



**CEMENT INDUSTRY
FEDERATION**



**CEMENT INDUSTRY FEDERATION
SUBMISSION ON THE
CLIMATE CHANGE AUTHORITY
CONSULTATION PAPER:**

Updating the Authority's previous advice on
meeting the Paris Agreement

August 2019





CEMENT INDUSTRY FEDERATION

Thank you for the opportunity to comment on the Climate Change Authority (CCA) consultation paper – *Updating the Authority's previous advice on meeting the Paris Agreement*.

1. AUSTRALIA'S CEMENT INDUSTRY

The Australian cement manufacturing sector is a critical component of the domestic economy. Our products underpin major sectors of the economy such as residential and commercial construction, as well as major infrastructure such as bridges, roads, airports, pavements and dams.

In 2017-18 the Australian cement industry recorded a turnover of around \$2.4 billion dollars. Our industry employs around 1,300 people directly – mostly in regional areas of Australia as well as suburban and industrial areas of our cities – and underpins a further 5,000 jobs indirectly and many thousands more in terms of downstream concrete and aggregate production and distribution.

2. INTERNATIONAL COMPETITIVENESS – A SECTORAL APPROACH

It is critical that Australia's climate policy measures include provisions to maintain the international competitiveness of key Australian industries, such as cement manufacturing, and aim to deliver abatement at least cost to the economy.

Climate change is a global issue that requires a consistent global response. However, despite decades of negotiations, such a response has not been forthcoming. Instead the Paris Agreement allows countries to determine their own targets and actions, as well as timetables for those actions.

This 'bottoms-up' approach to the implementation of climate policy and measures, with countries moving at different paces and towards differing goals, impacts on global trade and therefore introduces key competitiveness issues for global industries such as cement manufacturing.

The cement industry is highly trade exposed as cementitious products are easily substituted for imports due to the homogeneous nature of the product.

Climate policy formulation should consider sector specific evidence to appropriately address carbon leakage and competitiveness impacts, and therefore avoid any unintended changes in current and future production.

As recommended in the CIF submission to the CCA's 2016 special review – in the absence of a global sectoral approach, a national approach could be used to capitalise on the significant opportunities exist to reduce emissions across key sectors of the economy – such as cement, steel and aluminium.

Such an approach would need to be flexible and designed to balance out competitiveness, economic and environmental concerns.

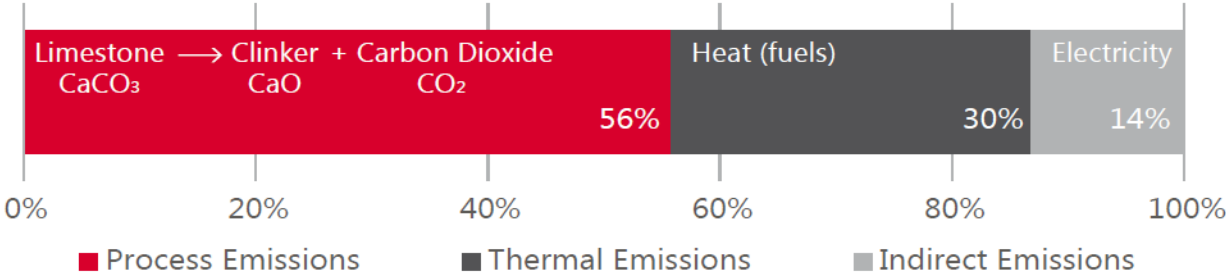
3. THE CEMENT INDUSTRY AND GREENHOUSE GAS EMISSIONS

The main source of carbon emissions from Portland cement manufacturing results from the manufacture of clinker from limestone. This chemical transformation involves the heating of limestone to generate clinker (lime) and carbon dioxide. This process is the main source of carbon dioxide emissions from cement manufacturing.

Process emissions accounted for around 56 per cent of emissions in 2017-18 - Figure 3.1.

Approximately 30 per cent of emissions resulted from the burning of fuels such as coal and gas to generate heat for the process, and the remaining 14 per cent came from the use of electricity across the facilities.

