



**C E M E N T I N D U S T R Y  
F E D E R A T I O N**

26 September

Committee Secretary  
Senate Select Committee on Fuel and Energy  
Department of the Senate  
PO Box 6100  
Parliament House  
Canberra Act 2600

Dear Sir/Madam

## **CIF SUBMISSION: Senate Select Committee on Fuel and Energy**

The Cement Industry Federation (“the CIF”) welcomes the opportunity to submit comments to the Senate Select Committee on Fuel and Energy on the impact of an emissions trading scheme on the energy intensive cement industry.

The Cement Industry Federation is the national body representing the Australian cement industry, and comprises the three major Australian cement producers - Adelaide Brighton Ltd, Blue Circle Southern Cement Ltd and Cement Australia Pty Ltd. Together these companies account for 100 per cent of integrated clinker and cement supplies in Australia. Their operations are located in every state and territory, and include 15 manufacturing sites, 10 mines and over 70 distribution terminals. In 2007, the industry employed 1,850 people and produced over ten million tonnes of cementitious materials, with an annual turnover in excess of \$1.79 billion. In Australia, the industry is responsible for nearly 7.2 Mt per annum of greenhouse gas emissions.

## 1 Background to Cement

### 1.1 The Importance of Cement

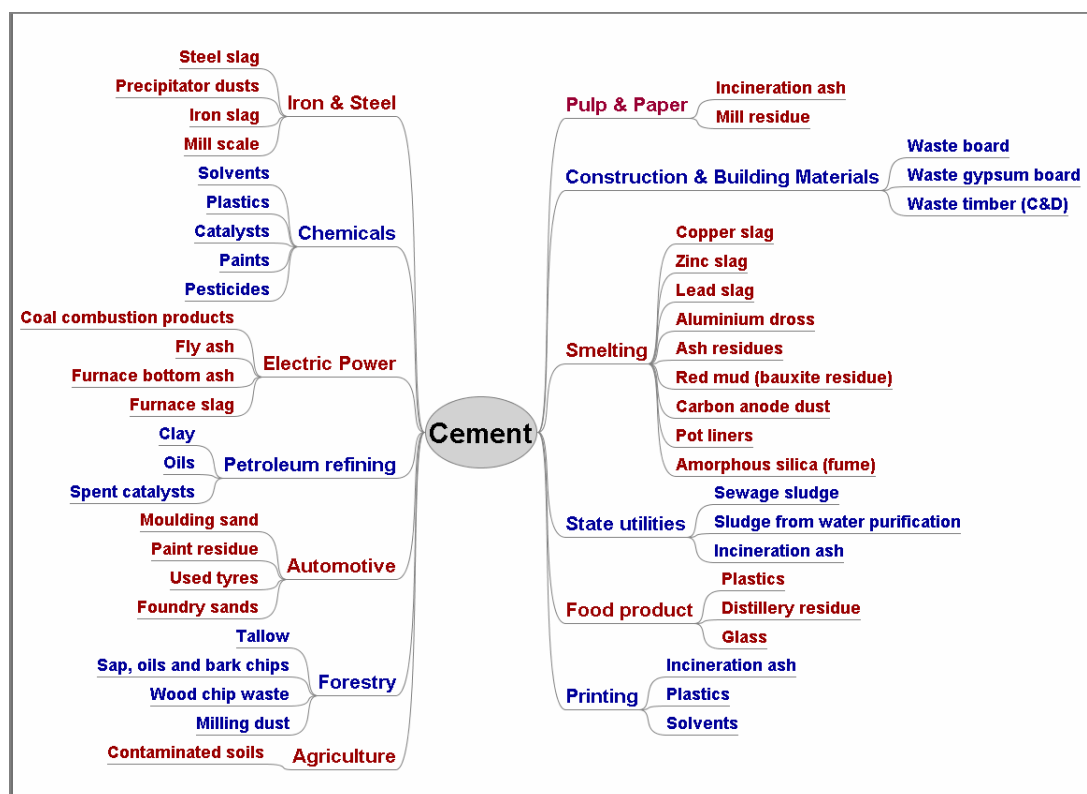
The cement industry is critical to many industries. It is the 'glue' that binds our buildings and infrastructure, including roads, rail, airports, bridges and ports. With nearly three tonnes used annually for each person on the planet it is estimated that concrete, which contains 10-15 per cent cement, is second only to water as the most consumed substance on earth.

Cement is a vital commodity for the Australian economy, not only as a critical input for Australia's construction industry, but increasingly in resource recovery and reuse innovation – in both cases providing significant economic and social benefits. Competitively priced supplies of cement are essential to Australia's continuing economic growth. Hence security of supply should be a goal supported by all levels of Government.

### 1.2 The Australian Cement Industry and Resource Recovery

The cement industry is at the forefront of resource efficiency initiatives, which have been achieved through research and development programs and innovation. The versatility of the cement manufacturing process enables the safe use of certain secondary materials from other manufacturing processes, and has resulted in the progressive uptake of supplementary cementitious materials (materials which exhibit cementitious properties), non-traditional or alternative raw materials (materials containing calcium, silica, alumina or iron), and non-traditional or alternative fuels (having calorific value and in some cases recyclable raw material components). Examples of the secondary materials opportunities for the cement industry are listed in figure 1.

The Australian cement industry's viability is dependent upon minimising costs, advancing the industry toward greater sustainability and maintaining a "social licence to operate". In this regard, **the industry has been innovative and creative in reducing its environmental footprint via the uptake of alternative fuels, raw materials and supplementary cementitious materials (SCMs)** - predominantly sourced from secondary materials/by-products. These actions not only conserve natural resources (for example coal, gas, limestone, iron ore, sands and shales) and reduce landfill, but in many cases also reduce greenhouse gas and other emissions.



**Figure 1 Secondary / By-Product Material Opportunities for the Industry**

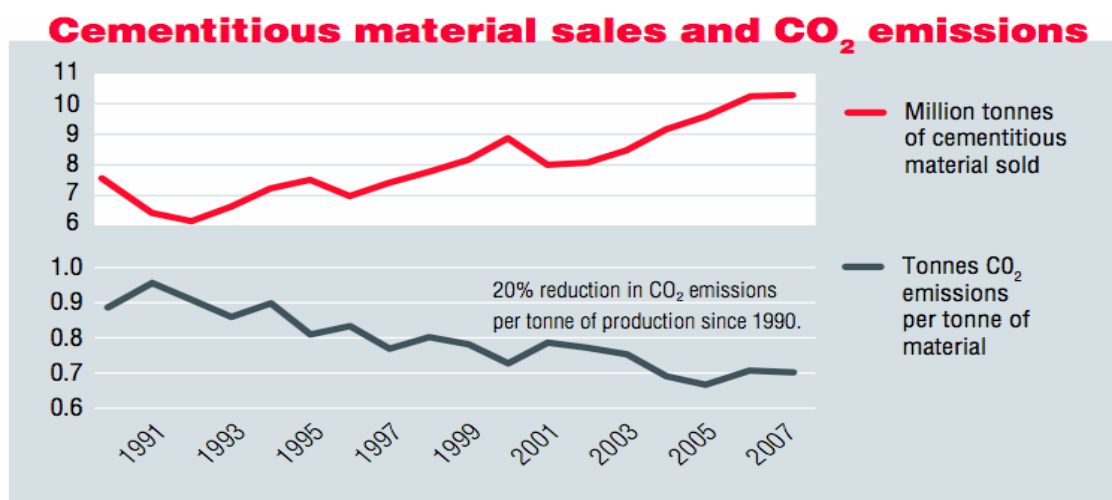
For the year 2006/2007, approximately 112,000 tonnes of solid and liquid alternative fuels (or 6.5% of our total thermal energy requirements) were safely converted to energy and product materials, and nearly 1.5 Mt of SCMs (in a total market in excess of 10Mt of cement and cement materials) were introduced to the market. ***These figures make the cement industry one of the largest recyclers in Australia yet the Australian cement industry's can recycle more.*** Globally, particularly in Europe and Japan, the cement manufacturing process is recognised for its contribution to sustainable resource management. Internationally the cement industry has made significant achievements in the use of alternative resources over the past 30 years which have not been able to be realised in the Australia industry due to a number of factors including:

- the abundant opportunities and low cost of land filling which has diminished the market incentive to establish resource recovery
- outdated and inconsistent waste and recycling legislation within State and Federal jurisdiction which results in regulatory uncertainty or disincentives to drive progress supporting resource recovery.

In particular, State approaches vary to defining, classifying and regulating wastes. This leads to increased ambiguity and confusion, and forms barriers to progressing innovative initiatives for end use.

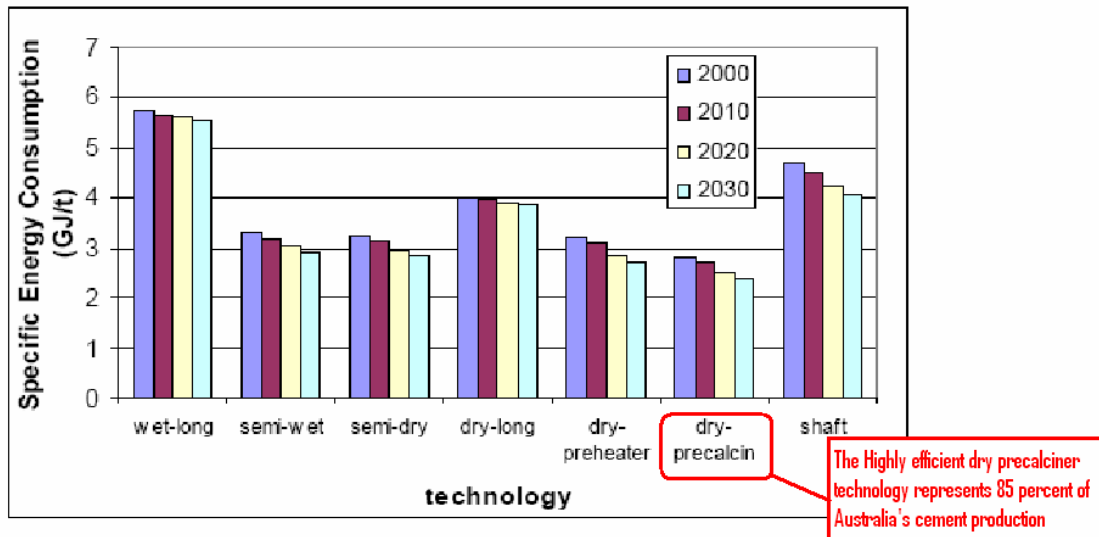
### 1.3 Cement and Climate Change

The Australian cement industry recognises the threat that climate change poses to our natural environment as identified by the scientific world. We have been working diligently on this challenge for well over a decade and have developed and maintained a verifiable emissions database extending back to 1990. Since that time the industry has maintained carbon dioxide emissions at 103% of 1990 levels while increasing production by 33 % and reduced the carbon intensity of its product by 20% per tonne (figure 2).



**Figure 2 – Cementitious material Sales and CO<sub>2</sub> emissions**

The cement industry has consciously engaged in striving for improvement through being a leader in the uptake of technology to maximise energy efficiency, increasing the use of by-products of other industries, reducing greenhouse emissions through reduced dependence on fossil fuels and in working in concert with the broader community.



**Figure 3 – Average world specific energy consumption by kiln technology**

From a global context the Australian industry, while small in size, has a high uptake of best technology (see figure 3) and has remained price-competitive with our closest neighbours. Retaining this competitive position with our Asian neighbours remains a critical area of importance and is potentially the most difficult challenge for the development of any national emissions scheme. The highly efficient dry precalciner technology represents 85 per cent of Australia's cement production.

For the last twenty years the Australian cement industry has continued to seek out new opportunities to reduce carbon dioxide emissions through more energy efficient technology. It is important to note **there is no new technology on the horizon that will enable the industry to significantly reduce its current emissions intensity for clinker**. However opportunities are present for further reductions in the emissions intensity of cement, such as the further addition of supplementary cementitious materials (SCMs).

## 2 Impact of an emissions trading scheme on the cement industry

### 2.1 Key Issues for Cement

The CIF is comfortable with the following issues proposed in the Green Paper:

- Assistance provided to offset competitive loss of EITE industries, in the absence of a truly global scheme.
- The allocation of assistance for direct emissions of new and existing EITE entities being calculated on the basis of an Australian historical industry

average emissions intensity baseline for each EITE sector over the period 2006-07 to 2007-08.

- Allocation to new EITE investment should be conditional of employment of international best practice.

However the CIF opposes the following proposals in the Green Paper:

- The proposed assistance rate of 90 per cent of emissions for new and existing operations for clinker manufacturing only. We believe EITE assistance should cover the entire integrated cement manufacturing process.
- The Governments preferred option of reducing the EITE assistance rate over time with the intent that the share of assistance provided to the EITE sector does not increase significantly over time. The Australian cement industry can only remain competitive if the assistance rate remains constant until a global scheme is implemented. The decay of the assistance rate will diminish the competitiveness of the Australian cement industry and deter new investment which contradicts the commitment made by the government in the 2007 election campaign to not disadvantage EITE industries.
- The disaggregation of EITE activities will fundamentally thwart the stated shielding policy intent for EITE industries. The CIF opposes a clawback of the particular activities which make up an integrated manufacturing process defined as EITE.

## **2.2 Carbon Pollution Reduction Scheme Green Paper (CPRS)**

The CIF found the task of responding to the Green Paper in any substantive way very difficult without the presence of the economic modelling from Treasury.

The Green Paper states *“the ultimate objective of the scheme is to contribute to reductions in global emissions”* and *“if an emission-intensive entity relocates to another jurisdiction and uses a more emissions-intensive production technology, the move would increase global emissions and result in carbon leakage”*, whilst the CIF supports these key rationales for providing assistance to emissions-intensive trade-exposed industries this is not apparent in the policies described within chapter nine of the Green Paper. The proposed assistance policy for both new and existing EITE industries does not encourage those industries to continue to produce in Australia following the introduction of the scheme. As outlined in Appendix A, the Australian cement industry has an emission intensity second only to Japan in the Asia-Pacific region (see page

26), given the proposed assistance policy for EITE industries, carbon leakage will occur if clinker that could be manufactured in Australia is produced offshore. This does not fit with the ultimate objective of the scheme to contribute to reductions in global emissions.

