



**CEMENT INDUSTRY
FEDERATION**

CEMENT INDUSTRY FEDERATION RESPONSE TO THE CLEAN ENERGY BILL 2011 AND RELATED LEGISLATION

22 SEPTEMBER 2011

The proposed amendments to the Clean Energy Future Package being requested by the Cement Industry Federation (CIF) are:

3. An integrated cement activity definition as per **Attachment 1** be approved by the Minister for Climate Change and Energy Efficiency and be included in the *Clean Energy Regulations 2011* as referred to in Part 7 of the draft *Clean Energy Bill 2011*;
4. Cement chemical process emissions be excluded from facing a carbon price in the *Clean Energy Bill 2011*. This equates to 50% of Australia's cement CO₂ emissions profile. This proposed change would require a sub-clause to be inserted in Part 3, Section 19 and a new Section after Part 3, Section 30 in the draft *Clean Energy Bill 2011* (**see Attachment 2**).

1. Executive Summary

The cement industry is one of the most trade exposed Australian industries. Our key competitors do not face a carbon price, leaving cement manufacturers in an extremely vulnerable position.

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2. Cement chemical process emissions be excluded from facing a carbon price in the *Clean Energy Bill 2011*. This equates to 50% of Australia's cement CO₂ emissions profile. This proposed change would require a sub-clause to be inserted in Part 3, Section 19 and a new Section after Part 3, Section 30 in the *Clean Energy Bill 2011* (**see Attachment 2**).

Reasoning behind the proposed Cement Industry Federation amendments

Based on the current details included in the proposed *Clean Energy Future Package (CEF)*, Australian cement manufacturers will be required to assess whether to produce cement locally, to import clinker for cement milling in Australia or to import cement. This decision will be made based on their overall competitive position relative to imports, including their ability to pay the proposed carbon liability. In the long run cement closures will occur, thus exporting jobs without changing global emissions unless our Asian competitors introduce a similar carbon price.

Emissions Intensive Trade Exposed (EITE) 'free permits' for Australian cement manufacturing are proposed to be limited to clinker production and will exclude cement milling. As a result, only 86 per cent of cement CO₂ emissions will be covered by 'free permits' in July 2012, with the clinker component declining annually at a rate of 1.3 per cent (known as the 'carbon productivity factor').

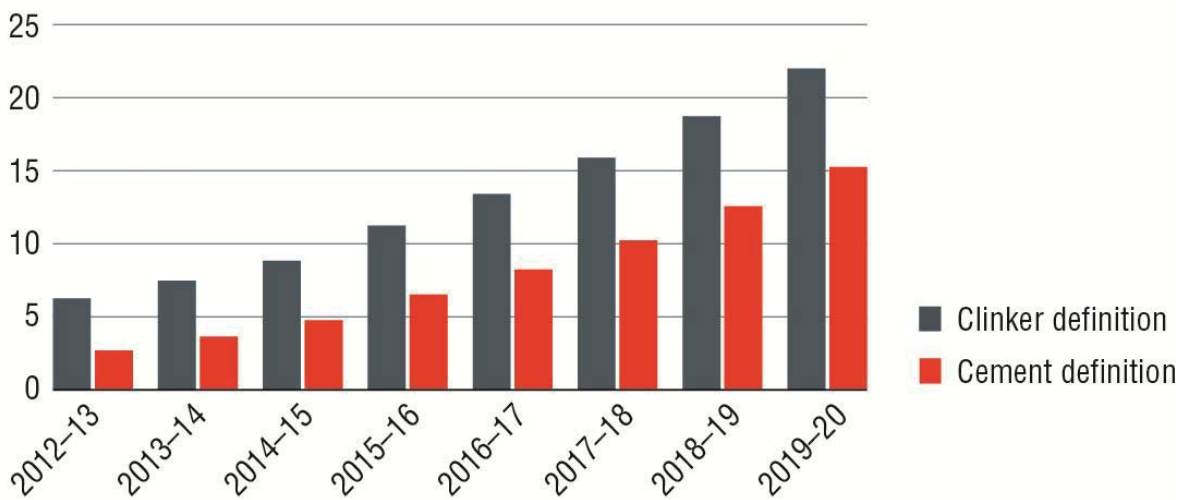
While the industry can understand the reasoning for a 'carbon productivity factor', the one size fits all approach makes no recognition of the fact that 50 per cent of the emissions from cement manufacturing cannot possibly be avoided as they are produced as a result of a chemical process in changing limestone to first stage of cement production, known as clinker. This will mean that carbon reductions from the remaining part of the cement manufacturing process must be found at twice the rate compared to other EITE affected industries.

