

Australian Carbon Tax Impact: Steelmakers to come out ahead

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Assistance likely to reduce the impact of Australia's carbon price

In recognition of impacts on Emissions Intensive Trade Exposed (EITE) industries from the carbon pricing scheme, the government has announced an assistance package. Our estimates indicate that this assistance package will in all likelihood significantly reduce the effect on the costs and earnings of EITE industries in the initial phase of the planned scheme.

EBITDA reductions for aluminium smelters and refiners, negligible on steel

Based on the most recent available output, emissions and earnings levels, we estimate that in 2012-13 that aluminium smelters and alumina refiners will see reductions of up to 1% of EBITDA: **Alcoa -0.9%** (*BBB – CarbonBeta**), **BHP Billiton -0.9%** (*A**), **Norsk Hydro +0.1%** (*AA**), **Rio Tinto -0.8%** (*BBB**). On the other hand, **per our estimations** steelmakers will see negligible impacts on earnings due to a combination of EITE assistance and funding from the Steel Transformation Plan, and may receive a small surplus in free permits and funding above permit liabilities: **Bluescope +2.4% gain** (*BB*), **Onesteel +2.1%** gain (*A*). See Figure 1, pg 6.

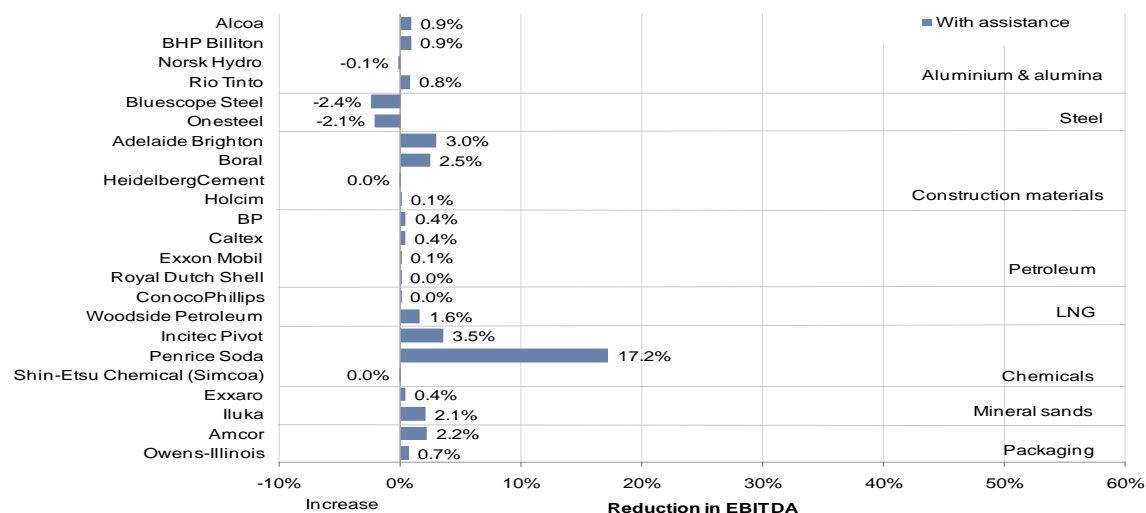
Impacts are small at 3.5 per cent of earnings or less

The overall impacts on earnings for companies where we were able to calculate assistance is small. We estimate impacts on earnings for most companies to be 3.5 per cent or less (see cover chart).

Closing the gaps in company information disclosed

A number of additional disclosures would assist investors in EITE industries to better understand the impacts of a carbon price. These include clear company announcements describing the expected impacts of the carbon tax on costs and earnings and emissions disclosures made on an equity share basis. Only a small minority of the operators of EITE facilities that we have identified have currently made such disclosures, see page 10.

Cover Chart: Potential Earnings impacts after accounting for assistance, 2012-13



Source: MSCI ESG Research

* CarbonBeta ratings identify company specific risks and opportunities associated with climate change. See Appendix 2 for more information.

Introduction

The Australian government announced its Clean Energy Future proposal on 10 July, comprised of a carbon tax to commence in July 2012, transitioning to an emissions trading scheme after three years, and accompanied by a range of industry and household assistance measures. In the lead up to the announcement, one of the most debated issues had been the appropriate level of assistance to emissions-intensive trade-exposed (EITE) industries. Competing in international markets, individual companies have little pricing power and would likely need to absorb any increase in cost caused by the introduction of a carbon price, exposing them to lower competitiveness or potential negative earnings impacts.

