pp.12-46, 18-8

ACIL Tasman found:

- the coal mining industry would qualify for the EITE activity transition scheme, because the weighted average emissions intensity of respondent coal mines was 1333 tonnes of CO<sub>2</sub>-e per million dollars of revenue, which is well above the lower eligibility threshold.
- 57 per cent of surveyed mines and 53 per cent of surveyed production generated emissions above 1000 tonnes of CO<sub>2</sub>-e per million dollars of revenue
- only 22 per cent of surveyed production caused emissions less than 0.05 tonnes of CO<sub>2</sub>-e per tonne of coal
- 19 per cent of mines generated missions above the higher eligibility threshold of 2000 tonnes of CO<sub>2</sub>-e per million dollars of revenue.

The Government's position and ACIL Tasman's findings regarding emissions intensities have been placed in juxtaposition in Table 1.

Table 1 **Facts on Coal Mining's Emission Intensity**

White Paper	The Facts
Coal mining excluded from EITE scheme	Coal mining sector comfortably satisfies eligibility rules Emissions/revenue one-third higher than lower eligibility threshold
Vast majority of mines below lower eligibility threshold	57% of mines above lower eligibility threshold 19% of mines above higher eligibility threshold
Nearly 90% of production from mines with emissions/t less than 0.05 t CO <sub>2</sub> -e/t coal	Only 22% of production from mines with emissions/t below 0.05 t CO <sub>2</sub> -e/t coal

*Note:* Respondents to survey accounted for 86 per cent of coal output and 70 per cent of coal mines in Qld and NSW.  
*Data source:* ACILTasman research

The White Paper second argument for excluding coal mining from the EITE activity scheme was that the majority of mines would receive significant windfall gains if coal mining was included.<sup>3</sup> This claim is highly misleading.

ACIL Tasman found:

- windfall gains were attributable to eligibility and allocation of assistance being based on industry-wide emissions intensity, and linked to that measure, respectively
- even in that case, 36 per cent of mines and 34 per cent of tonnage, not the majority, would receive windfall gains
- administrative allocation of permits on the basis of historical production and emissions intensity of individual mines, as proposed by ACA, would

<sup>3</sup> Commonwealth of Australia (2008c), pp. 12-46, 18-8.

not yield windfall gains, and this applies if eligibility is based on emissions intensity on an industry-wide or individual mine basis.

The White Paper's argument for exclusion of coal mining from special arrangements for EITE activities has been based partly on the extent of variation of emissions intensity within the industry. This is a *non sequitur*.

Much of the diversity of circumstances of coal mines has been caused by unalterable geological and geographical attributes of deposits. This does not justify exclusion of a sector with a large proportion of high emissions intensity activities. An appropriate policy response would be better targeting of EITE activity arrangements in recognition of unalterable diversity. For example, linking permit allocation to historical emissions intensity and production of individual mines would be one way of better targeting the scheme.

The White Paper's third reason for denying coal access to EITE activity arrangements was that there was substantial potential for emissions cuts through relatively low cost abatement technologies.<sup>4</sup> The only evidence provided to support this assertion was a fleeting reference to "abatement technologies for underground gassy mines".<sup>5</sup> The technologies mentioned in the White Paper require further research and development and/or have location-specific deployment limitations.

## 5.2 Denial of EITE Assistance to Coal Inconsistent with Government's EITE Activity Principles

Exclusion of coal mining from EITE activity arrangements conflicts with the Government's declared aims of:<sup>6</sup>

- avoidance of adverse effects on competitiveness and carbon leakage
- supporting business decisions consistent with a global carbon constraint
- ensuring EITE policy is equitably applied within and across industries
- targeting EITE activity arrangements to the most emissions-intensive trade-exposed entities.

These conflicts have been summarised in Table 2.

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<sup>4</sup> Commonwealth of Australia (2008c), p. 18-8.

<sup>5</sup> See Commonwealth of Australia (2008c), p. 18-10.

<sup>6</sup> See Commonwealth of Australia (2008c), pp. 12-3 to 12-22, including policy positions 12.1, 12.2 and 12.4.

Table 2 **Exclusion of Coal Mining from EITE Scheme Conflicts with Government's Scheme Design Principles**

Government principles for EITE scheme	Conflict with treatment of coal mining
Avoid adverse competitiveness effects	Competitiveness problems for coal mining caused by CPRS ignored in White Paper Coal Sector Adjustment assistance poor substitute for targeted EITE arrangements
Support production and investment decisions consistent with global carbon constraint	No insights in White Paper as to how EITE scheme, coal's exclusion and Coal Sector Adjustment assistance might comply with principle
Ensure equitable application within and across industries	Strong discrimination against coal mining
Target scheme to the most emissions –intensive trade-exposed entities	Scheme completely missed target in case of substantial proportion of mines with varying degrees of high emissions intensity

*Data source:* CPRS White Paper and ACIL Tasman analysis

The economic rationale for EITE activity arrangements is avoidance of adverse effects on competitiveness and associated carbon leakage arising from tougher emissions constraints in Australia than in countries hosting competing activities. As carbon constraints in relevant countries are aligned with those in Australia, EITE activity arrangements could be phased out.