Figure 3.1: Greenhouse gas emissions profile of Australia’s cement industry in 2017-18



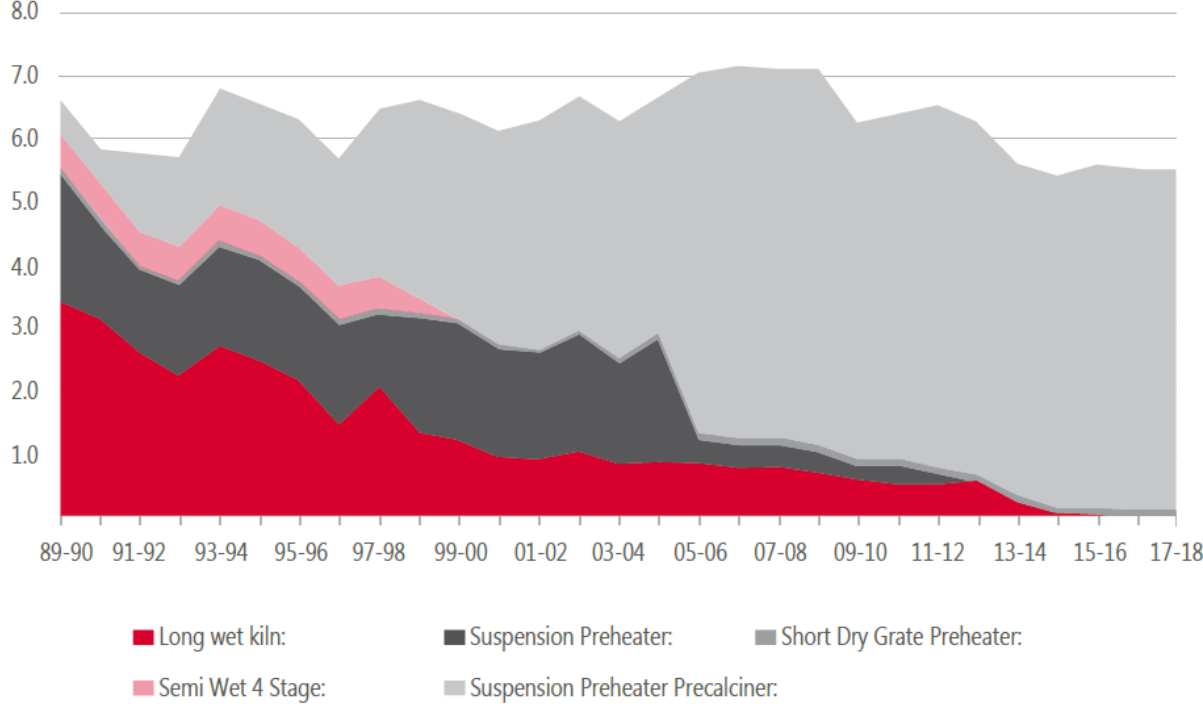
Source: CIF Survey

4. HISTORICAL EMISSIONS REDUCTION IN THE CEMENT INDUSTRY

Step change emissions reduction from technology upgrades, involving significant capital investment, have largely been implemented throughout the Australian cement industry.

Around 98 per cent of Australian clinker is now produced using highly efficient suspension preheater precalciner technology - Figure 4.1. In addition to this significant capital investment in technology over almost three decades, the industry has also continued to focus on reducing emissions through other levers, such as increasing the use of alternative fuels and raw materials, reducing the clinker content of cement, as well on energy efficiency measures.

Figure 4.1: Australian clinker production by kiln technology (million tonnes)



Source: Cement Industry Federation

5. EMISSIONS REDUCTION OPPORTUNITIES

Emission reduction opportunities for cement manufacturing include alternative fuels, clinker substitution, energy efficiency and carbon capture and storage.

The cement industry both in Australia and globally has been at the forefront of identifying actions to reduce emissions. Cement producers collaborated in 2009 with the World Business Council for Sustainable Development (WBCSD) Cement Sustainability Initiative (CSI) and the International Energy Agency (IEA) to develop the first sectoral Cement Technology Roadmap.

This Roadmap was updated in 2018 with the theme of a low-carbon transition in the cement industry and identifies four main carbon mitigation levers available to the cement sector: alternative fuels, clinker substitution, energy efficiency and carbon capture and storage.

Of these options, carbon capture and storage and reducing the clinker content in cement are expected to deliver the largest cumulative emissions reductions, followed by the increased use of alternative fuels and energy efficiency.

5.1 Carbon Capture and Storage/Use (CCSU)

Even with the most efficient processes, a proportion of the CO₂ emissions from cement production cannot be avoided.

More than half of greenhouse gas emissions from Portland cement manufacturing in Australia result from the chemical transformation of limestone to clinker. CCSU is therefore expected to play a significant role in reducing cement emissions over the longer-term.

Carbon capture, storage and utilisation (CCSU) is a process whereby carbon dioxide is captured and then transported to storage or for use. CCSU is recognised as a key technology required to deliver net zero emissions from global cement manufacturing during this century.