This briefing seeks to identify and estimate assistance for a broad set of EITE industries and companies, and estimate the net impacts of the carbon price on company earnings, having taken this assistance into account. In total, we have estimated assistance and earnings impacts for 18 activities that have been defined by the government as eligible for EITE and related assistance. Limitations in data availability prevented estimation of assistance for a further 15 eligible activities. We also review gaps in company disclosure that limit the ability of investors to quantify levels of company assistance and earnings impacts. MSCI ESG Research previously published estimates of industry assistance under the now shelved Carbon Pollution Reduction Scheme (CPRS) in three papers in 2008 and 2009. Note that all estimates, predictions, and numbers presented in this paper, insofar as they relate to future events or performances, are estimates only, based on third party information, and that the actual future numbers may be different from our estimates.

Assistance to EITE industries

The Clean Energy Future package contains a number of points that are relevant for the analysis of impacts on Emissions Intensive Trade-Exposed (EITE) industries:

- A carbon tax will commence on 1 July 2012 at a fixed price of \$23/tonne CO₂-e, rising by 5% p.a. in nominal terms in the second and third year.
- A transition to a cap-and-trade emissions trading scheme (ETS) with a market-determined carbon price will occur from 1 July 2015.
- EITE assistance is to be provided in the form of free permits allocated to producers of a range of internationally traded commodities and manufactured goods, commencing at rates of 94.5% or 66% of industry average direct and indirect emissions.
- Initial assistance levels to fall by 1.3% per annum (the "carbon productivity contribution").
- No change in the model for assistance before the sixth year of the carbon price.
- No maximum cap on allocations to existing facilities that would prevent windfall gains.

Assistance to EITE industries, in the form of free allocations of permits and supplementary assistance measures, remains similar to that proposed under the earlier Carbon Pollution Reduction Scheme (CPRS). Eligibility thresholds and initial rates of assistance, shown in Table 1 below, are unchanged from the CPRS. Key changes are a broader package of assistance for the steel industry, a lower rate of assistance to Liquefied Natural Gas (LNG) recognising it does not meet standard EITE assistance thresholds, and a clarification of the assistance rates for several industries. Eligibility for assistance is summarised in Table 2.

Table 1: Eligibility thresholds and rates of assistance

	Industry average emissions intensity	Initial rates of assistance
Highly emissions-intensive	At least 2,000t CO2-e/\$m revenue or at least 6,000t CO2-e/\$m value added	94.5%
Moderately emissions-intensive	1,000 - 1,999t CO2-e/\$m revenue or 3,000 - 5,999t CO2-e/\$m value added	66%

Source: Securing a clean energy future: The Australian government's climate change plan (July 2011)

Because of new information published by the government on eligibility for assistance in recent months, we have been able to estimate assistance for 18 EITE activities, up from 6 in our previous papers.

Key assumptions made in calculations of assistance and earnings impacts include:

- 2010 production, emissions and earnings levels. Where 2010 production levels were not available we made assumptions based on facilities' capacity levels or previous years' output.
- Use of equity accounted shares of production, and equity accounted shares of emissions where available or where manual adjustments were able to be made to reflect the economic impacts of shares in joint ventures.
- 100% pass-through of Scope 2 (electricity) emissions costs.
- No pass-through of Scope 3 (supplier) emissions costs.
- No adjustments made for company specific electricity allocation factors, which could be used to adjust company assistance levels where very large existing electricity contracts are in place.

Table 2: Activities eligible to receive EITE assistance*

Highly emissions-intensive		Moderately emissions-intensive	Other categories of assistance
Alumina	Lime	Carbamide (urea)	LNG: Projects will receive an effective assistance rate of 50% in relation to their LNG production each year.
Aluminium	Magnesia	Glass containers	
Carbon black	Manganese	High purity ethanol	
Carbon steel from cold ferrous feed	Methanol	Integrated lead and zinc	Coal mines: The most emissions-intensive mines receive \$1.3b over 6yrs (2008-09 fugitive emissions at least 0.1 tCO2-e per tonne saleable coal).
Cartonboard	Newsprint	Polyethylene	
Clinker	Packaging and industrial paper	Tissue paper	
Copper	Petroleum	White titanium dioxide pigment	
Dry pulp	Printing and writing paper		
Ethene (ethylene)	Silicon		Coal Mining Abatement Technology Support: Grants of \$70m over 6yrs
Flat glass	Sodium carbonate (soda ash) and sodium bicarbonate		
Fused alumina	Synthetic rutile		Steel Transformation Plan: \$300m over 5yrs
Integrated iron and steel	Zinc		