Based on current estimates, cement manufacturing net profits will decline by approximately 22 per cent by 2020 as a result of the Clean Energy Future Package.

Technological options to capture cement CO₂ emissions have a long-term horizon and will not be available for many years.

As seen in **Figure 1**, the relative cost to Australian cement manufacturers will be significantly lower if an integrated cement activity definition is implemented (as per New Zealand and California). These estimates are based on a \$23 fixed price (increasing in real terms by 2.5 per cent and a carbon productivity factor of 1.3 per cent.

Figure 1:
Impact of carbon price on the cement industry
(Cost as % of net profit)



2. Activity Definition for permit allocation to the cement industry

Summary

- The Cement Industry Federation proposes that an integrated clinker and cement definition is appropriate as defined in Attachment 1. This definition was developed by PricewaterhouseCoopers (the consultants that provided key advice in developing the activity definition framework).
- An integrated clinker and cement activity definition meets all criteria defined in the Guidance Paper called '*Assessment of activities for the purposes of emissions-intensive trade-exposed assistance program*' published by the Department of Climate Change and Energy Efficiency (DCCEE) in February 2009.
- The application of the Guidance Paper to developing activity definitions has not been consistent. A number of other industries analogous to cement manufacturing have been granted integrated activity definitions, which capture the majority of the manufacturing process. Copper and Tissue Paper manufacturing are two key examples.

Clean Energy Bill 2011

- The method for formulating activity definitions is not referred to in the Clean Energy Bill 2011 (only in the explanatory memorandum).
- The Explanatory Memorandum states that the definitions for permit allocation to Emissions-Intensive-Trade- Exposed (EITE) industries will be made by regulation and will refer to the definitions completed in the context of the Renewable Energy Target (RET) or the 2009-10 CPRS.
- The cement industry has been given an assurance by the Minister that the RET definition would not necessarily be used in the Clean Energy Future legislation.

Why is the definition so important to the Australian Cement Industry?

- If the definition only covers part of the cement manufacturing activity the industry will be highly trade exposed. No other country's cement sector will be left exposed as the Australian cement industry (including the following States that will or have introduced an emissions trading scheme):
 - **New Zealand**
 - **European Union**
 - **California**

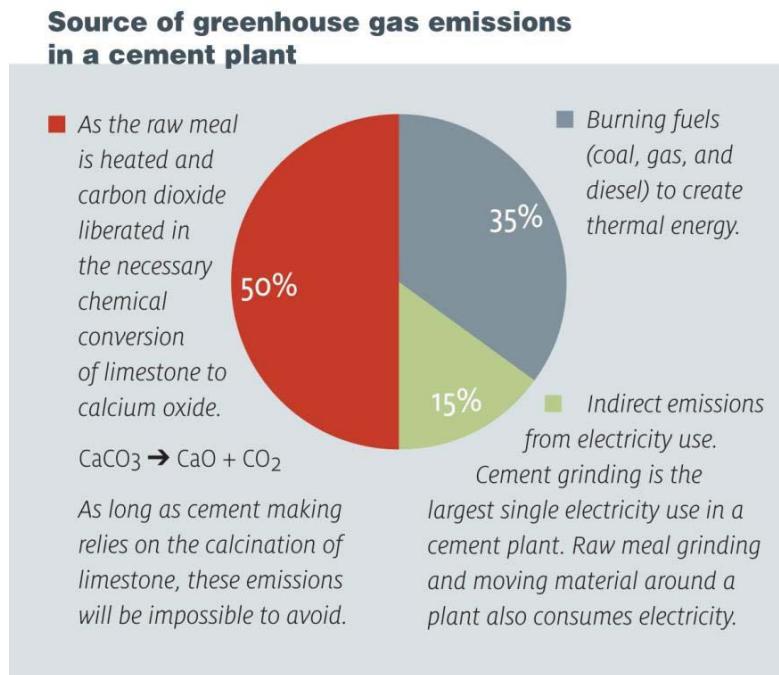
New Zealand's cement industry definition covers both clinker and cement (this will become very important as Australia changes to an ETS in 2015 with the potential to link schemes through forums such as the Australian-New Zealand Closer Economic Relations (NZCER));

The European Union has provided free permits to domestic cement companies that will protect it from the true impact of a carbon price for many years.