Cement plants are well suited to carbon capture due to the high CO₂ concentration of the flue gas which is less polluted by other environmental emissions relative to other industrial sources. There are a number of promising technologies under investigation to capture CO₂ – including a technique involving direct separation that captures pure CO₂ emissions through indirect heating of the calciner.

Investigations are also underway into possible uses for captured CO₂, including as a raw material for the process and/or as marketable building materials.

Carbon capture does have its challenges that are likely to preclude its application in the short term. Not only is it technically difficult to separate out and capture CO₂ from the process – transport infrastructure, storage and/or usage applications need to be developed.

Overall CCSU as it currently stands is likely to add significantly (25% to 100%¹) to the cost of production – an issue that will need to be addressed in order to achieve significant emissions reduction in Portland cement manufacturing.

5.2 Clinker Substitution

Supplementing energy intensive clinker with other cementitious materials (such as limestone, blast furnace slag or fly ash) has the potential to realise significant emissions reductions within our sector – without adversely impacting on the performance of the cement.

5.3 Alternative Fuels and Raw Materials (AFRs)

Increasing the use of alternative fuels and raw materials in energy intensive cement production will reduce coal, natural gas and other raw material requirements along with their associated greenhouse gas emissions.

¹ The role of cement in the 2050 low carbon economy; CEMBUREAU

There are a number of materials that can substitute for the natural resources that supply both the minerals and/or energy required for clinker and cement production. These alternative fuels and raw materials are typically by-products of other industrial processes or waste materials that would otherwise be disposed of.

Examples of the types of alternative fuels used in the Australia cement industry include demolition wood waste, carbon powders, used oils and solvents, as well spent cell liners from aluminium production.

Currently alternative fuels meet around 10 per cent of the total energy requirements of the Australian cement industry. This is less than the global average of around 16 per cent and the EU average of around 40%.

Barriers to the uptake of AFRs in Australia include transport costs, access to long-term and reliable sources of AFRs, regulatory impediments, as well as capital costs associated with required infrastructure (e.g. storage and handling systems).

5.4 Energy Efficiency

Improving energy efficiency is part of the everyday business of cement manufacturing. As large users of energy, both in the form of electricity and to produce heat, Australian clinker and cement manufacturers place a high value on managing energy as efficiently as possible.

6. CIF RESPONSE TO THE CCA'S KEY AREAS OF INVESTIGATION

6.1 Previous CCA Recommendations

What aspects of the Authority's previous recommendations remain valid and why?

What has changed since this advice was given and how should the advice be updated to account for those changes?

Industrial Sector: Enhance the safeguard mechanism	
CCA 2016 Recommendation	CIF Comments
Remove access to further baseline increases	The safeguard mechanism was amended in March 2019 in order to address issues around individual facility baselines and how the process for setting baselines could be made 'fairer and simpler', whilst also reducing compliance costs and ensuring baselines reflect the current operating environment for businesses. The CIF supports the recent changes and is engaging with the Government and the Department of Environment and Energy during this ongoing process.
Decline safeguard baselines in line with Australia's economy-wide emissions reduction commitments under the Paris Agreement.	Existing safeguard mechanism baselines are intended to accommodate business growth and allow businesses to continue normal operations. This is a critical feature of the safeguard mechanism for Australian cement manufacturers that want to grow their businesses but have limited emissions reduction opportunities due to the nature of the process. Any future consideration of declining baselines will impact on the trade competitiveness of Australian cement manufacturers in the current global policy environment. As it currently stands the safeguard mechanism is not designed to address trade competitiveness issues.
Allow safeguard facilities to meet their international obligations with Emission Reduction Fund (ERF) offsets and international credits and permits.	The CIF supports the use of domestic offsets and international units as part of a suite of measures to achieve least-cost abatement.
Lower thresholds to 25,000 t CO ₂ -e	The CIF is not opposed to lowering the safeguard mechanism threshold to 25,000 t CO ₂ -e, to distribute the costs associated with reducing emissions across the economy.