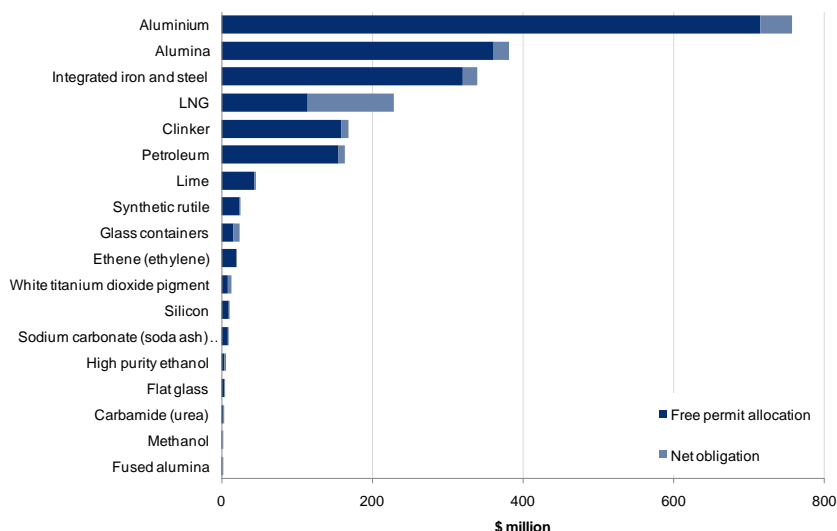
* Bold font indicates the activities for which we provide estimates in this paper.

Source: Australian government, Australia's Clean Energy Future (July 2011); Establishing the eligibility of emissions-intensive trade-exposed activities (March 2011)

Graphs 1 and 2 and Table 3 summarise our estimates of EITE assistance. We also provide discussion of assistance to key industries below, along with estimates of likely changes to company earnings due to the carbon tax, net of EITE assistance.

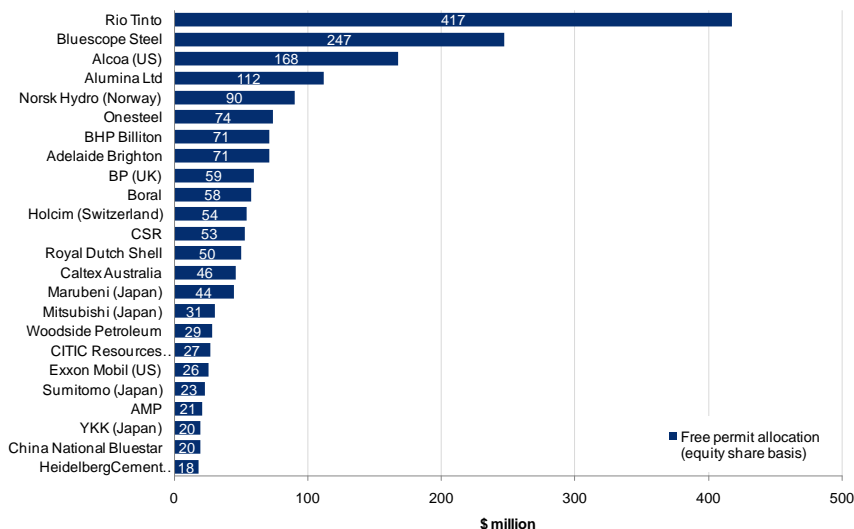
Most EITE assistance will go to a handful of industries, most notably to aluminium and alumina, steelmakers, construction materials, and the petroleum refining and LNG industries. We have estimated that Rio Tinto will be the largest recipient of EITE assistance (\$417.3m), with other large recipients including Bluescope Steel (\$246.8m), Alcoa of Australia joint venture partners Alcoa Inc and Alumina Ltd (\$167.6m and \$111.7m respectively, or \$279.4m on a combined basis), and Norsk Hydro (\$90.3m).

Graph 1: EITE industry assistance and net obligations, 2012-13



Source: MSCI ESG Research

Graph 2: Largest recipients of EITE assistance (equity share basis), 2012-13



Source: MSCI ESG Research

Table 3: Estimated EITE industry assistance, 2012-13

Activity	Baseline assistance	Total estimated assistance (\$m)*	Assistance rank (of 18 activities estimated)^
Aluminium	94.5%	715.2	1
Alumina	94.5%	361.1	2
Integrated Iron & Steel	94.5%	320.4	3
Clinker	94.5%	159.4	4
Petroleum	94.5%	155.1	5
LNG	50%	114.3	6
Lime	94.5%	43.7	7
Synthetic rutile	94.5%	23.5	8
Ethene (ethylene)	94.5%	19.6	9
Glass containers	66%	15.9	10
Silicon	94.5%	9.4	11
White titanium dioxide pigment	66%	8.5	12
Sodium carbonate (soda ash) and sodium bicarbonate	94.5%	7.9	13
High purity ethanol	66%	3.8	14
Flat glass	94.5%	3.6	15
Carbamide (urea)	66%	2.3	16
Methanol	94.5%	1.5	17
Fused alumina	94.5%	0.9	18

Source: MSCI ESG Research

* Excludes the natural gas feedstock component of assistance for ethene and methanol production.

^ We have estimated assistance for 18 EITE activities, omitting the remainder for which the government has provided formal eligibility determinations due to a lack of availability of required data from companies.

