

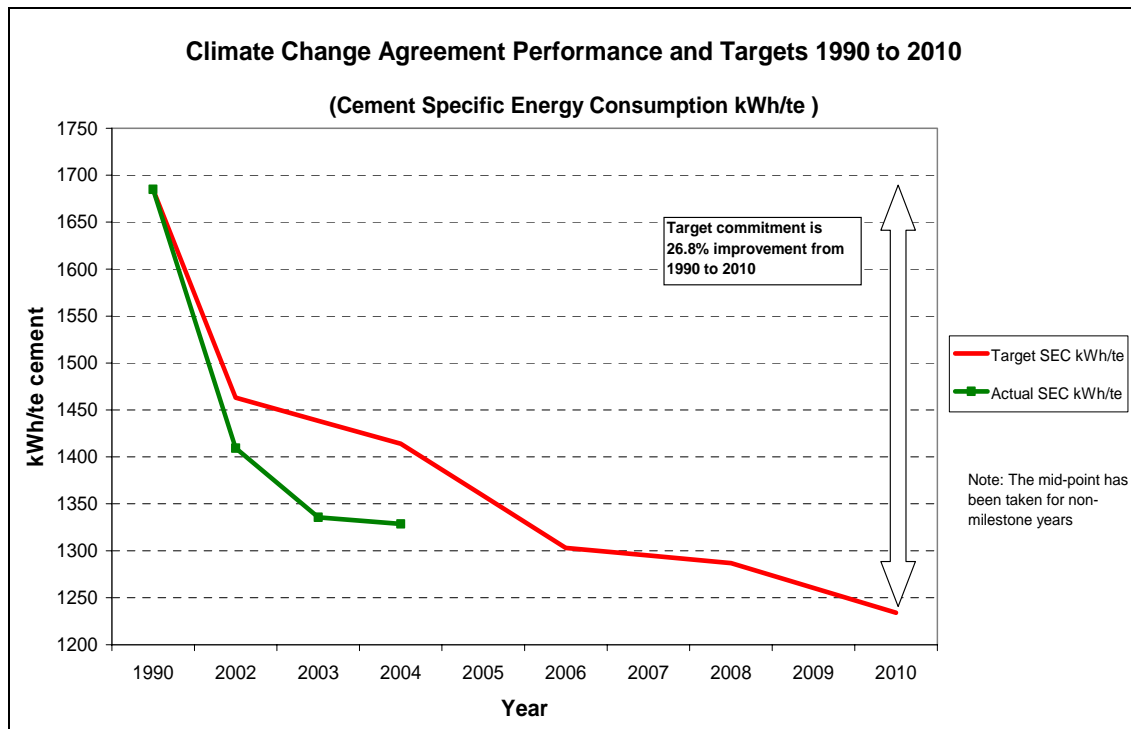
The UK cement industry recognises the importance of climate change and that it can contribute towards the government's 60% reduction target for CO₂ emissions by 2050. There are two key ways in which the cement industry can help:

1. Reduce direct emissions from cement kilns in addition to related activities such as transport, and indirect emissions from electricity use.
2. Work with the design and construction industry to promote low-carbon long-life dwellings, offices and other buildings that can adapt to a changing climate through the effective use of cement and concrete.

This two part approach to our carbon strategy will ensure that the full life-cycle of cement and the products produced from cement are taken fully into CO₂ accounting. While we plan three phases of action many of the steps taken in the short and medium terms will act as building blocks to achieve our long term goals:

Short-term (up to 2010):

1. Emissions reduction: This phase is underway and builds upon the commitments in place under current investment and regulatory dynamics. During this phase the industry will have invested over £350M (between 1997 and 2010) in new technologies which will yield the following improvement in energy efficiency and consequential reductions in CO₂ emissions from the UK Climate Change Agreements.



Other short-term actions will include:

- