

Cement Industry Federation

The Cement Industry Federation (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 production in Australia.

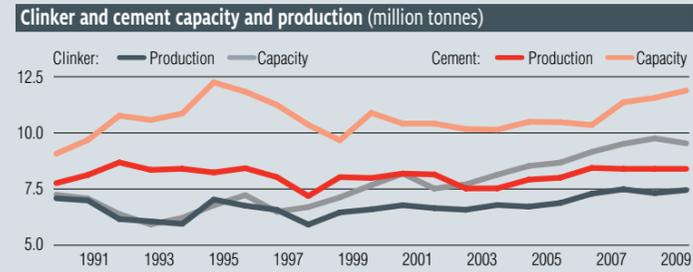
CIF aims to promote and sustain a world-class, internationally competitive Australian cement industry, positioned to take advantage of emerging market opportunities, and endorsed by a community licence to operate.



Supply situation

Cement manufacturing is a domestically focused industry. Imports have historically been small compared with domestic supply and are used to bridge the gap between domestic supply and demand.

Demand for cementitious materials in Australia is over 10 million tonnes. Under normal circumstances when there is sufficient growth in demand, new domestic capacity would be built to replace imports.



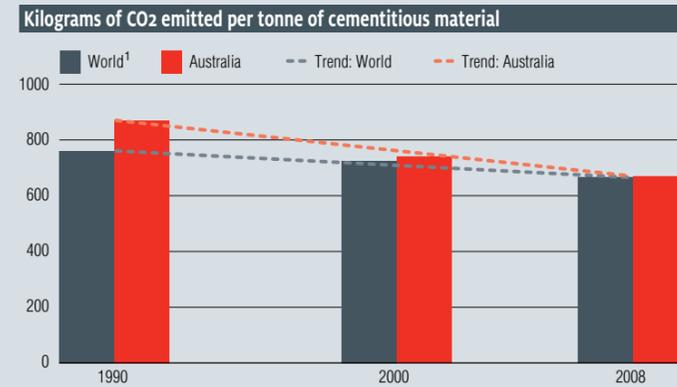
With an appropriate regulatory environment, that is internationally comparable, Australia's cement industry should continue to competitively supply domestic needs while improving environmental performance and sustainability.

Since 1990 the industry has achieved, per tonne of cement, a 35% reduction in fuel used, 15% reduction in power used and 23% reduction in CO₂ emissions.

1 'World' statistics sourced from World Business Council for Sustainable Development, Cement CO₂ and Energy Database, www.wbcscement.org. The database covers 900 cement production facilities, owned by 46 companies, representing 30% of global cement production.

Key achievements

The environmental performance of Australia's cement industry is at world's best practice on many measures.



These achievements have been made through investments in best available technology, use of alternative fuels and raw materials and use of supplementary cementitious materials.



Cement extenders:
To increase the use of cement extenders, the market must be educated to accept them.

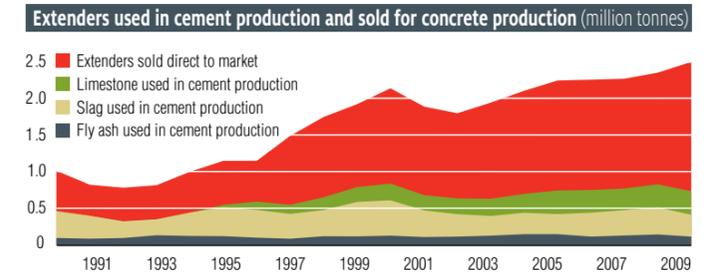
Alternative fuels and raw materials:
Effective implementation of COAG's National Waste Policy will make the utilisation of more alternative fuels possible by reducing regulatory barriers.

Challenges and opportunities

Immediate

Opportunities for improved environmental performance include the greater use of supplementary cementitious materials or cement extenders, as well as the greater use of alternative fuels and raw materials.

It is technically possible to make further gains in these areas as the barriers to greater use of cement extenders, alternative fuels and raw materials are often of a regulatory nature, or the result of construction practices.