In most cases we have assessed, this assistance will in all likelihood provide a significant buffer to the likely earnings impacts on EITE industries. For example, relative to the near 8% reductions in EBITDA that would occur for some aluminium and alumina producers without EITE assistance, after accounting for assistance the impact on companies' EBITDA is reduced to less than 1% for all operators in that industry (Graphs 3 and 4 overleaf). Companies assessed in other assisted industries also seem to have relatively small earnings impacts, in the range of 0-3.5% reductions in EBITDA in 2012-13 in all except for one case.¹

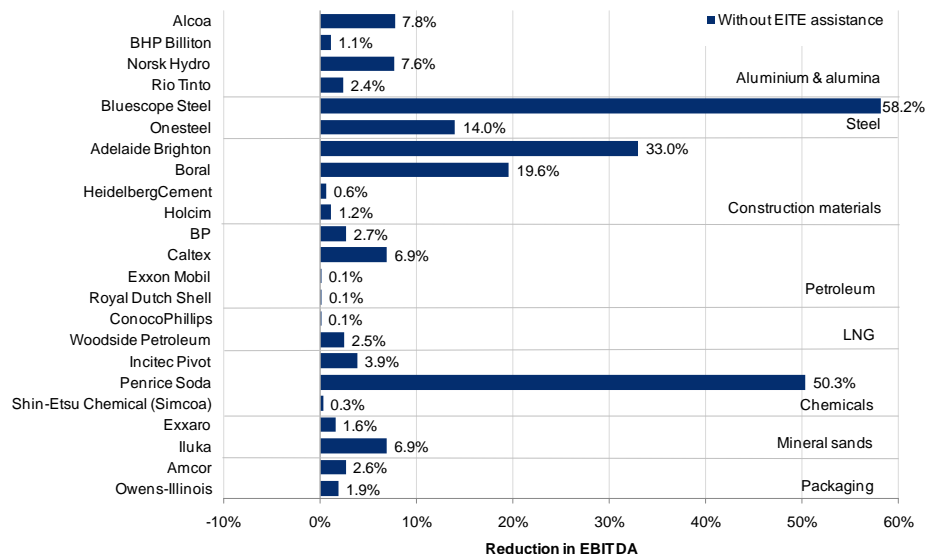
¹ Penrice Soda, a manufacturer of soda ash and sodium bicarbonate, would be faced with the largest earnings impact of the companies assessed, with the carbon tax potentially reducing its EBITDA by 17.2% under our assumptions. Penrice has made an ASX announcement indicating it expects the impact on its NPAT to be \$0.5m, significantly less than the \$4m we estimate at a pre-tax level. Penrice appears however to have calculated this exposure without assuming any pass through of Scope 2 (electricity) carbon costs, unlike our scenario which implies full pass through of carbon costs to electricity prices.

Figure 1. Emissions and earnings levels estimates in 2012-13 (most recent available output):

- Aluminium smelters and alumina refiners will see reductions of up to 1% of EBITDA. **Alcoa -0.9%** (BBB – CarbonBeta*), **BHP Billiton -0.9%** (A), **Norsk Hydro +0.1%** (AA), **Rio Tinto -0.8%** (BBB)
- Steelmakers will see negligible impacts on earnings due to a combination of EITE assistance and funding from the Steel Transformation Plan, and may receive a small surplus in free permits and funding above permit liabilities. **Bluescope +2.4% gain** (BB*), **Onesteel +2.1% gain** (A)
- Construction material manufacturers will face 0-3% reductions in EBITDA. **Adelaide Brighton -3%** (BB*), **Boral -2.5%** (BBB), **HeidelbergCement 0%** (A), **Holcim -0.1%** (AA)
- Petroleum refiners will see reductions in EBITDA of less than 0.5%. **BP -0.4%** (BB*), **Caltex -0.4%** (B), **Exxon Mobil -0.1%**, **Shell 0%** (BBB)
- LNG producers will face reductions of up to 1.6% of EBITDA. In the medium term to 2020, carbon costs could equate to approximately 1% of project revenues. **ConocoPhillips 0%** (BBB*), **Woodside -1.6%** (A)
- Chemical manufacturers have the widest variation in earnings impacts from a carbon price, with one subject to an estimated reduction in EBITDA of 17.2%. Other chemical manufacturers have impacts in a similar range to other industries estimated, from 0-3.5%. **Incitec Pivot -3.5%** (B*), **Penrice Soda -17.2%**, **Shin-Etsu Chemical 0%** (AA)
- Mineral sands processors face reductions in EBITDA of up to 2.1%. **Exxaro -0.4%**, **Iluka -2.1%** (BBB*)
- Packaging manufacturers would have EBITDA reduced by 0.7-2.2%. **Amtcor -2.2%** (A*), **Owens-Illinois -0.7%** (BB)