The California Government has halved the decay rate of free permit allocation for the cement sector (meaning that the level of support over time is higher for cement compared to all other commodities).

3. Exclusion of cement process emissions within the *Clean Energy Bill 2011*

- The cement industry becomes relatively more exposed to the carbon price over time when compared with other EITE industries as a result of the high proportion of process emissions associated with cement manufacturing (**Figure 2**).



- Process emissions cannot be avoided in the cement industry without some kind of carbon capture or possibly bio-algae technology, which is not expected to be

available until well after 2020. While other industries will have technology options available to reduce their CO₂ liability, the cement industry will not.

- Chemical process emissions for Australian cement manufacturing should be excluded in the proposed *Clean Energy Bill 2011* Alternatively, in line with the approach taken in the proposed Californian emissions trading scheme, a differential carbon productivity factor (decay rate) for cement would be an appropriate way of recognising the high proportion of process emissions associated with cement manufacture.

4. CIF and The Australian Cement Industry

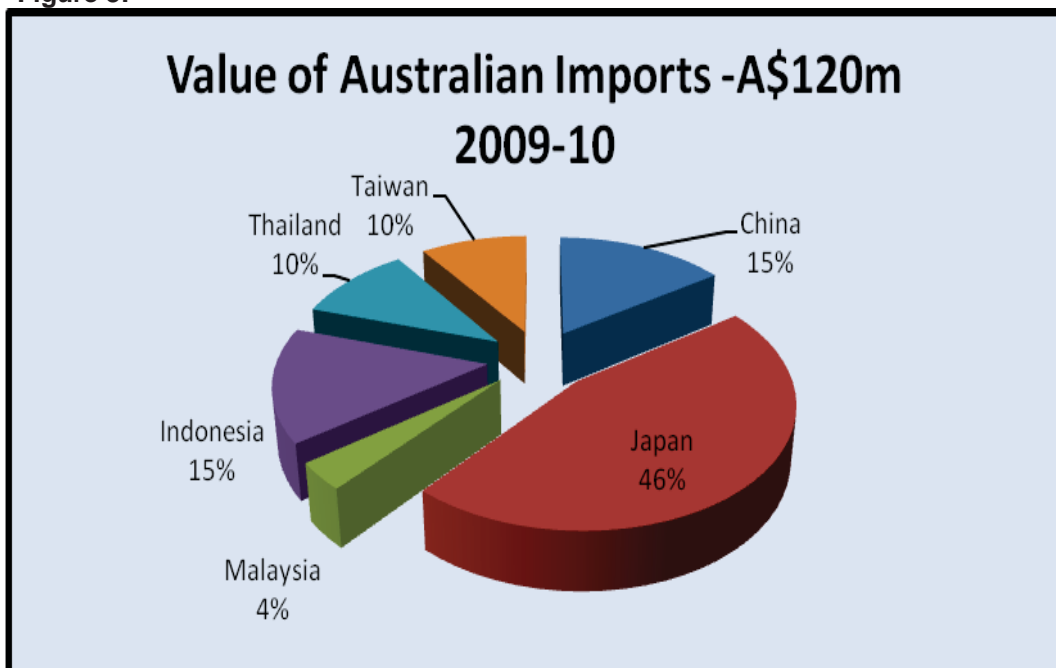
The CIF is the national body representing the Australian cement industry, and comprises the three major Australian cement producers - Adelaide Brighton Ltd, Boral Cement Ltd and Cement Australia Pty Ltd. Together these companies account for 100 per cent of integrated clinker and cement supplies in Australia. Their operations are located in every state and territory, and include eight integrated cement manufacturing facilities as well as mines to service those facilities and a national distribution network.

The industry employs over 1,800 people and produces over ten million tonnes of cementitious materials, with an annual turnover in excess of \$2.14 billion. In Australia, the industry is responsible for around 7.2 million tonnes per annum of greenhouse gas emissions.

Australian cement plants are some of the most efficient in the world. The Australian cement industry is an import competing industry with its price capped by the 'import parity price'. This is very different to other highly emissions intensive trade exposed industries (Grattan Institute 2010). The Grattan Institute suggests that few 'free permits' are required if imports also face a carbon price. However, this is not proposed in the *Clean Energy Bill 2011*.