Additionally the Government made the following commitments during the 2007 election:

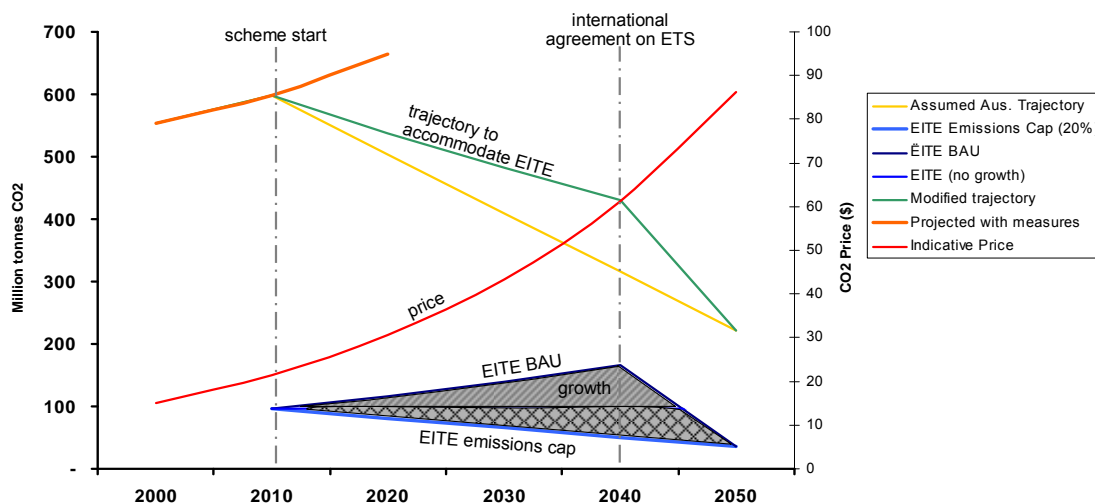
*“A Rudd Labor Government will*

- Ensure that Australia’s international competitiveness is not compromised by the introduction of emissions trading*
- Consult with industry about the potential impact of emissions trading on their operations to ensure they are not disadvantaged*
- Establish specific mechanisms to ensure that Australian operations of emissions intensive trade exposed firms are not disadvantaged by emissions trading.”*

The CIF supports the Prime Ministers position and will work with the Government to contribute to the same objective.

### **2.2.1 The proposed initial size and distribution of the EITE assistance policy**

The CIF strongly disagrees with the assumption all EITE activities (excluding agriculture) should be limited to 20 per cent of available permits. The current level of emissions by EITE industries exceeds the 20 per cent allocation by the Government which indicates the Government is attempting to reduce the assistance rate to eligible EITE to enable all EITE industries to fit into the 20 per cent allocation pool. The CIF supports an assistance policy where all industries that meet the criteria set out for EITE status, receive the allotment regardless of the overall percentage of the national emissions.



**Figure 4 – Suggested modified trajectories and caps**

In figure 4, the blue line represents the emissions cap for the EITE industries (20 per cent allocation). The CPRS proposal does not accommodate growth of existing EITE operations nor an allowance made for new investment in EITE industries. The assumed overall emissions trajectory is represented by the yellow line. The CIF urges the Government to factor growth of the existing operations and new investment into the overall trajectory (represented by the green line).

Additionally, the CIF is disappointed the government has chosen to separate the clinker manufacturing and cement grinding process and only provide assistance for the clinker manufacturing activity. The in-direct emissions from the cement grinding activity accounts for approximately 6% of the overall cement manufacturing process. As the proposed 90 per cent assistance rate for EITE activities (with emissions intensities above 2,000 tonnes CO<sub>2</sub> –e per million dollars of revenue) only covers the clinker manufacturing activity, the cement industry will receive an allocation of approximately 84 per cent of the permits required for the overall cement manufacturing process. The CPRS is proposing the cement industry absorb approximately 16 per cent of its total emissions. This will obviously have a significant impact on the profitability of the sector which is trade exposed. Figure 2 clearly displays the cement industry has explored and implemented new production technologies over the last 20 years and has achieved an enviable 20 per cent CO<sub>2</sub> emissions reduction per ton of cementitious product since 1990. The Government is asking the cement industry to achieve further abatement that is impossible to achieve. Again this contradicts the objective of the Prime Ministers 2007 election campaign not to disadvantage EITE industries.



### 2.2.2 Proposed disaggregation of EITE activities

Cement manufacturing is an integrated process involving the recovery and blending of minerals (calcite, alumina, ferric oxide and silica) to achieve the correct chemical mix that enables the desired quality and consistency of cement. Appendix B includes descriptions of the two activities involved in cement production. The CIF considers the clinker manufacturing process as an integrated process as each activity does not occur in isolation. If cement manufacturing relocates offshore as a result of poor shielding policy then the limestone mineral blending will also move offshore. This is not the case with other mining products such as coal and bauxite, as these products are valuable in their own right and will be exported should manufacturing not take place in Australia.

Indeed, the extraction of minerals for the purpose of clinker manufacture has had a lengthy discussion/debate through the Federal Parliament, Administrative Appeals Tribunal (AAT), Federal Court and the Full Bench of the Federal Court. They concluded for the purposes of the Diesel Fuel Rebate Scheme that limestone is extracted for the purposes of recovering four minerals; calcite, alumina, ferric oxide and silica.

#### Extract from High Court of Australia - No A44 of 2004

Further, the extrinsic materials and historical context of the legislation do not point to the construction favoured by the applicant. Rather, as the majority in the Full Court observed (at [122]), the Minister's second reading speech to the *Customs and Excise Legislation Amendment Act 1995 (Cth)* (the "1995 Act"), which introduced the exclusion for "limestone" from the definition of "minerals", drew the distinction accepted by the AAT, Mansfield J and the majority of the Full Court in this case, as well as the Full Court in each of *David Mitchell* and *Goliath* between mining for limestone for use as limestone and mining limestone for the minerals it contains. In particular, the Minister expressly stated<sup>28</sup> that "[t]he exclusion would bring about transparent distinction between mining for minerals and operations that cannot, in the ordinary sense, be regarded as mining", in that "[w]here these minerals<sup>29</sup> are extracted for the purpose of recovering a mineral, the extraction will remain eligible for rebate" (emphasis added). The explanatory memorandum also emphasized that rebate would remain payable if the excluded material was extracted "for the purpose of recovering their inherent mineral qualities".

*David Mitchell Ltd v CEO of Customs* (2001) 107 FCR 2002.

*Goliath Portland Cement Co Ltd v CEO of Customs* (2000) 101 FCR 11.

<sup>28</sup> See Second Reading Speech of Senator Cook, Minister for Industry, Science and Technology, in Senate Hansard, 8 June 1995, 1062 at 1064.

<sup>29</sup> That is, the materials excluded from the definition of minerals, being "sand, sandstone, earth, soil, slate, clay (other than bentonite or kaolin), basalt, granite, gravel, limestone or water".

The CIF believes the aggregation of particular activities which make up an integrated manufacturing process, such as cement manufacturing, is consistent with the intent of a shielding policy for EITE industries. Any disaggregation of EITE activities contradicts

the overall objective of the Prime Minister and CPRS to not disadvantage EITE industries.

#### **2.2.2.1 The Canadian approach to calculating assistance for EITE activities**

The CIF notes the Canadian ETS (Regulatory Framework for Air Emissions) does not include fixed process emissions. The Canadian ETS emissions-intensity reduction calculation applies only to combustion and non-fixed process emissions. Fixed process emissions that are tied to production and for which there is no alternative technology that will reduce them. The only way to reduce these emissions is to reduce production. The calcination in cement and lime production is listed as an example of fixed process emissions. The Canadian framework states "*there is no known techniques or practices to avoid the release of carbon dioxide when limestone is calcined*". The CIF would strongly urge the Government to duplicate this approach taken by Canada and provide 100 per cent assistance rate for fixed process emissions as there is no known techniques or practices to avoid the release of carbon dioxide when limestone is calcined. The CIF's supports the adoption of 100 per cent assistance rate for fixed process emissions coupled with a 90 per cent assistance rate for thermal and indirect emissions. The CIF acknowledges that processes that are currently considered fixed may not be considered fixed in the future if technologies or processes are developed that could reduce or capture and store emissions.

#### **2.2.3 The proposed reduction in assistance to EITE entities over time**

The CIF disagrees with the Governments preferred option of reducing the EITE assistance rate over time.