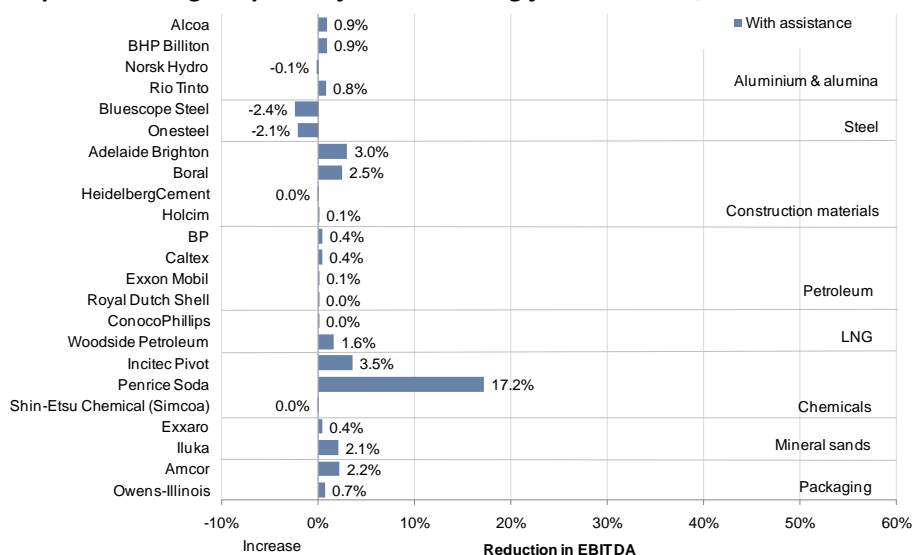
* CarbonBeta ratings identify company specific risks and opportunities associated with climate change. See Appendix 2 for more information

Graph 3: Earnings impacts before accounting for assistance, 2012-13



Source: MSCI ESG Research

Graph 4: Earnings impacts after accounting for assistance, 2012-13



Source: MSCI ESG Research

The steel and LNG industries have been singled out for special assistance outside of the standard EITE assistance package, and are discussed in further detail below.

Steel

Steelmakers will be eligible for both EITE assistance and additional assistance through the Steel Transformation Plan (STP). Considering EITE assistance alone, Bluescope will receive an estimated \$246.8m in free permits and Onesteel \$73.6m in 2012-13, leaving a residual 7.1% impact on Bluescope's EBITDA and 2.5% on Onesteel.

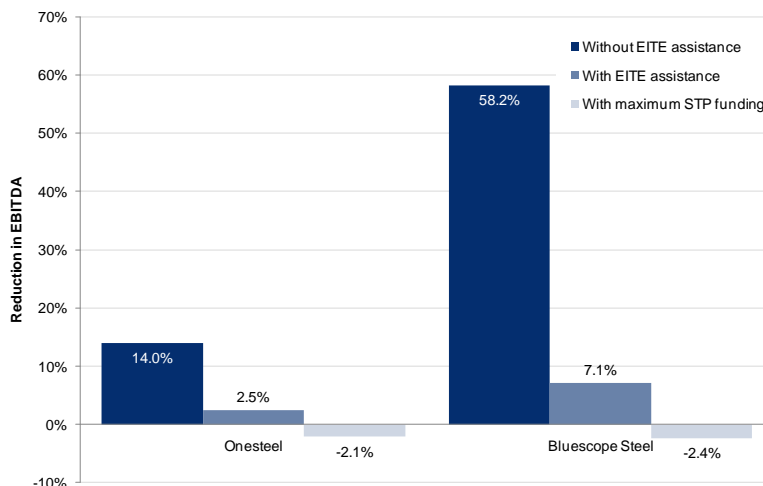
However, if maximum yearly funding under the four year, \$300m STP is allocated alongside EITE assistance, the two programs will more than negate carbon costs in 2012-13, and potentially provide the steelmakers with a small surplus of free permits or funding (Graph 5 and Table 4), equivalent to adding 2.4% to Bluescope's 2010 EBITDA or 2.1% for Onesteel. However, we note that there is so far little detail available in the government's proposal on conditions required to be met for STP payments or whether maximum payments are likely to be made each year, and any such divergence from our assumptions may significantly impact our estimates. In an additional concession to the steelmakers, the government has noted that it intends to provide additional assistance through a 10% increase in permit allocations for crude steel commencing in 2016-17. If realised, this would more than offset the 1.3% p.a. decay in EITE assistance that would otherwise occur over that period.

Table 4: Steel industry permit liabilities and assistance (\$ million), 2012-13

	Bluescope Steel	Onesteel
Gross permit cost	-281.0	-89.4
EITE assistance	246.8	73.6
STP assistance (maximum potential)	45.8	29.3
Net impact	11.6	13.5

Source: MSCI ESG Research, Bluescope Steel ASX Releases 3 May 2011 and 11 July 2011, Onesteel ASX Release 10 July 2011.