The Government has endorsed this economic rationale for special arrangements for EITE activities.<sup>7</sup>

The White Paper did not explain how provision of limited Coal Sector Adjustment assistance could reasonably substitute for EITE activity arrangements in addressing temporary adverse competitiveness and associated carbon leakage effects of CPRS in the coal mining sector. Our analysis has shown that it could not do so.

The Government's EITE activity policy included support for production and investment decisions that would be consistent with a global carbon constraint.<sup>8</sup> The White Paper suggested that its EITE arrangements complied with this principle. It asserted that these arrangements had similarities to the EITE scheme proposed by the Garnaut Climate Change Review, which directly targeted this important principle. However, the White Paper did not explain how the Government's EITE scheme might be consistent with the principle.

Because the EITE scheme in the White Paper is a collection of arbitrary elements, one of which is exclusion of coal mining from the scheme, it is difficult to envisage how it could conceivably satisfy the key scheme design principle of support for production and investment decisions that would be consistent with a global carbon constraint.

<sup>7</sup> Commonwealth of Australia (2008c), pp. 12-3 to 12-6.

<sup>8</sup> Commonwealth of Australia (2008c), pp. 12-5 to 12-7.

The Government's aim of equitable application of EITE activity arrangements within and across industries<sup>9</sup> has been undermined by exclusion of coal mining from the EITE scheme. This exclusion discriminates against coal mining activities that satisfy the Government's eligibility requirements.

The Government's principle of targeting EITE activity arrangements to the most emissions-intensive trade-exposed entities in the economy<sup>10</sup> has been violated by exclusion of coal mining. ACIL Tasman's research found that 57 per cent of surveyed mines had emissions intensities above 1000 tonnes of CO<sub>2</sub>-e per million dollars of revenue, and 19 per cent had emissions intensities above 2000 tonnes of CO<sub>2</sub>-e per million dollars of revenue. The coal mining sector comfortably satisfied eligibility requirements for EITE activity policy arrangements.

The coal mining industry is characterised by great diversity of circumstances of mines comprising the sector. Much of this considerable diversity has been caused by unchangeable geological and geographical characteristics of deposits. The correct way to tackle diversity is to apply the principles of equity and targeting espoused by the Government. The wrong way is to avoid the issue of diversity and neglect competitiveness and associated carbon leakage problems arising from application of CPRS to the coal mining sector.

### 5.3 CPRS' Treatment of Coal Mining to Raise Costs Significantly for Many Mines

The CPRS' treatment of coal mining would raise costs directly through the cost of acquisition of emissions permits and indirectly through effects of emissions prices on costs of various inputs.

Figure 4 depicts increases in costs per tonne for surveyed mines, before Coal Sector Adjustment assistance. Cost per tonne increases have been presented in a "levelised" form by use of a real discount rate of 8 per cent. This rate was adopted for the reference case. The time frame was to 2025-26.

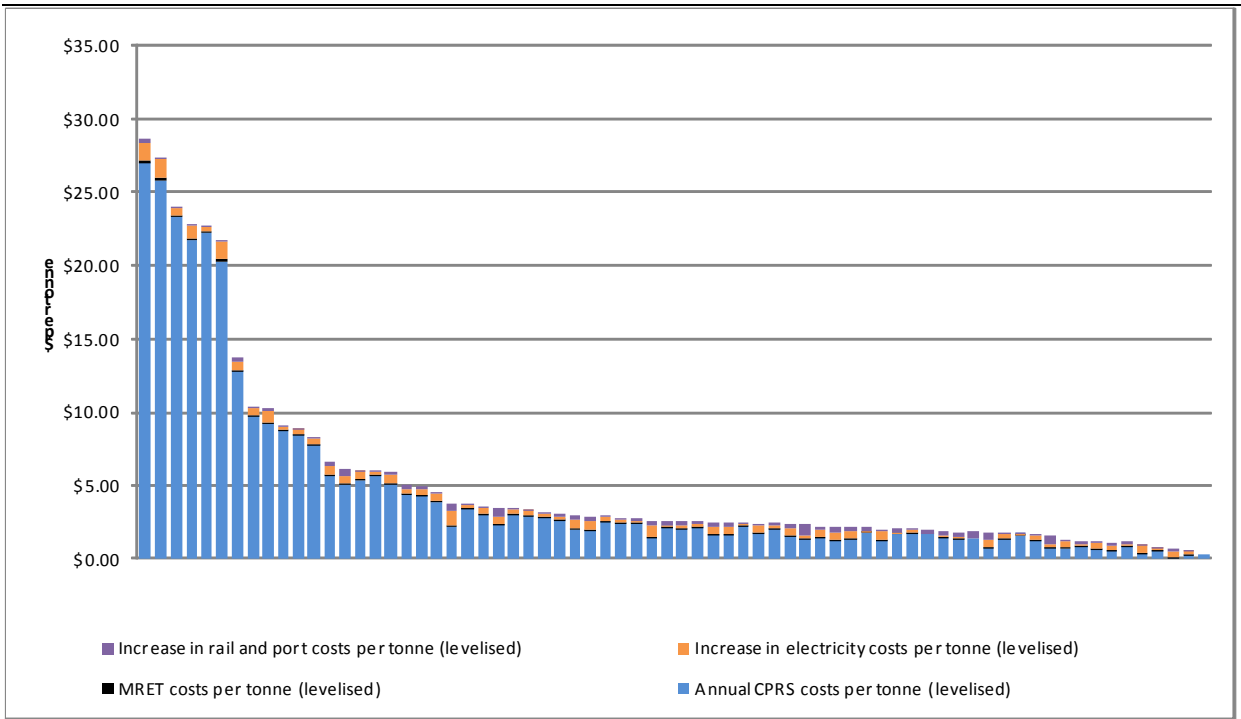
Figure 4 shows contributions of direct permit costs, higher electricity costs, additional electricity costs arising from the RET scheme, and increases in rail and port costs. The unit cost increases shown in Figure 4 are likely to be conservative because additional cost increases could derive from effects of the CPRS on prices of other inputs.

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<sup>9</sup> Commonwealth of Australia (2008c), p. 12-19.

<sup>10</sup> Commonwealth of Australia (2008c), pp. 12-7, 12-8, 12-19.

Figure 4 Mine by Mine Levelised Increased Costs/Tonne from Emissions Pricing and RET before Coal Sector Adjustment Assistance – Reference Case (timeframe to 2026, 2008-09 \$)

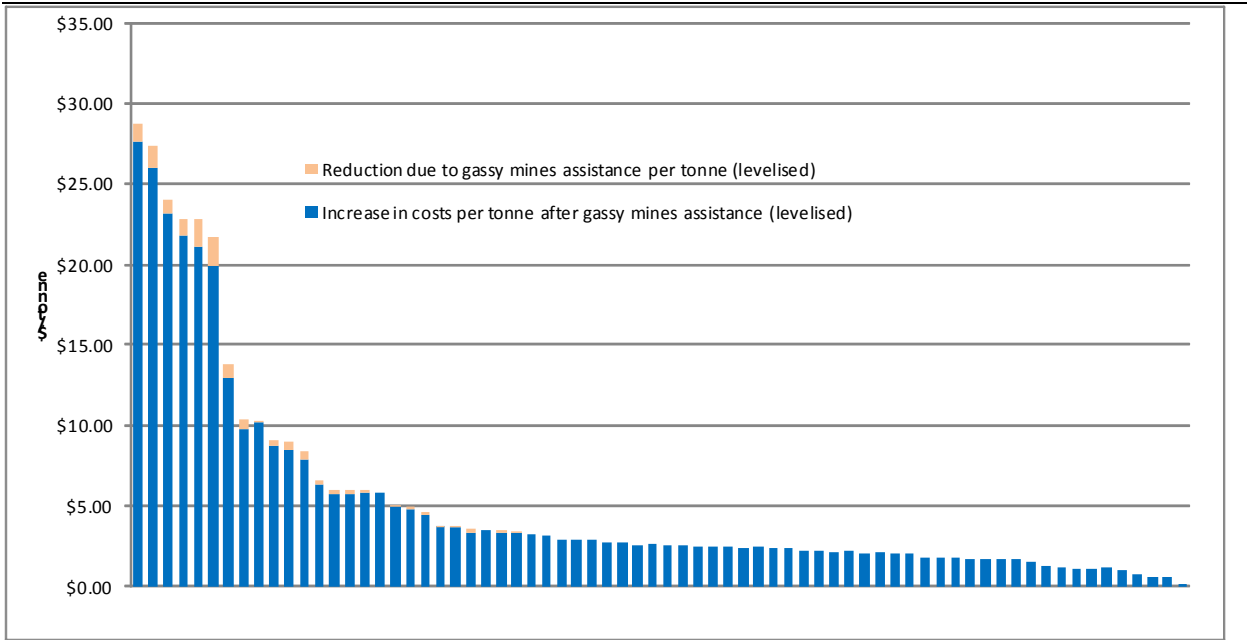


a Data source: ACIL Tasman research

The effect of the Coal Mining Transitional Assistance component of Coal Sector Adjustment assistance has been shown on a mine by mine basis in Figure 5. Again, cost per tonne increases have been presented in a “levelised” form by applying a real discount rate of 8 per cent over the timeframe to 2025-26.