Critical for the Australian cement industry is the issue of maintaining competitiveness in an import-competing environment whilst acknowledging that Australia imports about 20% of product to meet the current supply / demand balance. Whilst we believe that providing EITE industries with 90 per cent permit allocation is somewhat equitable for all industries we urge government to explore other options rather than reducing the assistance rate over time. As the Green Paper does not outline the actual reduction of the assistance rate and the economic modelling will not be released until late 2008, it's difficult to ask industry to comment on the actual level of reduction to the assistance rate over time. Is the reduction linear or a soft start? We don't know what the trajectory will be (in our industry modelling we are using a straight linear reduction).

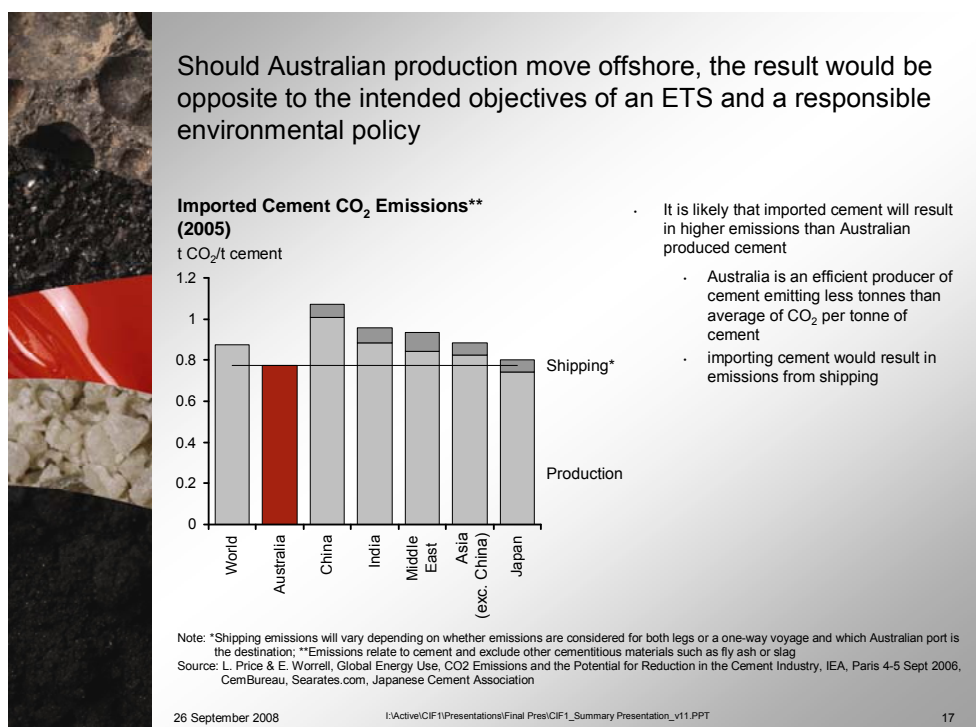
The CIF's preferred option is a fixed level of assistance per unit of output over time. If an industry is recognised as an EITE in 2010, then it should remain recognised as a EITE industry in 2020, with a fixed assistance rate until such time that **a global scheme is implemented.**

As stated in the Green Paper the ultimate objective of the scheme is to contribute to reductions in global emissions. If an emission-intensive entity relocates to another jurisdiction and uses a more emissions-intensive production technology, the move would increase global emissions and result in 'carbon leakage'. By reducing the assistance rate for EITE industries over time, the Government is forcing these industries to commence unrealistic abatement opportunities or reduce returns on business hence lowering the expected returns of their shareholders. As outlined in the introduction, the Australian cement industry has already achieved significant CO<sub>2</sub> abatement over the last 20 years. This proposal is asking the industry to do something it has already achieved as the industry is already producing at worlds best practice (WBP) and has limited opportunity to gain further significant abatement savings, therefore the proposed reduction in assistance rate will have a significant impact on the profitability of the sector.

#### **2.2.3.1 Carbon Leakage**

An important characteristic for the Australian cement industry is that our competitors, almost without exception, are countries in the developing world where the prospect of GHG emissions penalties being imposed is very distant. With respect to GHG emissions and given the relative carbon efficiency of the Australian industry, there is little or no global environmental benefit in locating these industries in Asia or elsewhere, in preference to Australia. This is the 'carbon leakage' problem which together with the added emissions arising from transport defeats the overall objective of reducing global emissions. Australia might meet its emissions reduction target but the world won't.

As outlined in Figure 5, the Australian cement industry has an emission intensity second only to Japan in the Asia-Pacific region, given the proposed assistance policy for EITE industries, carbon leakage will occur if clinker that could be manufactured in Australia is produced offshore. This does not fit with the ultimate objective of the scheme to contribute to reductions in global emissions.



**Figure 5 – Global Comparison of Emissions Intensity**

### 2.2.3.2 Future Investment in the Cement Industry

There is no quick fix to emissions reduction and the decay of the assistance rate over time is not the answer. This decay does not promote the expected returns for new investment in the Australian cement industry. The decay in assistance rate will also have a dramatic affect on the existing assets. Depending on the trajectory rate we will see an ultimate shutdown of the cement industry over the coming years with a tendency to run down the industry. Domestic manufacturers will be forced to import clinker from countries with a higher CO<sub>2</sub> intensity. This will result in the loss of jobs in regional Australia impacting the local communities. Again this contradicts the objective of the Prime Ministers 2007 election campaign not to disadvantage EITE industries.

### 2.2.3.3 Impacts of CPRS on employment in regional areas

A well designed ETS must have protection for EITE industries until a truly global scheme is implemented. A permit not allocated to an EITE firm shifts the disproportionate burden to the EITE workers and shareholders, who are also households. The closure of EITE industries not only affects the jobs of the workers employed within the industry but also the indirect jobs downstream of the industry. The Australian cement industry employs a diverse range of technically skilled workers in regional areas such as Berrima, Maldon, Kandos, Angaston and Railton. A closure of

capacity would have dire consequences for local employment. Indirect employment generated by the Australian cement industry is about four times the direct employment bringing substantial economic benefits to local communities as well as the broader economy (refer to Appendix A, page 25).

### **2.3 Complimentary Solutions to an ETS**

Unfortunately, the current media attention around emissions trading is feeding the perception that an emissions trading scheme is the sole solution. An ETS clearly has a proper place but will only ever be one component of an effective national climate change strategy. From an industry position, we believe that an effective climate change strategy should incorporate mechanisms focused on addressing the impediments to developing technology solutions.

The CIF believes the CPRS has ignored the importance of technology solutions such as international technology partnerships and research, development and demonstration (RD&D) support.

The CIF supports the promotion of international technology partnerships to facilitate operational excellence, technology adoption, development and sharing, and workforce skills development (e.g. the Asia Pacific Partnership for Clean Development and Climate (APP) within which Australia has a creditable standing). The CIF believes Government should encourage driving the RD&D of emerging technologies (e.g. carbon capture through geo- or bio-sequestration, improved waste heat recovery) that have the potential to provide the next step-change process improvements.

### **2.4 Current waste legislation limiting resource recovery opportunities**

Lowering energy costs is one of the main ways of improving the international competitiveness and sustainability of the Australian cement industry. More and more, cement plants are turning to using alternatives to fossil fuel and natural raw materials. Today, in Europe, alternative fuels provide on average approximately 12% (up to 72% in some individual plants) of thermal energy consumption to the industry. Yet alternative fuels account for only 6.5% of the Australian cement industry's total thermal energy requirements.

Reducing the quantity of clinker required in concrete through the substitution of pre-calcined and supplementary cementitious materials (SCMs) during the manufacture of cement and concrete lowers the greenhouse gas emissions per unit of cementitious material used and manages large volumes of normally land filled waste. The industry currently substitutes 22% (about 2.2 million tonnes) of clinker with both mineral addition and SCMs such as fly ash and slag as blends in cement products or as sales direct to the premix industry for use in the concrete products markets. The Cement Industry Action Agenda includes a recommendation to increase the use of SCMs in cement and concrete to at least 29% by 2012.