Graph 5: Earnings impacts on steelmakers, 2012-13



Source: MSCI ESG Research

Liquefied Natural Gas

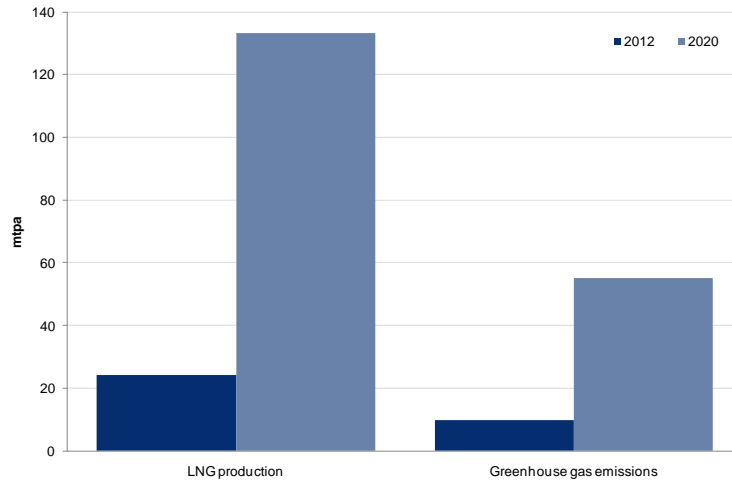
LNG producers have been prescribed a special category of assistance, outlined in the government's proposal as an effective rate of 50% in relation to LNG production each year, outside of the standard EITE guidelines. We interpret this to mean that 50% of emissions permits will be allocated free at the project level for LNG, rather than a baseline being set at an industry average level as it is for other EITE activities. For this reason, unlike our estimates for other activities, we have based our estimates for the LNG industry on project-specific estimates of emissions intensities, generally disclosed by operators as part of the environmental approvals process. In the various iterations of Australia's carbon pricing plans since 2008, LNG has had the largest shifts in proposed assistance levels. Under the CPRS Green Paper, LNG was not recognised as being likely to receive EITE assistance. This became a 60% rate of assistance against industry average emissions under the CPRS White Paper, and was increased to 66% under the 'Global Recession Buffer', before the July 2011 announcement provided a revised 50% assistance level.

Though a reduction in assistance from the final CPRS plans in 2009, the currently proposed 50% assistance continues to provide a substantial buffer to prevent losses in industry profitability. Based on our interpretation of the government's proposal, in 2012-13 we estimate Woodside Petroleum would receive \$28.6m in assistance based on its equity shares of the North West Shelf and Pluto LNG projects (the latter expected to commence in March 2012), while Darwin LNG operator ConocoPhillips would receive \$10.9m. Based again on equity shares of emissions, Woodside's EBITDA would fall 1.6% as a result, while there would be negligible impact on ConocoPhillips' earnings (Graph 4).

Australia's LNG production is expected to ramp up significantly in coming years, with a series of projects currently in planning, and consequently industry emissions levels are set to rise (Graph 7). Many of these projects are yet to receive final investment confirmation from project proponents. Some commentators have suggested that a carbon price will introduce a significant new cost impost and prevent some LNG projects from going ahead. To assess this possible impact we have calculated carbon costs as a percentage of project revenues over the period 2012 to 2020, assuming LNG prices remain at

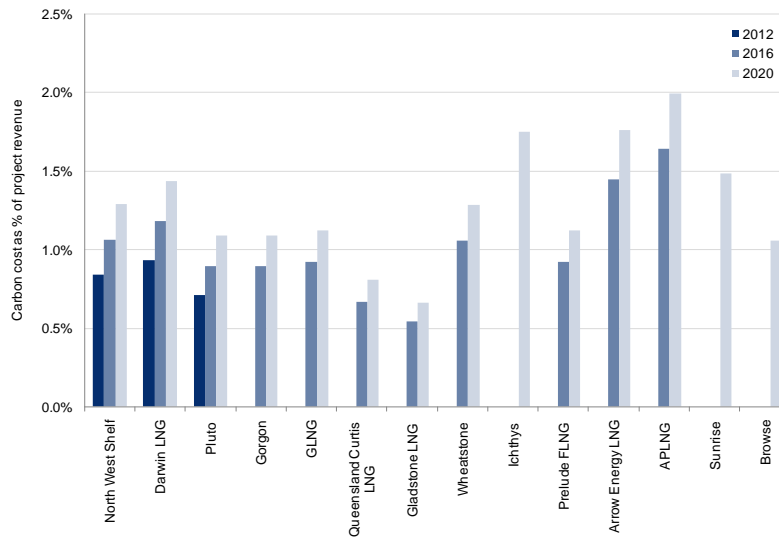
recent levels and a steady carbon price trajectory to the expected 2020 price of \$29/tonne CO₂-e forecasted by Treasury. We estimate carbon costs at 0.5-2% of revenues for each proposed project through to 2020, with most projects incurring a cost equivalent to around 1% of revenue.