Electricity generation sector	
CCA 2016 Recommendation	CIF Comments
Implement an emissions intensity scheme or low emissions target in the electricity sector	<p>The secure, reliable and affordable supply of electricity is a key competitiveness concern for large users of energy and electricity such as Australian cement manufacturers.</p> <p>Electricity is an essential input into the cement manufacturing process, both in terms of operating essential equipment and in the grinding stage of the operation – where the calcined material (clinker) is ground with gypsum and/or other materials to produce cement.</p> <p>Any future policy should not be at the expense of electricity security, reliability and affordability. All Australian governments should ensure that climate goals, and the programs and measures designed to achieve them, do not adversely impact on the competitiveness of the Australian economy.</p>
The National Energy Guarantee was also seen as a possible way forward in the sector.	Key recommendations of the NEG remain in development and/or have been implemented.
End the Renewable Energy Target in 2030 as legislated.	<p>The Renewable Energy Target (RET) was designed to incentivise investment in intermittent, renewable sources of electricity – predominantly wind power generation – at the expense of other sources of electricity generation.</p> <p>Increased levels of renewable energy in the system, effectively subsidised by other energy users, has the effect of lowering wholesale electricity prices due to their lower marginal cost of generation (i.e. their fuel is free).</p> <p>This in turn makes it harder for traditional, baseload generators to compete in the market. This has implications for the security of the NEM in terms of both overall capacity and in terms of other services traditionally supplied by baseload generators, such as frequency control for example.</p> <p>The CIF therefore strongly supports the phasing out of the RET as legislated.</p>

Waste Sector	
CCA 2016 Recommendation	CIF Comments
Harmonise and enhance legislation	<p>Cement kilns are ideally suited to the safe recovery of energy and co-processing of a wide range of waste materials - including certain types of hazardous waste.</p> <p>The use of Alternative Fuels and Raw (AFR) materials reduces the need to extract virgin resources from the environment, conserving non-renewable resources (such as coal and gas) and assists in the management of wastes produced by other industries (e.g. fly ash from electricity production and blast furnace slag from steel production).</p> <p>The CIF remains concerned over the lack of a nationally consistent approach to waste policy - including policies targeted at recovering energy from waste materials in Australia.</p> <p>Policy frameworks on the recovery of energy from waste should not limit or exclude facilities that have a demonstrated track record for safely co-processing alternative materials for the process and/or energy recovery.</p>

Emissions reduction Fund (ERF)	
CCA 2016 Recommendation	CIF Comments
Transition away from Government to private sector purchasing of offsets under the ERF	<p>There is substantial scope for change under the ERF to ensure the fund is able to target a wider range of sectors and projects. For example, the fund has been extremely useful in targeting emissions within the land sector, however, there are very few projects included from other sectors.</p> <p>It would therefore be useful to re-evaluate the current criteria underpinning the development of methods and projects to ensure other suitable projects can be targeted in Australian manufacturing and other sectors. This may include encouraging bespoke projects with variable clearing prices and/or a formal grants scheme for large projects with either matching public and private funds or finance.</p>

Energy Efficiency	
CCA 2016 Recommendation	CIF Comments
Harmonise Commonwealth and state energy efficiency schemes or implement a National Energy Savings Scheme, and update and expand energy efficiency standards for appliances and buildings	<p>Energy is a key component of cement manufacturing in Australia, representing approximately 25-30 per cent of total costs. This includes thermal energy for the cement kiln and electricity for the cement grinding plant. As such, Australia's energy intensive cement producers are constantly focused on achieving the highest levels of energy efficiency, within the context of a wide range of business considerations, in order to maintain their competitiveness.</p> <p>The focus on voluntary (national) action and coordination across the various jurisdictions is critical from an energy intensive industry perspective. Flexible approaches to achieving energy productivity improvements, as opposed to white certificate or other mandated schemes, will be essential if energy intensive industries are to remain competitive into the future.</p> <p>In order to encourage the uptake of energy efficiency measures where there is a perceived market failure in the economy, the CIF supports the use of alternative approaches that do not impact on the overall cost of electricity in the market – such as through the use of direct subsidies and/or more targeted measures to increase awareness of energy efficiency opportunities.</p>

6.3 Achieving a net zero emissions economy in the long-term

How can the Government assist the positioning of the Australian economy to best take advantage of opportunities associated with the global transition to net zero emissions, while managing any risks? And what are these opportunities and risks?

In considering Australia's future emissions reduction policies any measures should be:

- Consistent with the Government's broader economic policy objectives to building a stronger, more productive and diverse economy;
- Trade and investment neutral to ensure Australian industry is not exposed to costs its competitors do not face;
- Wide-ranging. All sectors and jurisdictions within the Australian economy should play an active role in reducing their emissions profile;
- Utilise market-based measures wherever possible; and
- Ensure efficient and effective administrative reporting against any adopted measures.

A pragmatic coordinated approach to climate and energy policy at all levels of government will help to avoid price shocks and unintended impacts on Australia's electricity system, whilst striving to achieve Australia's climate change objectives.

The current inconsistent approaches to both climate and energy policy have the potential to create market distortions (e.g. renewable energy targets, natural gas cost and supply issues) and must be addressed.