Alternative fuel use as a percentage of total thermal energy use



Medium to longer term

To move ahead of the world on environmental performance, Australia must pioneer new technologies and non-traditional methodologies of manufacturing. The cogeneration of electricity with cement manufacturing, the creation of biofuel from algae and the use of energy efficient grinding techniques may provide some of the medium-term opportunities.

Longer term technology options may include the manufacturing of new substances with cementitious qualities that do not require calcination or to safely capture and store the carbon dioxide released.

Cement is a critical commodity for the Australian economy

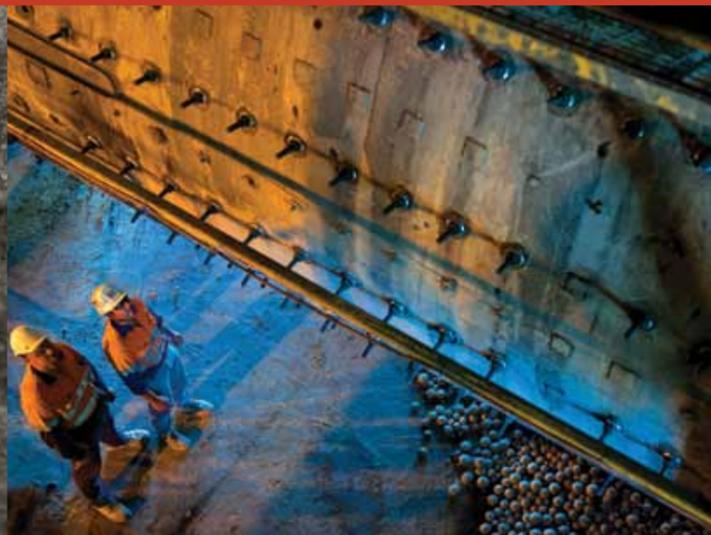
Cement is the glue that binds aggregates together to form concrete, one of the key construction materials available today.

Twice as much concrete is used in construction as all other building materials combined. The pre-mixed concrete industry consumes the greatest volumes of cement for applications including concrete slabs and foundations for buildings, as well as for large infrastructure including roads, bridges and reservoirs. Concrete is versatile in form and can be easily shaped and coloured.

Growth in demand for cement is closely linked to Australia's economic growth, providing long term stability for investment and employment. Cement manufacturing and distribution provide jobs and investment in regional Australia as well as the suburban and industrial areas of our cities. Security of supply should be a goal supported by all levels of government as well as the industry's employers and employees.

New grinding systems

A trial of a new sonic grinder² has been undertaken at Cement Australia's Bulwer Island cement grinding facility. This grinding system could lead to huge gains in energy efficiency. This technology is Australian made and while the first trial was informative, further work will be needed to ensure this technology can produce cement of a suitable quality.



Solvent-based fuels

Geocycle Australia² (a subsidiary company of Cement Australia) is working to utilise the thicker heavy sludges, currently being sent to landfill, as an alternative fuel for cement kilns and at the same time, utilise the steel drums used to transport the sludge to prevent the need to send them to landfill.



2 The sonic grinder, sewage sludge and Geocycle Australia projects received funding from the Australian Government as part of the Asia-Pacific Partnership on Clean Development and Climate.



Sewage sludge as an alternative fuel

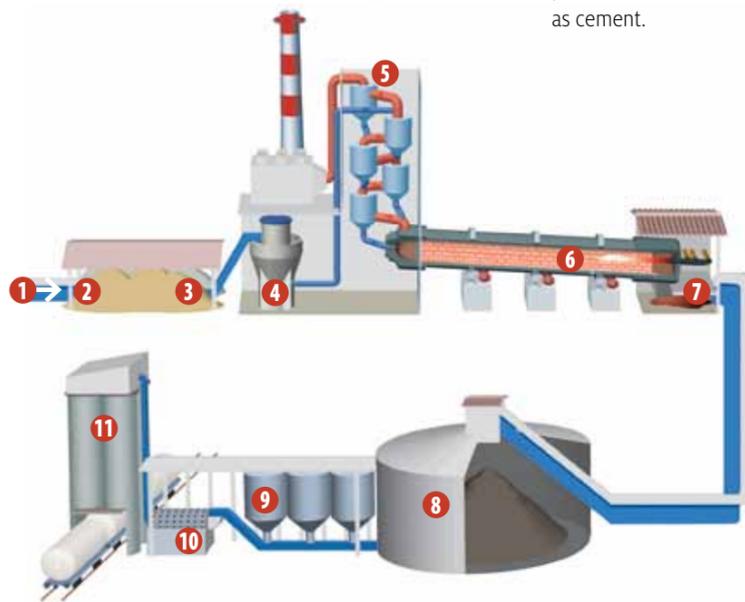
Sewage sludge² has the capacity to replace fossil fuel to fire a cement kiln while significantly reducing CO₂ emissions. Melbourne Water have stored their dry sewage sludge for many years as they have been unable to use it as fertiliser due to the presence of mercury in the sludge as a result of trade waste having been allowed into the Melbourne sewerage system over many years.