Unfortunately alternative fuels and raw materials and SCMs are commonly classified as “wastes” under existing state regulatory regimes and this can constrain legitimate resource conservation efforts. As a minimum standard, all CIF member companies using alternative fuels and raw materials follow the World Business Council for Sustainable Developments “Guidelines for the selection and use of fuels and raw materials in the cement manufacturing process” which are built upon the principles of sustainable development, eco-efficiency and industrial ecology, and the best practice of the global industry.

Current inconsistent legislative requirements place significant limitations on some cement plants ability to re-use waste materials. This varies from state to state. Opening legislative requirements and approval processes to move progressive approaches to the re-use of alternative resources, encourages the opportunities for the industry to adopt more sustainable practices and reduce its environmental footprint.

## Cement Industry Preferred Position on the CPRS

The CIF supports:

- The commitments made by the Rudd Labor Government during the 2007 election to:
  - Ensure that Australia's international competitiveness is not compromised by the introduction of emissions trading
  - Consult with industry about the potential impact of emissions trading on their operations to ensure they are not disadvantaged
  - Establish specific mechanisms to ensure that Australian operations of emissions intensive trade exposed firms are not disadvantaged by emissions trading.
- A national ETS that balances economic, environment and equity objectives.
- Assistance provided to offset competitive loss of EITE industries, in the absence of a truly global scheme. Ensure no competitive disadvantage to existing operations and proposed new investment.
- The Government to factor growth of existing EITE operations and new investment into the overall trajectory.
- A fixed level of EITE assistance per unit of output over time.
- The allocation of assistance for direct emissions of new and existing EITE entities being calculated on the basis of an Australian historical industry average emissions intensity baseline for each EITE sector over the period 2006-07 to 2007-08.
- The Government's first option to base allocations of free permits on a forecast of each entity's output each year and 'true up' allocations at the end of the year.
- The Government to duplicate the approach taken by Canada and provide 100 per cent assistance rate for fixed process emissions.
- Allocation to new EITE investment should be conditional of employment of international best practice.
- The Governments position to phase out and withdraw assistance to EITE industries in the event of a broadly comparable carbon constraint is introduced in key competitor economies.

The CIF opposes:

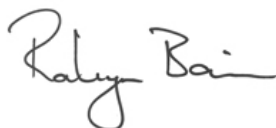
- The proposed assistance rate of 90 per cent of emissions for new and existing operations for clinker manufacturing only. We believe EITE assistance should cover the entire cement manufacturing process.
- The disaggregation of EITE activities. We consider the cement manufacturing process as an integrated process as each activity does not occur in isolation. The disaggregation of EITE activities will fundamentally thwart the stated shielding policy intent for EITE industries. The CIF opposes a clawback of the particular activities which make up an integrated manufacturing process defined as EITE.
- The decay in permit allocation for EITE industries over time. The decay of assistance rate will result in no new investment and gradual run down of existing plants forcing industry off-shore with no global climate change advantage. A permit not allocated to an EITE firm shifts the disproportionate burden to the EITE workers and shareholders, who are also households.



The Australian cement industry recognises the threat that climate change poses to our natural environment. We have been working diligently on this challenge for well over a decade and achieved, by voluntary measures, reductions in the carbon intensity of our product of 20% per tonne. The industry has achieved this through the high uptake of new technology to maximise energy efficiency and increasing the use of alternative fuels and raw materials and SCMs. However inconsistent state legislative requirements place significant limitations on some plants ability to re-use waste materials restricting further reductions in carbon intensity.

With the introduction of an Australian ETS, the Australian cement industry can only remain competitive if the proposed assistance rate for EITE industries remains constant until a global scheme is implemented. The decay of the assistance rate will diminish the competitiveness of the Australian cement industry leading to the premature closure of production facilities and deter new investment which contradicts the commitment made by the government in the 2007 election campaign to not disadvantage EITE industries.

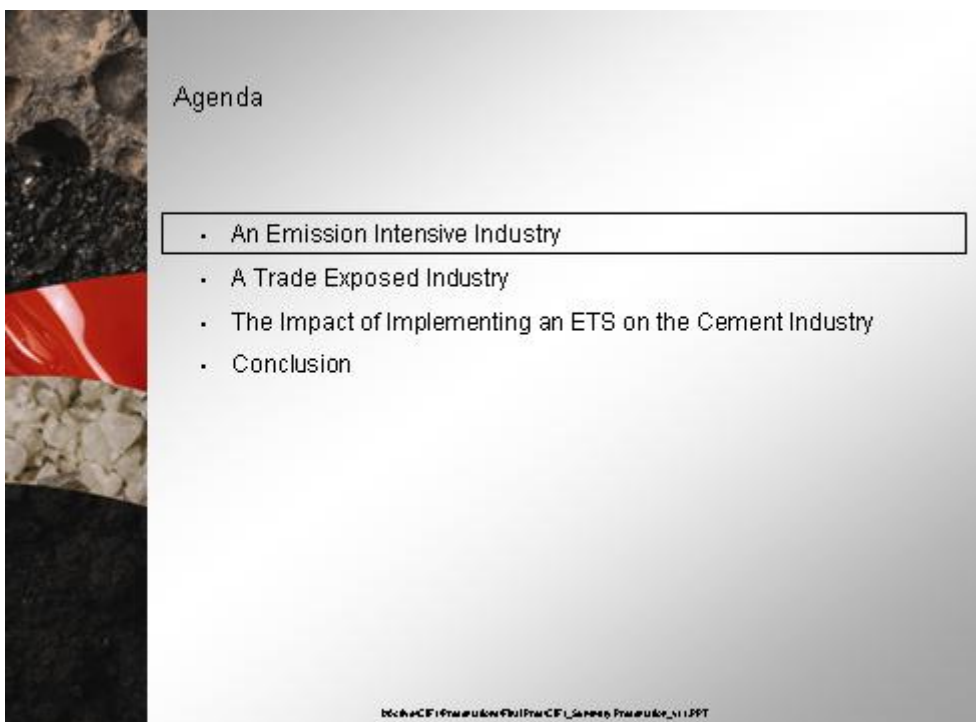
The CIF encourages the Government to actively seek opportunities to develop and implement a truly global emissions trading. The Australian cement industry is not asking for a free kick, we want to compete on a level playing field with our international competitors. **A decay in the assistance rate over time will make cement produced in Australia uncompetitive compared to imported cement.** If this leads to lower output from, or even the closure of Australian cement plants, offshore plants would increase production – hence carbon leakage. Australia would more easily meet its Kyoto obligation, but global emissions would not change – hardly the actions of a responsible global citizen. Furthermore, an industry once lost to Australia might never be re-established, even if at some point in the future most countries impose a price on emissions.