Key competitors to Australian cement manufacturing are mainly from developing countries apart from Japan – namely China, Indonesia, Taiwan, Thailand, Philippines and Indonesia (**Figure 3**). Key competitors will be at a distinct advantage in competing with Australian cement manufacturing as they will not be subject to a carbon price. When the costs of manufacturing cement in Australia exceed the import parity price for a sustained period, integrated cement plants will close.

Figure 3:



Source: Australian Bureau of Statistics (2010)

Over 50 per cent of cement CO₂ emissions result from the chemical process necessary to change limestone into cement clinker. Every manufacturer in the world has the same chemical process emissions associated with the production of cement.

The World Business Council for Sustainable Development demonstrates that a technological solution to address cement chemical process emissions is not imminent with carbon capture and storage being the most promising. Bio-algae may also be a long term solution. Both these technologies are blue-sky solutions, a unilateral carbon price will not progress these technologies.

The high A\$ is currently placing significant upward pressure on the Australian cement industry as the price of imported cement clinker has recently reached parity. Rising energy costs (electricity and coal) and other government imposts are also placing considerable pressure on profit margins for domestic cement manufacturing. A carbon price imposed on Australian process emissions will only lead to increased imports of clinker and cement, leading to the export of jobs and emissions overseas. Global CO₂ emissions will not be reduced.

5. The Australian cement industry and action on climate change

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 have developed and maintained a verifiable emissions database extending back to 1990. Since that time the industry has maintained carbon dioxide emissions at 108% of 1990 levels while increasing production by 40% and reduced the carbon intensity of its product by 24% per tonne.

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.

From a global context the Australian cement industry, while small in size, has a high uptake of best technology (see **Figure 4**) and has remained price-competitive with our closest neighbours. Retaining this competitive position remains a critical area of importance and is potentially the most difficult challenge for the development of any national emissions scheme. The current market conditions are challenging as a result of the high Australian dollar, rising labour costs and other imposed regulations and imposts.

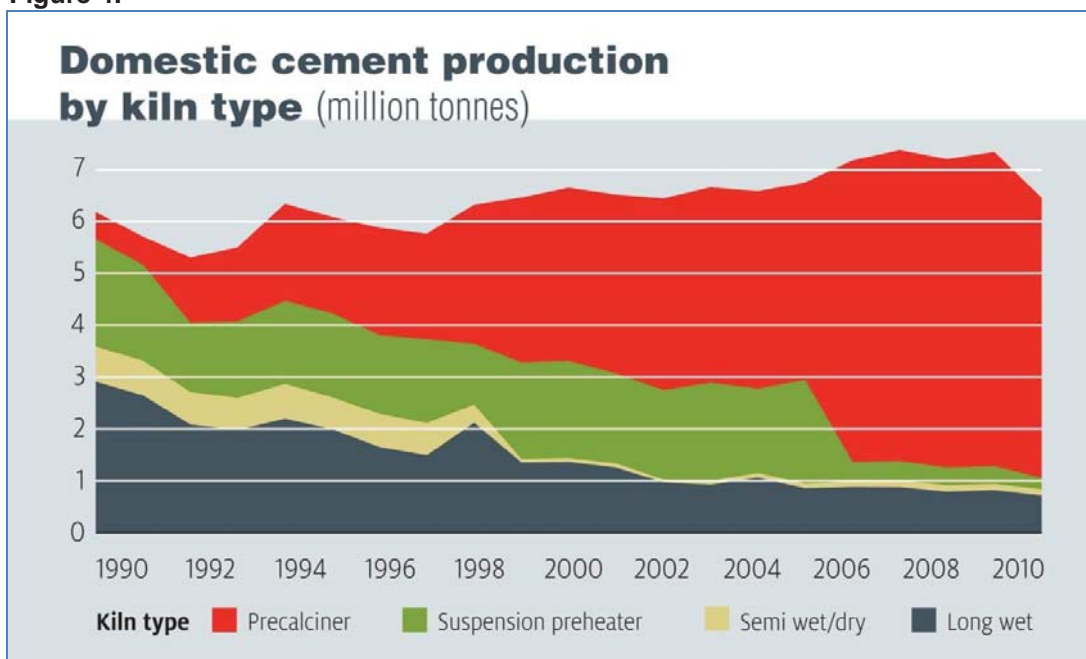
For maximum environmental and economic efficiency, Australian cement kilns must run at or near maximum capacity. It is not possible to 'turn the tap down' as cement kilns require a much higher volume of thermal fuel for a much lower rate of production, increasing both greenhouse gas emissions and costs on a per tonne of cement basis.