Graph 7: LNG production and emissions



Source: MSCI ESG Research

Graph 8: Ratio of carbon liabilities to LNG revenues



Source: MSCI ESG Research

Gaps in Disclosure

A number of additional disclosures would assist investors in EITE industries to better understand the impacts of a carbon price, but are not yet widespread:

1. Clear company announcements describing the expected impacts of the carbon tax on costs and earnings. A week after the carbon tax announcement was made, only a small minority of the operators of EITE facilities we have identified had made such disclosures.
2. Emissions disclosures made on an equity share basis, as well as the more commonly disclosed operational control basis. This would allow more accurate assessment of the economic impact of emissions obligations for companies that have operations under joint ventures or similar arrangements.

These issues are discussed in more detail below.

1. Company Announcements

A week after the release of the Clean Energy Future plan, only a small minority of companies operating facilities likely to be eligible for EITE assistance had made disclosures on the cost and earnings impact of a carbon price, or of key inputs that determine assistance.

Detailed announcements were made by companies including Bluescope Steel, Onesteel, and Cement Australia, providing clear information on the number of permits expected to be allocated for free, the expected impact of the carbon tax on profitability, or both. However, many other companies have not yet made similar announcements, or have described the expected impacts in only qualitative terms. Appendix 1 lists operators of facilities eligible for EITE assistance and a description of relevant announcements.

No operators of EITE-eligible facilities from the oil and gas or paper and packaging industries had at the time of writing made announcements on the impact of the carbon price on company earnings, and only one such announcement had been made from a chemicals company. Overall, of 43 companies we identified as operating facilities eligible for EITE assistance, only six had made announcements detailing impacts on earnings a week after the carbon tax announcement.

Several possible conclusions could be drawn from the lack of company announcements:

- Most companies expect the impacts on earnings to be immaterial; or
- Most companies were still assessing the impact on earnings

It is likely that more companies will report on the expected impact of a carbon price on their costs and earnings over time, particularly as part of end of year financial reporting as occurred in several cases following the drafting of the CPRS. Such disclosures are particularly important in understanding the impact on companies operating in industries that are assisted on the basis of a value added methodology or whose assistance is determined on the basis of multiple intermediate products whose output levels are not widely disclosed.

2. Emissions disclosures on an equity share basis

Many companies with joint venture operations do not currently disclose equity accounted emissions, which prevents an accurate allocation of emissions liabilities in a way that reflects their economic impacts. The government-mandated National Greenhouse and Energy Reporting System (NGERS) provides emissions levels on an operational control basis, which in a number of cases does not reflect the economic impact of emissions. Most other disclosures are also made on the basis of operational control. Where possible we have used alternative company sources of equity accounted emissions, and have adjusted some NGERS and other company disclosures where credible allocations of emissions to joint venture partners was possible. This was not possible in all cases due to a lack of disclosure.

To improve the level of transparency to investors in EITE industries, we would encourage companies to disclose emissions on both an operational control and equity accounted basis, and provide clearer disclosures on the expected cost and earnings impacts of the carbon price, or provide the inputs by which these can be calculated where not already in the public domain.

Conclusion

This briefing has sought to systematically identify recipients of emissions-intensive trade-exposed industry assistance and related packages under Australia's planned carbon tax, and estimate the likely earnings impacts for these companies once this assistance is taken into account. Overall, these earnings impacts appear to be small for almost all companies for which we are able to calculate assistance, with negative earnings impacts estimated at 3.5% or less for all companies except one outlier.

We have also made several suggestions on better disclosures for EITE industries that would allow a broader and more accurate estimation of carbon liabilities. Investors would benefit from more companies disclosing emissions on an equity share basis where this differs from an operational control basis of allocation, and making explicit disclosures of likely carbon obligations and assistance levels. Estimating the impact of a carbon price on a number of companies would also be assisted the disclosure of specific variables used to calculate assistance, including the economic value added measure and output levels at the activity level.