Robyn Bain  
**Chief Executive**

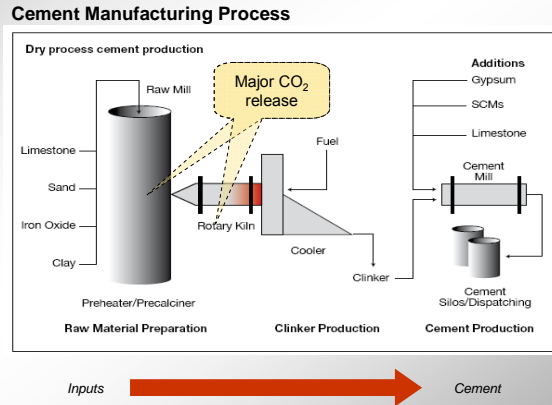
### 3 Appendices

#### 3.1 Appendix A: Case for Emissions Intensive Trade Exposed Status compiled by LEK Consulting





Cement is produced in a high temperature chemical reaction where limestone is calcined into clinker. Carbon dioxide (CO<sub>2</sub>) is emitted as a product of the reaction, through the combustion of fuels, and indirectly through electricity consumption



11 September 2008

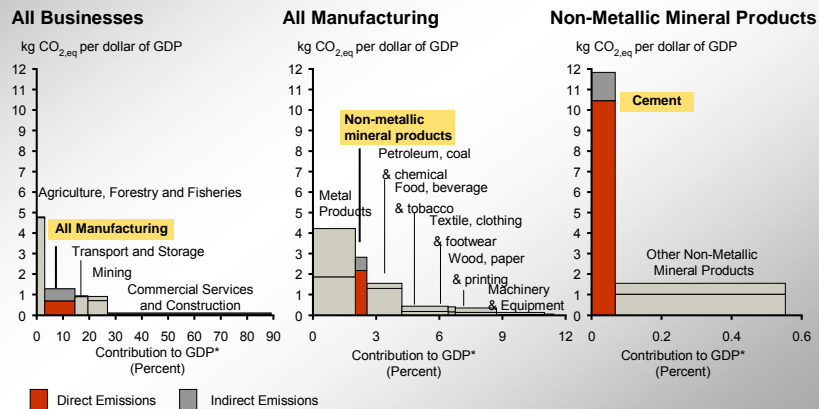
I:\Active\CIF1\Presentation\Final Pres\CIF1\_Summary Presentation\_v11.PPT

3



The cement industry is one of the most emission intensive sectors in Australia

**GHG Emissions Intensity: CO<sub>2,eq</sub> Emissions Per Contribution to GDP Across Sectors (2005)**



Note: \*Based on contribution to GDP at basic prices (does not include taxes and subsidies). The contribution by business is less than 100% as 'Dwellings owned by persons' contributed ~8.5%  
 Source: ABS National Accounts and Manufacturing Industry in Australia, Australian Greenhouse Office Emissions Information System, CIF, L.E.K. Analysis

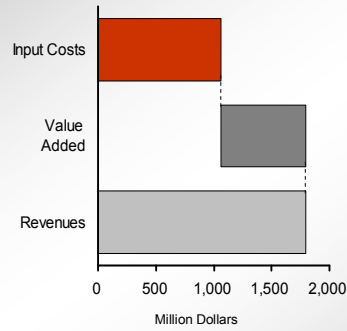
11 September 2008

I:\Active\CIF1\Presentation\Final Pres\CIF1\_Summary Presentation\_v11.PPT

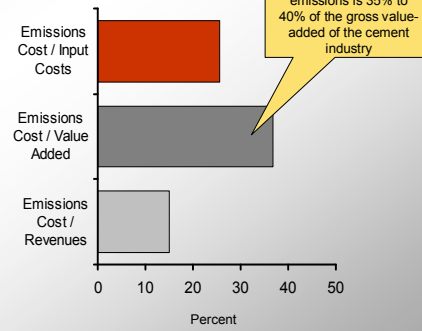
4

A carbon cost would have a material impact on the cement industry: the ratio of CO<sub>2</sub> emission costs relative to its contribution to GDP is approximately 35%-40%\*\*

Industry Measures of Value (FY2007)



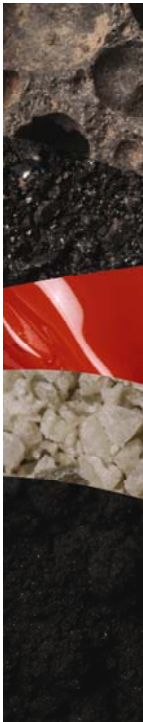
Ratios of CO<sub>2</sub> Emission Costs\* to Different Measures of Value (FY2007)



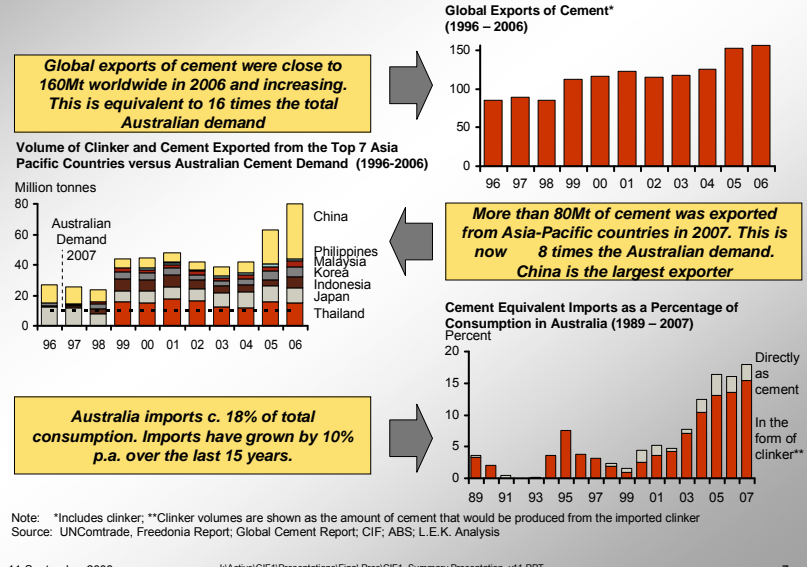
Note: \* Assuming a cost of \$35/t CO<sub>2</sub>; includes CO<sub>2</sub> direct emissions and power indirect emissions (no other GHGs)  
Source: CIF Industry Survey, L.E.K. Analysis

## Agenda

- An Emission Intensive Industry
- A Trade Exposed Industry
- The Impact of Implementing an ETS on the Cement Industry
- Conclusion



Large volumes of cement are internationally traded, and imported to Australia



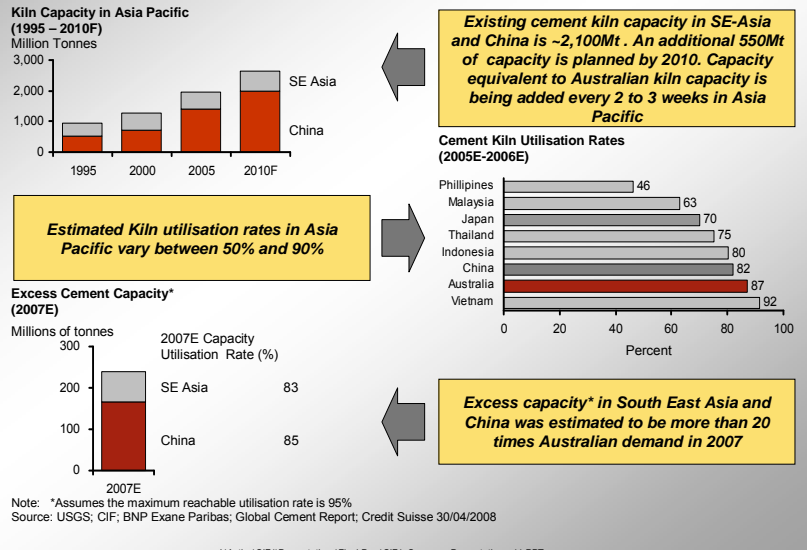
11 September 2008

I:\Active\CIF1\Presentation\Final Pres\CIF1\_Summary Presentation\_v11.PPT

7



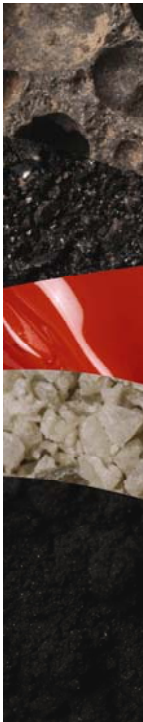
There is a significant threat of “carbon leakage” as Australian demand could be easily met by the kiln capacity available in the Asia Pacific region