Coal Mine Transitional Assistance for high emissions mines would have only a small ameliorating effect on the increase in costs arising from emissions pricing and RET requirements. The pain experienced by the industry would still be substantial. This is clear from comparison of Figure 4 and Figure 5.

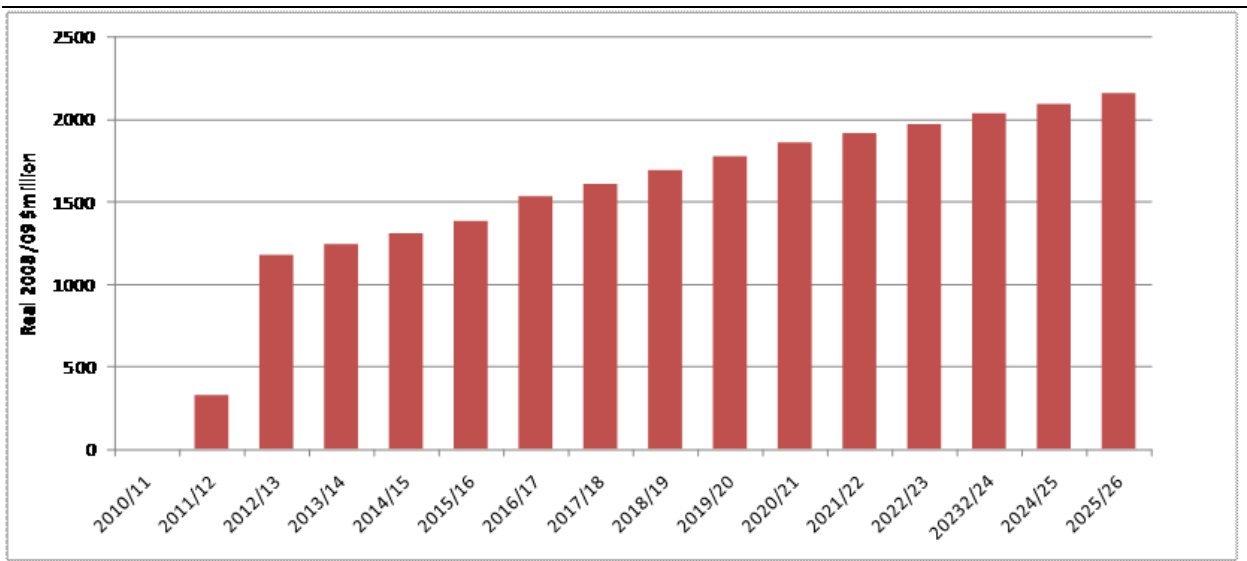
Figure 5 Mine by Mine Effect of Coal Mining Transitional Assistance on Levelised Costs/Tonne of Emissions Pricing and RET – Reference Case (time frame to 2026, 2008-09 \$)



a Data source: ACIL Tasman research

The cost over time of the CPRS to the coal mining sector after Coal Mining Transitional Assistance component on coal mining costs has been depicted in Figure 6.

Figure 6 Cost of Emissions Pricing and RET to Coal Mining Sector Over Time, After Coal Mining Transitional Assistance – Reference Case



a Data source: ACIL Tasman research

The aggregate cost of CPRS to the coal mining sector before Coal Mining Transitional Assistance during the first ten years of the scheme in the reference case is estimated to be about \$14.35 billion in 2008-09 prices. Coal Mining Transitional Assistance would amount to \$0.441 billion in 2008-09 prices. Therefore, the assistance rate is around 3 per cent.

In contrast, the assistance rates for other comparable EITE activities having emissions above the eligibility thresholds exceed 60 per cent and 90 per cent.

## 5.4 CPRS' Treatment of Coal Mining to Cause Significant Economic Damage

Data collected through the survey of coal mines in New South Wales and Queensland permitted indicative estimates of first round production and employment impacts and indicative partial equilibrium employment effects of CPRS' treatment of coal mining from premature closure of mines.