Boral Cement is working with Melbourne Water on an Asia-Pacific Partnership project which may lead to the adoption of technology that will remove mercury from cement kiln emissions to make the use of the sewage sludge as a kiln fuel possible.

How cement is made

Cement is a man-made powder that, when mixed with water and aggregates, produces concrete. The cement making process can be divided into three steps:

- raw materials are mined and ground into a raw meal ready to feed into the kiln
- clinker is made in the kiln at temperatures of 1450°C
- clinker is ground with other minerals to produce the grey powder we know as cement.



- 1 Raw material extraction
- 2 Crushing
- 3 Prehomogenization
- 4 Grinding
- 5 Preheating
- 6 Rotary kiln
- 7 Cooler
- 8 Clinker storage
- 9 Additions
- 10 Cement grinding
- 11 Cement silo

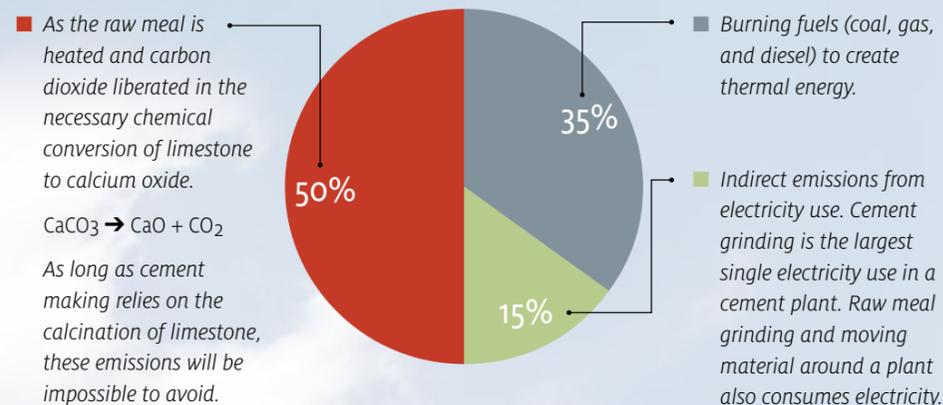
Cement facts

- Cement is the glue that binds aggregates together to form concrete, one of the key construction materials available today.
- By weight, concrete is the most consumed product on earth after water.
- Prior to the 2008 global financial crisis, annual Australian demand for cementitious materials was over 10 million tonnes.
- Growth in demand for cement is closely linked to Australia's economic growth and standard of living.
- Since 1990, per tonne of cement, the industry has achieved a 35% reduction in fuel used, 15% reduction in power used and 23% reduction in CO₂ emissions.
- Australia's immediate opportunities to make further gains on environmental performance include the greater utilisation of cement extenders and alternative fuels.
- Cement production is capital intensive.
- Fixed costs are a high percentage of total costs.
- Climate policies must address trade implications in order to avoid carbon leakage as Australian demand could easily be met by kiln capacity in the Asia-Pacific region.
- Over the last 15 years domestic cement prices have followed the import parity price.
- The cement industry is emissions-intensive and trade-exposed.

after water,
concrete is
the most
consumed
material
on earth ...
cement is
the 'glue'
that holds
it together

WORLD BUSINESS COUNCIL
FOR SUSTAINABLE
DEVELOPMENT

Source of greenhouse gas emissions in a cement plant



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**CEMENT INDUSTRY
FEDERATION**