The need to run cement kilns at or near maximum capacity also exacerbates the risk of carbon leakage as imports only have to replace a small proportion of market share in order to ensure a kiln is no longer economically or environmentally efficient to run. Further, due to the capital intensive nature of the cement industry, foreign producers have enormous economic incentives to maintain high capacity utilisation rates and to sell any excess capacity to the Australian market at prices to cover variable costs plus transportation.

5.1 Innovation to reduce process emissions

As the majority of Australian cement plants have invested in 'state of the art' technology the opportunity to significantly reduce process emissions will not occur until there is a new technological breakthrough.

Figure 4:



Cement Industry Survey (2010)

The World Business Council for Sustainable Development predicts that innovation in carbon capture and storage is a possibility in approximately 10-15 years (demonstration plants only). CCS is the only option for dealing with cement process emissions. Unfortunately most existing Australian plants are not situated near appropriate storage sites and transportation of process emissions to a possible storage site is not a feasible option.

To ensure a future for the Australian industry over the longer term there must be a capacity to invest in unproven and advanced technologies such as oxygen arc kilns, advanced grinding techniques and algae cultivation. A carbon price mechanism needs to recognise that potential next generation lower emissions technology has a long term time horizon (see **Table 1**).

5.2 Future cement manufacturing investment

As the economy and the Australian population increase a 'new' cement kiln would normally be built to meet increased demand. As an interim measure, a small amount of imports will be purchased until investment to expand capacity can be justified. As the cement industry begins to recover from the impact of the Global Financial Crisis, expansion in cement kiln capacity should be considered.

The recent appreciation of the Australian dollar is having a significant impact on the competitiveness of domestic manufacture relative to imports. To add a permanent carbon price under the current market circumstances will not lead to investment in further kiln capacity nor a reduction in CO₂ emissions. It will simply lead to a continued increase in imports that are not as 'emissions efficient' as Australia.

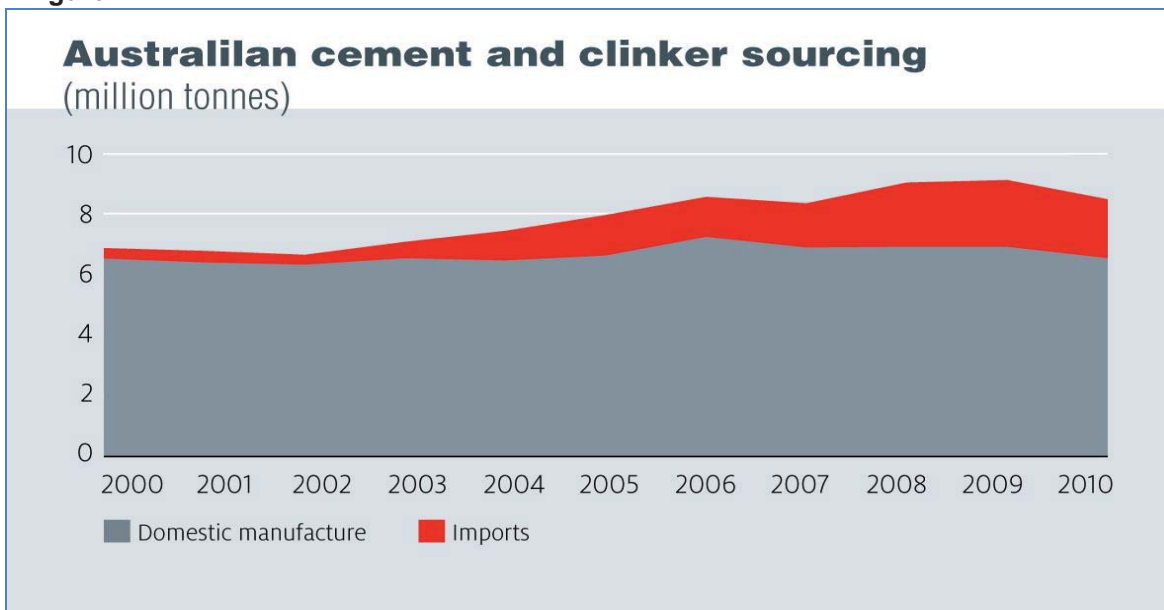
The increase in cement and clinker material currently being imported as a result of a new kiln not being built in Australia at the current time can be seen in **Figure 4**.