The data was not sufficiently detailed to enable estimates in respect of any scaling-down of production and associated resource sterilisation (other than premature closure effects), discouragement of expansion or extension of output at existing mines, and discouragement of investment in new mines.

Therefore, the indicative estimates of adverse impacts from premature mine closure must be regarded as providing a very conservative picture of adverse economic effects of CPRS' treatment of coal mining.

The investment discouragement effects of CPRS' treatment of coal mining have been analysed qualitatively below.

### 5.4.1 Premature Mine Closure

ACIL Tasman's quantitative analysis indicated that, in the reference case, 16 coal mines in Queensland and New South Wales survey could be expected to close prematurely under the CPRS (including Coal Sector Adjustment assistance), because earnings before interest, tax depreciation and amortisation would turn negative earlier. It has been estimated that 12 premature closures could occur by 2015, 13 by 2018, and 16 by 2021.

Table 3 summarises adverse coal production, revenue and initial and partial equilibrium employment effects of premature mine closure caused by CPRS.

Table 3 **CPRS' Premature Mine Closure Effects - Reference Case (2008-09 \$)**

By year:	Annual cost of CPRS to Coal Industry	Effects of premature mine closures						
		Number of mines affected	Annual decline in Coal production (mt)	Annual decline in revenue from coal sales	Employment reduction		Employment reduction in the coal industry by State	
					Coal industry	Overall	NSW	QLD
2015	\$1,300m	12	16.8	\$1,400m	2,500	7,600	2,300	200
2018	\$1,600m	13	17.6	\$1,500m	3,000	8,800	2,300	700
2021	\$1,900m	16	21.6	\$1,900m	3,300	9,900	2,300	1,000

<sup>a</sup> Note: Figures scaled up from survey data.

Data source: ACIL Tasman research

Economic effects of premature mine closures would be significant. The effects would be particularly important in New South Wales.

Overall employment reduction effects included in Table 3 are based on an employment multiplier of 3. This means the overall job loss, including job loss in the coal mining sector, would be three times the initial employment loss in the coal mining sector.

The multiplier reflects the initial change in employment in the coal mining sector plus production induced effects. It does not include consumption induced effects. The multiplier including consumption induced effects could exceed 5.6. Estimates of such a multiplier are not as reliable as those confined to production induced effects.

#### 5.4.2 Discouragement of Investment

CPRS' treatment of coal mining could be expected to discourage investment in expansion or extension of life of existing mines and in establishment of new mines. It would do so in two ways.

First, CPRS would lower expected rates of return of new capital investments in coal mining relative to internal corporate hurdle rates and relative to rates of return to new coal mining investments in countries with competing coal mining operations and undeveloped deposits.

Second, CPRS would increase uncertainty faced by enterprises contemplating investments in the Australian coal mines. These additional uncertainties would need to be considered in conjunction with effects on absolute and relative expected rates of return.

Coal mining is already subject to considerable uncertainty in respect of exploration, characteristics of deposits, mining activity, transport infrastructure, human resources and other input costs, and coal prices. CPRS will add additional uncertainties.

Uncertainties added by CPRS would derive directly from issues such as uncertainty regarding the starting market price for emissions, the trajectory of emissions prices over time, the timing, stringency and evolution of emissions constraints overseas. There would also be indirect additions to uncertainty relating to input prices and coal prices.

## 6 Inclusion of Coal Mining in EITE Activity Policy Arrangements

### 6.1 Alternative Types of EITE Policy Schemes

To deal with the temporary EITE activity problems of adverse affects on competitiveness and carbon leakage, the Commonwealth Government has chosen policy arrangements involving:

- determination of eligibility for free permit allocations based on historical industry-wide emissions per unit of revenue or value added for an activity
- administrative allocation of substantial permits on the basis of historical industry-wide emissions per unit of output for an activity, and annually updated output for each individual example of that activity.

EITE arrangements of this type have been discussed in the European and United States literature on climate change policy. However, the details of the schemes of this type that have been proposed or analysed in that literature have varied significantly.<sup>11</sup>

A unique feature of the Australian scheme is the arbitrary exclusion of a sector, coal mining, which would otherwise be eligible for an administrative allocation of permits under EITE activity arrangements.

Another distinguishing aspect of the Australian scheme is the aggressiveness of the arbitrary scaling down of allocations in the context of rising emissions prices, regardless of the degree of progress over time in alignment of carbon constraints in overseas competitor countries and in Australia.<sup>12</sup>

<sup>11</sup> See Grubb and Neuhoff (2006), Hepburn and others (2006), Sato and others (2007), Kopp (2007), Sterner and Muller (2008), Morgenstern (2008, 2009), Aldy and Pizer (2008), Pew Centre on Global Climate Change (2008), Fischer and Fox (2009), Claussen (2009).