This can be achieved through a single, national emissions reduction target and removing inconsistent, national or state-based renewable energy targets and underlying policies. The development of a coordinated approach to energy and climate policy across all Australian government jurisdictions that balances the need to provide secure, reliable and competitive electricity across the nation while striving to achieve realistic, flexible climate goals is needed.

A consistent and integrated approach to climate and energy policy across all Australian government jurisdictions will help to provide certainty and stability in the Australian electricity market and underpin the development of policies and measures to achieve Australia's climate change objectives.

Should particular regions or communities and emissions-intensive trade-exposed industries be assisted in the transition, and if so how?

As the cement industry is highly trade exposed, cementitious products can be substituted for imports due to the homogeneous nature of the product.

Climate policy formulation must consider sector specific evidence to appropriately address carbon leakage and competitiveness impacts, and therefore avoid any unintended changes in current and future production.

In the absence of a global sectoral approach, a national approach could be used to capitalise on the significant opportunities exist to reduce emissions across key sectors of the economy – such as cement, steel and aluminium.

Such an approach would need to be flexible and designed to balance out competitiveness, economic and environmental concerns.

6.4 Sectoral and Economy-wide policies

What are the barriers (regulatory and non-regulatory) to realising emissions reductions and are there any additional supporting policies, regulations or government actions that could drive emissions reductions in cost effective ways?

How should sectoral policies be linked to ensure efficient economic outcomes and to minimise the cost of abatement across the economy?

When considering Australia's emissions reduction policies care needs to be taken to avoid focussing on policies and measures to the exclusion of other, related policy areas that directly impact on Australia's ability or otherwise to meet its international obligations. Australian energy policy development is a prime example.

A fundamental disconnect currently exists between climate and energy policy at the national level that, combined with a measure of political opportunism, has subsequently led to individual state and territory action in the form of renewable-focused policies and measures. This situation has been amplified by other factors, including the availability and cost of gas, and has led to supply disruption along with the associated price impacts.

Since the CCA last provided advice (2016), Australia's energy crisis has worsened. The Australian Energy Market Operator in August 2019 issued a clear warning about the potential for wide-scale blackouts this summer and in future years.

Extraordinary and rapid changes that are occurring in the electricity market, spurred on by ambitious renewable policies and measures, are putting pressure on traditional baseload operators – some of whom have exited the market (e.g. Hazelwood, VIC; Northern, SA).

As previously stated, a consistent and integrated approach to climate and energy policy across all Australian government jurisdictions will help to provide certainty and stability in the Australian

electricity market and underpin the development of policies and measures to achieve Australia's climate change objectives.

Should changes be made to the Emissions Reduction Fund (ERF) to explicitly target multiple benefits (such as environmental outcomes) as well as abatement outcomes?

Changes should be considered under the ERF to encourage the increased participation of industrial abatement projects.

The majority (65% in terms of abatement) of contracted projects under the ERF have come from the agriculture sector, with relatively few projects (2%) from the industrial fugitives sector. This is largely due to the design of the Facilities Method under which industrial facilities are most likely to consider developing an ERF project.

The CIF made the following comments in July 2019 in response to the Emissions Reduction Assurance Committee Consultation Paper Review of the Carbon Credits (Carbon Farming Initiative-Facilities) Methodology Determination.

- Applications under the Facilities Method in general may be limited by the fact that large projects are, by their nature, relatively scarce. The consideration of any major expansion must weigh up many important factors, all of which contribute to a final investment decision.
- Consideration should be given to reviewing the requirement for a statement of activity intent with the aim of aligning the language and intent with that found in the additionality test of the offsets integrity standards. This would require changes to the Methodology Determination and to the Statement of Activity Intent form provide by the Clean Energy Regulator.
- The current approach that uses grid average emissions intensity at the time of project declaration as proxy over the crediting period should be retained. This method provides clarity and certainty when calculating abatement over the period.
- The existing method for setting the baseline – using the lowest annual emissions intensity of the facility over four to six years of historical NGERs data – may not capture routine events such as shutdowns and therefore is unlikely to be representative of the business as usual operating range.
- Large, capital intensive projects resulting in emissions reduction are likely to have payback periods longer than the existing crediting period of seven years and should be credited as such. Issues around the assumptions and considerations underpinning abatement calculations would need to be addressed under such an approach.

6.5 International Context

What role should international units have in Australia's response to climate change, and how should risks around availability, cost and quality be managed?

The CIF supports the use of domestic offsets and international units as part of a suite of measures to achieve least-cost abatement. To facilitate this appropriate linkage arrangements would need to be put in place with international markets in order to maintain the integrity of Australia's domestic policy.

Provided environmental integrity standards are met there should be no other limitations on the use of international units.