Table 1: Summary of Australian cement technology options for CO₂ abatement

Technology Options	Process Emission Reduction	Thermal Emission Reduction	Electricity Reduction
Existing improvements			
• Shift to pre-calciner technology		Yes	
• Shift to larger kiln sizes		Yes	
• Electrical efficiency measures			Yes
Short to medium term improvements			
• Alternative Fuels – waste utilisation / bio mass (Fuel emissions reductions)		Yes	
• Cogeneration of electricity (Fuel emission reductions)		Yes	Yes
• Currently uncommercial electrical efficiency measures			Yes
Long term improvements			
• Algae CO ₂ capture	Yes		
• Carbon Capture and Storage (Process emissions)	Yes		

Source: Cement Industry Federation (2011) Abatement options for the Australian cement industry.

Figure 4:



CIF Survey 2010

6. Other key comments that need to be addressed in the Clean Energy Future Package

Issue	Response
Objects of the Legislation	
Part 1 Section 3 - The objects infer that the <i>Clean Energy Bill 2011</i> would give full effect to Australia's international obligations.	As the legislation currently covers 65 per cent of Australia's emissions, then the scheme should only be responsible for 65 per cent of Australia's obligations. For example, why should the cement industry be required to cover agriculture emissions if they have been excluded from the legislation?
Proposed Targets	
Part 1 Section 3 (c) - Australia's target and net greenhouse emissions.	Needs to be defined.
Part 1 Section 3 (c) - Australia's commitment from 60 to 80 per cent below 2000 emission levels by 2050 and the implication that the <i>Clean Energy Bill 2011</i> will alone be used to meet this commitment.	The CIF is most concerned that there has not been any consultation with industry in setting this target. Nor has any analysis been undertaken on the potential impact this target would have on Australian industry, relative to the current commitments of other countries.
Carbon Pollution Cap	
Part 2 – coverage and default caps.	Both should be equivalent to 65% of Australia's international commitment.
Designated Joint Ventures	
Part 3 Section 77 – circumstances under which the Regulator can determine the percentage liability of participants in a JV where agreement cannot be met.	Should be defined and any decision should be reviewable.
Part 6 Section 139 – provides that the operator of a JV is jointly liable for shortfall charges not paid by other participants.	An alternative approach should be found.
Carbon Units and Auctioning	
Part 4 – Floor and ceiling prices.	CIF does not support, especially when the floor price could be set above international prices and the ceiling is ineffective in limiting the costs to the economy at a reasonable level.
Part 4 – Auctioning and deferred payment arrangements.	Due to the imposed working capital burden on scheme participants deferred payment arrangements should be available.
Part 4 – Reverse Auctions.	Due to the uncertainty created by the scheme, reverse auctions should be allowable

Issue	Response
Part 4 – Publication of Auction Sale Prices.	To ensure the market is able to be efficient, as much price information should be made publicly available, including the range of sale process at each auction, not just the average price.
Surrender of eligible units	
Part 6 Section 123 allows a regulation to be made that could make specific international units ineligible with one year of notice.	This should not be allowed to occur. Existing units at the time of regulation should remain eligible, but not new units. Investment in international units is a long term proposition and underpins investment in the developing country concerned.

Jobs and Competitiveness Program (JCP)	
Part 7 – Aims and objectives.	It is critical that the aims and objectives on trade exposure relate to industry CO ₂ carbon price reductions in competitor countries, not country wide reductions in CO ₂ emissions.
Part 7 Section 155.	More clarity is required to understand when reviews of the scheme will take place and what components of the JCP can be reviewed to ensure consistency and equity across industries. The baseline periods for activities included in the Bill should not be subject for review for at least the first five years of the Program to ensure clarity around investments decisions.
Part 7 Section 155 (2) (b).	Should relate to Clean Energy Act, not just the JCP when being reviewed. All other government imposts and their impact should also be taken into consideration when being reviewed eg RET.
Part 7 Section 156 (2) (d).	Replace 'foreign countries' with trade competitors.
Part 7 Section 2 (b) (f) (g) (h) (l).	Should be deleted – either does not make sense of irrelevant to the aims and objects of the JCP.
Climate Change Authority	
Part 22 Section 288 (1).	Should allow the CCA to recommend the abolition of other emission reduction measures and programs outside this act if impacting on the overall objects of the Act.
Part 22 Section 288 (6).	Should provide a public review and consultation process as required for a Productivity Commission Inquiry.