<sup>12</sup> For example, see Grubb and Neuhoff (2006), p. 25; Claussen (2009), p. 9; Waxman and Markey (2009), sections 401-407.

Addressing both of these anomalies would improve the capacity of the Australian EITE arrangements to deal with adverse competitiveness effects of early adoption of an emissions pricing regime.

However, the primary focus of this report is the economic implications of excluding or including coal mining in EITE policy arrangements of the type proposed by the Commonwealth Government.

EITE policy arrangements of the type outlined in the White Paper are not the only ways of addressing competitiveness and associated carbon leakage issues arising from emissions pricing. A variety of other schemes to deal with EITE activity competitiveness and carbon leakage problems have been discussed in the European and United States climate change policy literature:<sup>13</sup>

- allocation of free permits to EITE activities on the basis of historical emissions (“grandfathering”) without any adjustment for an activity’s changing production
- exemption of EITE activities from the emissions pricing regime
- border tax/price adjustments involving one or both of removal of the carbon price from exports and addition of the carbon price to imports
- global sectoral agreements covering particular EITE activities
- weaker emissions reduction targets.

Border adjustments and schemes of the type chosen in the White Paper have received the most attention. In the context of an Australian emissions trading regime, Professor Ross Garnaut has proposed an economically attractive approach to competitiveness and carbon leakage issues.

Analysis of schemes of a completely different type to the Commonwealth Government’s EITE policy arrangements is beyond the scope of this report. However, it is important to note that none of these alternative types of EITE policy involve arbitrary exclusion of any EITE sector.

## 6.2 Including Coal in Australia’s EITE Policy Scheme

There are ways of including coal mining in the Commonwealth Government’s EITE activity arrangements that would be significantly more consistent with EITE policy principles in the White Paper than the EITE policy scheme chosen by the Government.

One such approach is to treat the coal mining industry as an activity for scheme eligibility purposes and each coal mine as an activity for permit allocation purposes. This approach has been proposed by ACA.

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<sup>13</sup> See Grubb and Neuhoff (2006), Hepburn and others (2006), Sato and others (2007), Kopp (2007), Sterner and Muller (2008), Morgenstern (2008, 2009), Aldy and Pizer (2008), Pew Centre on Global Climate Change (2008), Fischer and Fox (2007, 2009), Claussen (2009).

Under this scheme, each mine would be allocated permits at the lower rate (initially 66 per cent) on the basis of its historical emissions per unit of output with updating for changes in its coal production.

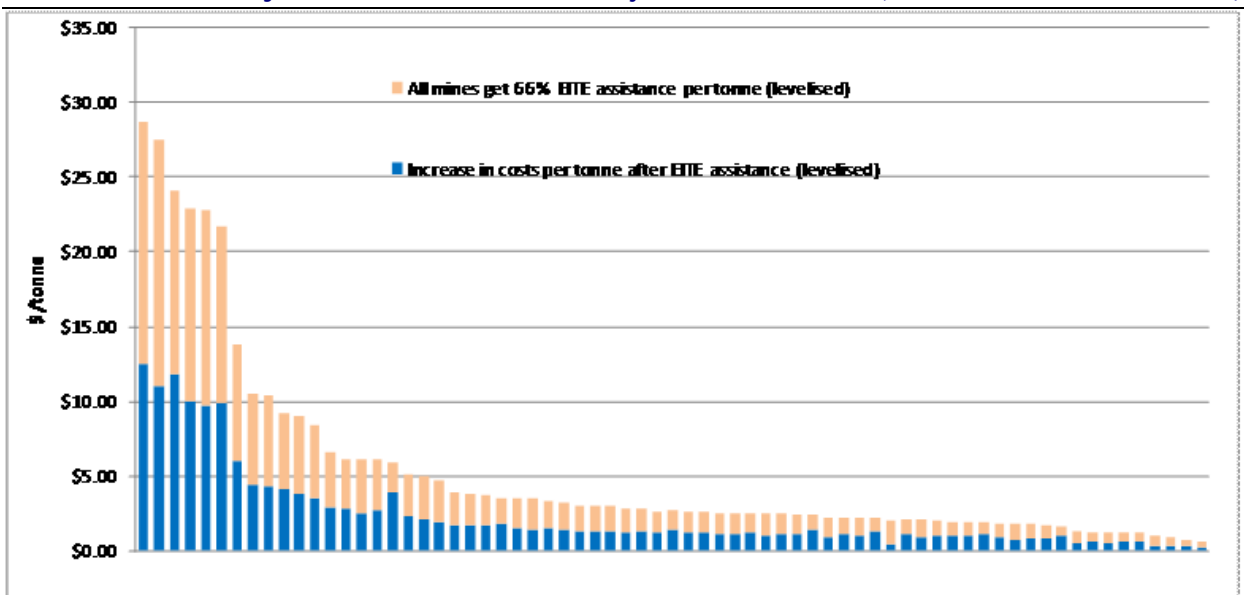
Because this approach allows for the natural diversity of coal mines arising from unalterable geological and geographical attributes, it facilitates achievement of competitiveness, equity and targeting principles set out in the White Paper (see sub-section 5.2 above). In contrast, the arbitrary exclusion of coal mining from the EITE activity arrangements is certainly in conflict with the design principles for the EITE regime outlined in the White Paper.