11 September 2008

I:\Active\CIF1\Presentation\Final Pres\CIF1\_Summary Presentation\_v11.PPT

8



It is unlikely that imported clinker or cement would incur any costs for its carbon emissions as, with the exception of Japan, the major Asia Pacific cement producers are not currently considering carbon pricing schemes

**Existing and Proposed Asia-Pacific Carbon Pricing Schemes**

	Do cement companies <u>currently</u> face a cost on carbon?	Are cement companies likely to face a cost on carbon in the <u>near-future</u> ?
China	x	x
Japan	x <i>Has a voluntary emissions trading scheme. However, no cement companies participate*</i>	? <i>Compulsory trading schemes and caps on GHG emissions are being looked into but no planned date for introduction has been stated</i>
Indonesia	x	x
Thailand	x	x
Malaysia & Vietnam	x	x

Note: \*Based on breakdown of companies participating in scheme for phase one and two  
Source: UNFCCC, OECD Emissions Trading: Trends and Prospects, World Bank, Institute of Global Environmental Strategies, Japanese Ministry of the Environment

11 September 2008

I:\Active\CIF1\Presentation\Final Pres\CIF1\_Summary Presentation\_v11.PPT

9



There are limited barriers to potential importers in the Australian cement market

Cement is a commodity product	Imported product can and does reach into the Australian market
<ul style="list-style-type: none"> <li>Product types and specifications are similar worldwide</li> <li>general purpose cement (Portland Cement) and its flyash and slag blends make up two-thirds of the cementitious products sold in Australia in 2007</li> <li>Furthermore, manufacturers engage in product swaps to avoid the transport cost</li> </ul> <p><b>Example of Swaps Between Producers</b></p>	<ul style="list-style-type: none"> <li>Cement importers have access to cement users</li> <li>unintegrated premix concrete producers represent 1/3 of concrete production</li> <li>few customers in other sectors (hardware, concrete products, construction companies...) are integrated with cement manufacturers</li> <li>A clinker importer would have ready access to customers</li> <li>eg BGC have a market share of 30% in WA</li> <li>Wagners is currently setting up a grinding facility in Brisbane; capital costs are relatively low</li> <li>Imports are delivered close to end-using markets as the majority of cement consumers are located near major ports on the coast.</li> <li>85% of Australia's population lives within 50 km of the coast</li> </ul>

Source: CIF Industry Survey 2007, Industry Interviews; L.E.K. Research, IBIS World

11 September 2008

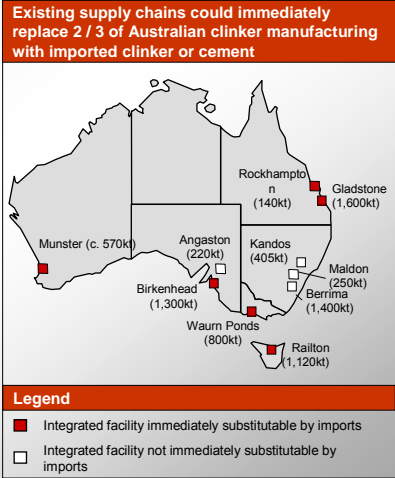
I:\Active\CIF1\Presentation\Final Pres\CIF1\_Summary Presentation\_v11.PPT

10

Significant volumes of foreign clinker could be substituted into Australia at short notice

**There is significant port infrastructure available for cement and clinker imports**

- The existing port facilities owned by Australian cement companies could currently import up to 5.9 Mt of bulk cement and clinker
- Over 2-3 years, this capacity could be increased significantly
- Bulwer Island, Townsville, Port Melbourne and Port Kembla (for Sydney) facilities have the capability to install more silos which would significantly increase their throughput capacity



Note: \* Capacity for clinker (e.g. kiln capacity)  
Source: CIF (Technology Model), Courier Mail, Sunstate Website, ABS

2 June 2008

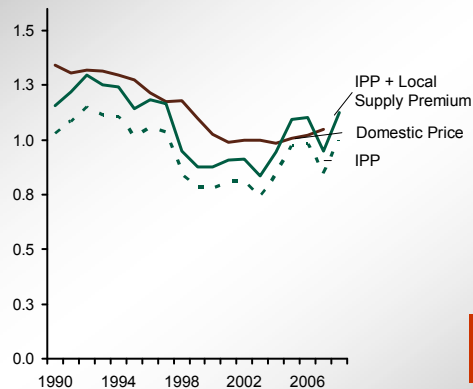
I:\Active\CIF1\Presentation\Final Pres\CIF1\_Summary Presentation\_v11.PPT

11

Over the last 15 years, domestic prices have followed the Import Price Parity

**Import Price Parity and Domestic Cement Prices\* (1990 – 2008e)**

Index (AUD 2008e IPP = 1)



- Whilst domestic prices follow IPP over the long term, short term movements in IPP do not translate into domestic price changes for a number of reasons
- domestic prices are only set approximately every six months based on the expectations of what IPP will do
- cement is not traded on an exchange. Therefore there is a lack of transparency on prices, and a low liquidity (in comparison to the oil market for instance)
- some sharp variations in the IPP are not expected to last, notably due to the volatility of freight rates and of AUD / US exchange rate

**Domestic cement producers can not pass the carbon costs onto customers**

Note: \*Real 2007 prices  
Source: ABL, Boral, Cement Australia, L.E.K Analysis

11 September 2008

I:\Active\CIF1\Presentation\Final Pres\CIF1\_Summary Presentation\_v11.PPT

12

### Agenda

- An Emission Intensive Industry
- A Trade Exposed Industry
- The Impact of Implementing an ETS on the Cement Industry
- Conclusion

D:\Active\CIF1\Presentations\Final Pres\CIF1\_Summary Presentation\_v11.PPT

If the cement industry's trade-exposure and emission intensity is not recognised in an ETS, the cost of carbon would result in new domestic investment failing to give an economic return limiting job creation and technological development

#### Economics for a New 1,000 kt Integrated Plant

Index (100= IPP 2007)

Category	Index Value (2007)
Production - Fixed	30
Production - Variable	15
Other non-production costs	20
Return on Capital Employed (@ 15% p.a.)	10
Carbon Cost**	65
<b>Total</b>	<b>140</b>
2007 Prices* (Benchmark)	120

Note: \*Eastern States IPP and Prices; \*\* Carbon cost calculated at \$35/tonne and with plants emitting 0.8 tCO<sub>2</sub>/t cementitious  
Source: CIF, ABL, Boral, Cement Australia, L.E.K Analysis

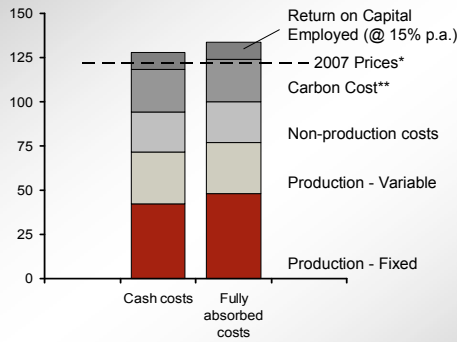
- Under a carbon price, domestic manufacturers would be more likely to import rather than invest in new capacity
  - an attractive economic return for investors would not be met by the Australian cement industry
  - importing clinker or cement has a lower risk profile than investing in new clinker manufacturing capacity
  - the two new kilns currently being considered would be unlikely to be built in Australia
- A carbon cost would effectively write down the value of cement manufacturers' existing large plants assets to close to zero