7. Conclusion

The cement industry is one of the most trade exposed Australian industries. Our key competitors do not face a carbon price, leaving cement manufacturers in an extremely vulnerable position.

Cement process emissions cannot change in the short or medium term as a chemical process takes place in changing limestone to clinker.

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* It should be noted that the current draft legislation does not refer to how activity definitions should be defined – only the 'commentary on provisions of the legislation' refers to the DCCEE guidance paper titled 'Assessment of activities for the purposes of the EITE program – Guidance Paper February 2009'. Updated guidance papers appear to have removed from the DCCEE website.

Example Activity Definition – Production of Cementitious Materials

For the purpose of the emissions-intensive trade-exposed (EITE) assistance program, the activity for the production of cementitious materials consist of:

- **Description:** The physical and chemical transformation of:
 - Calcium carbonate compounds (CaCO_3 , limestone) and/or other calcium containing feedstock's, and
 - Clay or other silicon dioxide (SiO_2 , silica), iron (Fe) and aluminium oxide (Al_2O_3 , alumina) feedstock's
 - That are fused together at a temperature greater than 1000°C into Portland cement clinker that consists of at least 60 per cent by mass of calcium silicates and a maximum magnesium oxide (MgO-mass content of 4.5 per cent, and/or
 - The transformation of clinker into cement through a process of blending and grinding with gypsum and other additives.
- Where:
- The outputs of this activity for the calculation of revenue are:
 - Saleable Portland cement clinker that consists of at least 60 per cent by mass of calcium silicates, and a maximum magnesium oxide (MgO) mass content of 4.5 per cent which is not subsequently transformed into saleable cement; and
 - Saleable cement, produced from the blending and grinding of the Portland cement clinker with gypsum and other additives to comply with Australian Standard AS3972.
- **Basis of allocation:**
 - Tonnes, on a dry weight basis, of:
 - Saleable Portland cement clinker that consists of at least 60 per cent by mass of calcium silicates and a maximum magnesium oxide (MgO) mass content of 4.5 per cent which is not subsequently transformed into saleable cement
 - Saleable cement produced from the subsequent blending and grinding of Portland cement clinker with gypsum and other additives, where the cement has been produced to comply with Australian Standard AS3972

Which results from carrying out the activity as described.

- **Inclusions:** For the purposes of the formal data assessment, emissions and electricity use which are to be included within the activity boundary are:
 - the direct emissions from, and electricity use of, machinery, equipment and processes which are integral to, and essential for, the physical and/or chemical transformation described in the Activity Definition, including, for example:
 - machinery used to move materials within and as part of the activity;
 - control rooms, laboratories, maintenance workshops;
 - machinery used to create non-electrical energy for use in the activity;
 - crushing, pre-homogenisation and grinding of raw materials that is contiguous with the clinker production process;
 - processing of Portland cement clinker including grinding, rolling, milling and blending processes to produce cement;

- the processing of by-products where it involves the recovery of materials for re-use within the activity or is necessary for the activity to proceed as described; and
 - Onsite processing of waste materials from the activity to comply with regulatory obligations.
 - Waste heat recovery within the activity boundary;
 - Steam consumed within the activity boundary;
 - Kiln dust production and reprocessing; and
 - Reject production where this is not recycled in the process.
- **Exclusions:** For the purpose of the formal data assessment, emissions and electricity use which are not taken to relate to the activity and must be excluded are those associated with:
 - transportation of inputs used in the activity to storage at the same location as the activity;
 - transportation of the output from the activity from storage at the same location as the activity;
 - the transportation of intermediate products between different locations where the activity is carried out;
 - complementary activities, such as packaging, head office, administrative and marketing operations, either at the same location as the activity or elsewhere;
 - emissions associated with the generation of electricity on the site where the activity is conducted;
 - extraction of raw materials; and
 - crushing of raw materials that are not contiguous with the clinker production process.

Proposed CIF changes to the Clean Energy Bill 2011

1. Addition to Part 3 Division 1 Section 19 after line 16:

(h) process emissions from clinker cement facilities;

2. Addition to Part 3 Division 2 Section 30 after (12):

Exclusion of process emissions from clinker cement facilities

(13) An emission of carbon dioxide as a result of the chemical transformation of CaCO_3 to CaO .