The effects of the ACA proposal on costs of the CPRS on a mine by mine basis have been depicted in Figure 7.

In this figure, the costs of the CPRS have not been adjusted to reflect applicability of Coal Sector Adjustment assistance. The effects of continuing that scheme in conjunction with inclusion of coal mining in the Government's EITE activity arrangements could be discerned by comparing Figure 7 and Figure 5. This policy combination would be consistent with the Government's expressed aim of ensuring EITE policy is equitably applied within and across industries.

It should be noted that costs per tonne effects in Figure 7 and Figure 5 have been "levelised" using a real discount rate of 8 per cent over the period to 2025-26, and that costs per tonne include increases in electricity costs, including those arising from RET, and increases in transport costs.

Figure 7 **ACA Proposal for Coal Mining in EITE Activity Scheme – Effects on Levelised Costs Per Tonne Caused by CPRS without Coal Sector Adjustment Assistance (timeframe to 2026, 2008-09 \$)**

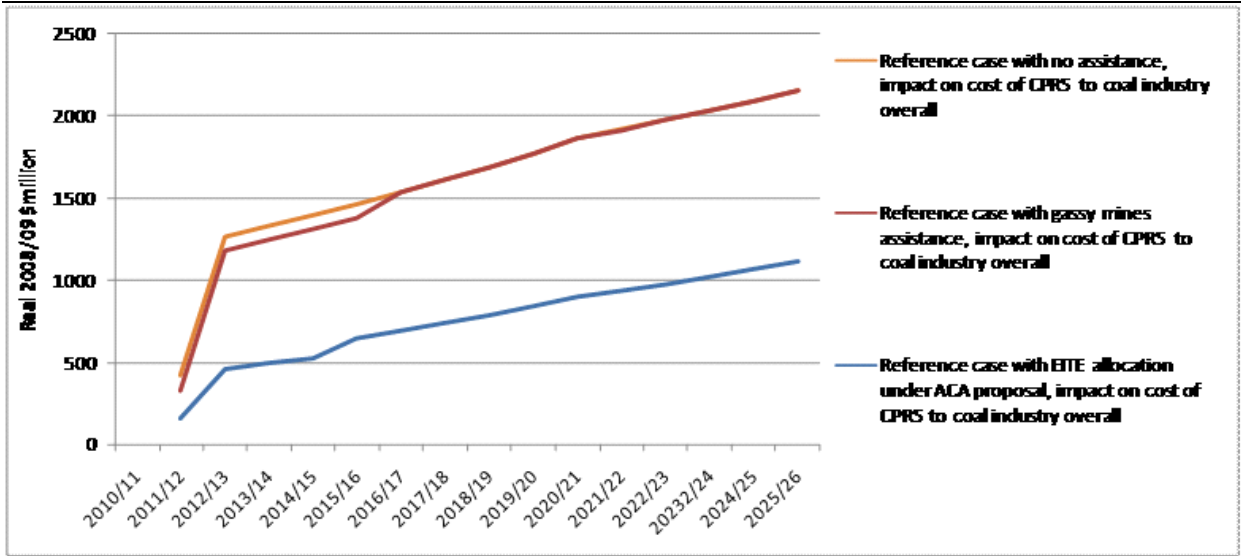


a Data source: ACIL Tasman research

The costs to the coal mining industry of alternative treatments of coal mining under CPRS in the context of the reference scenario have been depicted in

Figure 8. Inclusion of coal mining in the Government's EITE arrangements substantially reduces the costs of CPRS to the industry.

Figure 8 **Cost of CPRS to Coal Industry under Alternative Treatments of Coal Mining**



a Data source: ACIL Tasman research

The approach outlined above for inclusion of coal mining in the Government's EITE activity arrangements would avoid provision of windfall gains to coal mines. Adverse economic impacts of the CPRS' treatment of coal mining would be ameliorated. However, these adverse economic impacts certainly would not be eliminated. There would still be significant pain.