Appendix 1 - Facilities eligible for EITE assistance

Responses to the carbon tax announcement by EITE facility operators

Activity	Operator	Announcement	Includes estimate of financial impact	Details
Building and construction materials:				
Clinker & Lime	Adelaide Brighton	Yes	Yes	Reduce NPAT by approx \$5m
	Boral Limited	No	-	-
	Cement Australia	Yes	Yes	Increase costs by \$5.7m
	Sibelco (lime only)	No	-	-
Flat glass	CSR Ltd	No	-	-
Chemicals:				
Carbamide (urea)	Incitec Pivot	No	-	-
Ethene (ethylene) and polyethylene	Qenos (China National Bluestar)	No	-	-
High purity ethanol	Honan Holdings	No	-	-
	Tarac Technologies	No	-	-
	Sucrogen (Wilmar International)	No	-	-
	Dalby Biorefinery (United Petroleum)	No	-	-
Methanol	Coogee Energy	No	-	-
Silicon	Simcoa (Shin-Etsu Chemical Company)	No	-	-
Sodium carbonate (soda ash) and sodium bicarbonate	Penrice Soda	Yes	Yes	Reduce NPAT by approx \$0.5m
Metals and mining:				
Alumina and Aluminium	Alcoa	No*	-	-
	BHP Billiton (alumina only)	No	-	-
	Norsk Hydro (aluminium only)	No	-	-
Copper	Rio Tinto	Yes	No	-
	BHP Billiton	No	-	-
Fused alumina	Xstrata	No	-	-
	Doral Fused Materials (Iwatani Corp)	No	-	-
Integrated lead and zinc	Nyrstar	No	-	-
Magnesia	Causmag Ore Co (Excel Colours & Frits)	No	-	-
	QMCH Pty Ltd	No	-	-
Manganese	TEMCO (BHP)	No	-	-
Synthetic rutile	Iluka	Yes	Yes	Reduce NPAT by approx \$4.5m
	Tiwest	No	-	-
White titanium dioxide pigment	Cristal Chemical	No	-	-
	Tiwest	No	-	-
Zinc	Nyrstar	No	-	-
	Sun Metals (Korea Zinc)	No	-	-
Oil and gas:				
Petroleum	BP Plc	No	-	-
	Caltex	Yes	No	-
	Exxon Mobil	No	-	-
	Royal Dutch Shell	No	-	-
LNG	ConocoPhillips	No	-	-
	Woodside Petroleum	No	-	-
Paper and packaging:				
Cartonboard	Amcor	No	-	-
Dry pulp	Kimberly-Clark	No	-	-
	Paper Australia (Nippon Paper)	No	-	-
Glass containers	Amcor	No	-	-
	Owens-Illinois	No	-	-
Newsprint	Norske Skog	No	-	-
Packaging and industrial paper	Amcor	No	-	-
	Paper Australia (Nippon Paper)	No	-	-
Printing and writing paper	Visy	No	-	-
	Paper Australia (Nippon Paper)	No	-	-
Tissue paper	Kimberly-Clark	No	-	-
	SCA Hygiene	No	-	-
Steel:				
Integrated iron and steel, Carbon steel from cold ferrous feed	Bluescope Steel	Yes	Yes	Estimated free permit allocation
	Onesteel	Yes	Yes	Estimated free permit allocation

Source: ASX releases, releases to other stock exchanges, media releases.

* The minority joint venture partner in Alcoa of Australia, Alumina Ltd has issued an ASX Release on the carbon tax.

Appendix 2 - MSCI ESG CarbonBeta™

Company Specific CarbonBeta Ratings & Scores

MSCI ESG Carbon Beta assesses companies' performance within a given industry on a best-in-class basis and assigns a AAA to CCC rating. Analysts evaluate companies across three main categories, and provide a 0-10 score for each category, as well as an outlook score that assesses companies' progression with respect to its previous rating.

Risk

According to the relevant segments of the value chain that are analyzed for each sector (i.e., in-house, supply chain or products), this score reflects the company's expected carbon exposure, which takes into account emissions levels and intensities, in addition to policy risk.

Management

The management score assesses the carbon mitigation strategies in place to manage each corporation's overall risk exposure. Examples of the mitigation strategies that are evaluated, where applicable, include energy efficiency measures, alternative energy usage, and alternative materials and processes.

Strategic Profit Opportunities

The SPO score signals a company's ability to identify and capture upside opportunities related to a low-carbon economy such as renewable energy for electricity generation or for fuel efficiency for motor vehicles. The analysis of SPOs includes, depending on the sector, the potential low-carbon opportunities attributed to a company's market segments and whether the company has identified or capitalized on these potential opportunities through its current product offering, overall business strategy, and investment in research and development.

The Carbon Beta Platform is a research tool that identifies the risks and opportunities associated with climate change for company-specific and portfolio-wide analysis. MSCI ESG Carbon Beta provides company profiles for corporations in carbon-intensive sectors, analyzing carbon, energy, and low-carbon technologies (including cleantech, renewables and green buildings). This analysis is conducted across each sector's value chain where relevant: in-house, supply chain and products.

MSCI ESG CarbonBeta

MSCI ESG Carbon Beta provides a signal for a company's positioning on carbon and energy issues across the relevant segment of its value chain. The Carbon Beta platform is composed of three primary elements:

- Carbon intensity of industries (derived on direct and indirect intensity and market sensitivity)
- Company ratings (based on measurement of risk, management and opportunities)
- Carbon footprints (classified into three categories: Scope 1, 2, and 3)

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