11 September 2008 I:\Active\CIF1\Presentations\Final Pres\CIF1\_Summary Presentation\_v11.PPT 14



Furthermore, some existing plants could close as it would be more economic for domestic manufacturers to switch to imported product

**Economics for a Small Plant<sup>A</sup>**  
Index (100 = IPP 2007)



- With a carbon cost, producers would barely recover cash costs on some plants
- In the long term, these plants would most likely be closed by domestic manufacturers, who would move their clinker production overseas, rather than invest in their upkeep
- Economics between plants differ and the reaction would be granular. Initial responses might be a stop of upgrade investments and a reduction of maintenance activities to extend periods of positive contribution of individual plants prior to their closure

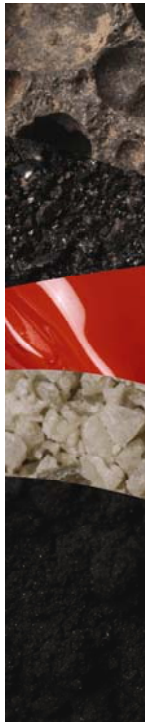
Note: \* Eastern States prices and IPP; \*\* Carbon cost calculated at \$35/tonne and with plants emitting 0.8 tCO<sub>2</sub>/t cement; <sup>A</sup> Based on data for plants of 300kt to 500kt capacity  
Source: CIF, ABL, Boral, Cement Australia, L.E.K Analysis

In some areas, the cement industry is the main industry and largest single source of employment. Closing down the cement operations would have significantly negative effects on the local economy through unemployment and lost GDP

Railton and Kandos Case Studies: The Cement Industry's Contribution to Local Communities		
	Railton (Large plant)	Kandos (Small plant)
Cement plant employment (FTE*)	230	125
Employees as percentage of labour force within 15 minute drive time	9.6%	17.5%
Indirect jobs from plant	1,150	625
Indirect jobs as percentage of labour force within 30 minute drive time	6.5%	58.0%
Average yearly salary for cement workers in Australia	\$82k	

- The cement industry is a significant employer of technically skilled workers in regional areas: Berrima, Maidon, Kandos, Angaston, Railton
- As well as direct employer, these facilities require local services for maintenance, supplies and construction facilities
  - "... Indirect employment generated is about four times the direct employment bringing substantial economic benefits to local communities as well as the broader economy ..."
- Cement Industry Federation Sustainability Report, 2007
- Gross value added per cement employee in Australia was \$395k in 2007 and salary was c. \$82k

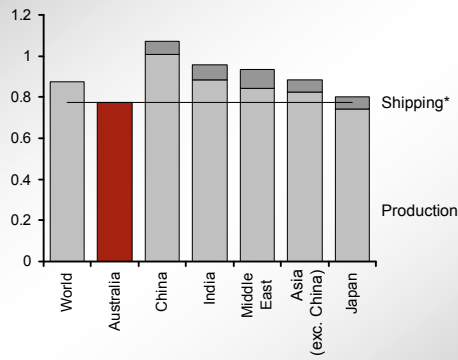
Note: \*Full-time equivalent  
Source: CIF, Cement Australia, ABS, L.E.K. Analysis



Should Australian production move offshore, the result would be opposite to the intended objectives of an ETS and a responsible environmental policy

**Imported Cement CO<sub>2</sub> Emissions\*\* (2005)**

t CO<sub>2</sub>/t cement



- It is likely that imported cement will result in higher emissions than Australian produced cement
- Australia is an efficient producer of cement emitting less tonnes than average of CO<sub>2</sub> per tonne of cement
- importing cement would result in emissions from shipping

Note: \*Shipping emissions will vary depending on whether emissions are considered for both legs or a one-way voyage and which Australian port is the destination; \*\*Emissions relate to cement and exclude other cementitious materials such as fly ash or slag  
 Source: L. Price & E. Worrell, Global Energy Use, CO<sub>2</sub> Emissions and the Potential for Reduction in the Cement Industry, IEA, Paris 4-5 Sept 2006, CemBureau, Searates.com, Japanese Cement Association

11 September 2008

I:\Active\CIF1\Presentation\Final Pres\CIF1\_Summary Presentation\_v11.PPT

17



**Agenda**

- An Emission Intensive Industry
- A Trade Exposed Industry
- The Impact of Implementing an ETS on the Cement Industry
- Conclusion

I:\Active\CIF1\Presentation\Final Pres\CIF1\_Summary Presentation\_v11.PPT



## In summary, the cement industry is a trade-exposed and emission intensive industry

- The cement industry is emissions intensive
  - The production of cement emits CO<sub>2</sub> as a by-product of the reaction process, through combustion of kiln fuels and through consumption of electricity
  - With emissions amounting to approximately 12 kg CO<sub>2</sub>,eq per dollar of GDP, cement is highly emission intensive relative to other sectors
  - At a carbon price of \$35/t, the cost of CO<sub>2</sub> emissions would amount to the equivalent of 35% - 40% of the gross-value added by the industry
- The cement industry is trade exposed
  - Large volumes of cement are internationally traded with Asia-Pacific trading volumes amounting to eight times Australian demand
  - Australia currently imports a significant amount of the cement it consumes
  - There is excess capacity in Asia-Pacific of approximately 20 times Australian demand
  - There is import infrastructure in Australia to meet the majority of domestic demand immediately and all of Australian demand in the near term as well as access to customers
  - Australian cement prices are close to, and have followed IPP prices

11 September 2008

I:\Active\CIF1\Ppresentations\Final Pres\CIF1\_Summary Presentation\_v11.PPT

19



## It is thus critical that issues relating to its competitiveness are adequately addressed by an ETS

- The impact of implementing an ETS is likely to represent an additional cost equivalent to c. 37% of the cement industry's GDP contribution. This incremental cost can not be passed on to customers
- If specific provisions for the cement industry's trade-exposed, emission-intensive nature are not included in the ETS scheme then:
  - Construction of new kiln capacity in Australia is unlikely to provide sufficient returns to justify the investment
  - The viability of existing manufacturing facilities will become questionable
  - Regional communities which are dependant on the cement industry for employment could be adversely affected
  - And, global carbon emissions would likely be increased due to cement production being shifted offshore to kilns that are likely to have higher emissions, and sea freight being required to transport the cement to Australia
- In order for the Australian ETS to meet its stated aims of reducing carbon emissions, the design has to address the issue of competitiveness of the Australian cement kilns

11 September 2008

I:\Active\CIF1\Ppresentations\Final Pres\CIF1\_Summary Presentation\_v11.PPT

20

### 3.2 Appendix B: Clinker manufacturing activities

#### **Mineral blending and clinker burning**

Typically 90% or more of feed to the cement kiln is a carefully selected blend of four minerals; calcite, alumina, ferric oxide and silica. The materials provide the necessary calcium oxides for clinker making and suitable grades for cement clinker can be found in many regions of the Australia. Limestone quarries operate in daily contact with the cement plant, are usually located nearby and are dedicated to supplying daily quantities of stone to a physical and chemical specification. Energy use in the quarry is sourced from diesel fuel for mobile equipment, blasting and power to drive crushing and conveying operations.

To ensure efficiency in the clinker kiln the kiln feed must be carefully prepared to specific physical and chemical conditions. To enable these operations to be conducted efficiently the proportioning of the raw materials, the drying, grinding and blending are all conducted as part of the kiln operations, in modern processes in particular there are direct linkages of material and air flows to ensure the maximum use of heat and conveying are gained from the initial input of energy. Consequently **if the kiln is not operating all other process steps are also shut down.**

#### **Cement grinding**

Once the cement clinker is produced it is transported to the finish grinding stage where with additions of gypsum and other minerals the construction material "cement" is produced.