Under the ACA approach, it could be appropriate to retain the Coal Sector Adjustment fund to address under-compensation of mines with the highest emissions intensities.

### 6.3 Premature Mine Closure

Inclusion of coal mining in the Government's EITE activity scheme would significantly reduce the adverse effects of premature mine closures caused by CPRS.

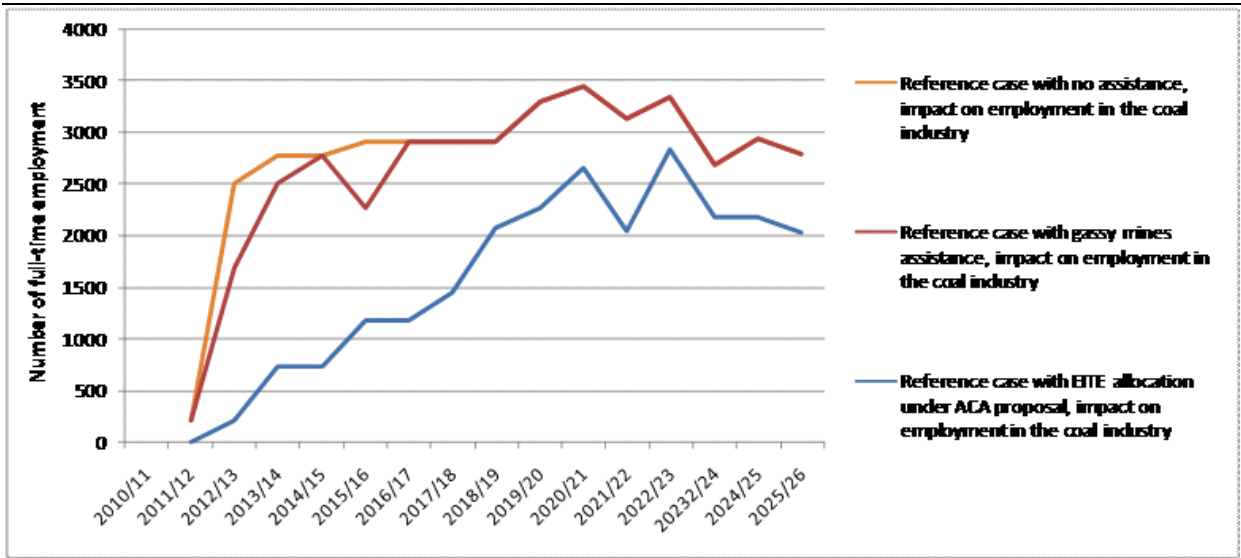
Between the time of implementation of the CPRS and 2015, nearly 1600 jobs would be saved in the New South Wales coal industry. Applying an employment multiplier of 3 as discussed in sub-section 5.4.1, about 4800 Australian jobs would be saved overall.

Figure 9 depicts coal mining employment effects of premature mine closures under CPRS with alternative treatments of the sector. Coal Sector Adjustment Assistance has not been combined with the treatment that would include coal mining in the Government's EITE activity arrangements.

Inclusion of coal mining in the Government's EITE scheme would significantly reduce adverse employment effects in the coal mining industry and overall. Job losses would also tend to be delayed. Adverse employment effects of CPRS' treatment of coal mining would be further ameliorated by combining EITE scheme permit allocations to coal mining with Coal Sector Adjustment Assistance.

It is important to note that there would still be significant pain with coal mining included in the Government's EITE activity arrangements and eligible for Coal Sector Adjustment assistance.

Figure 9 Reduction in Coal Industry Employment Due to Premature Mine Closure Effect of CPRS



a Data source: Data source: ACIL Tasman research

## 6.4 Discouragement of Investment

Inclusion of coal mining in CPRS in the manner proposed by ACA could be expected to ameliorate the investment discouragement effect of existing CPRS treatment of coal in expansion or extension of life of existing mines and in establishment of new mines. It would do so in two ways.

First, revised CPRS treatment of coal would improve expected rates of return of new capital investments in coal mining relative to internal corporate hurdle rates and relative to rates of return to new coal mining investments in countries with competing coal mining operations and undeveloped deposits. However, it would not fully restore expected rates of return to pre-CPRS levels.

Second, revised CPRS treatment of coal would ameliorate the problem of CPRS-related increased uncertainty (see sub-section 5.4.2 above) faced by

enterprises contemplating investments in the Australian coal mines. Reduction in various CPRS-related uncertainties when combined with improvements in absolute and relative expected rates of return would have a synergistic effect on the attractiveness of investments in coal mining in Australia.

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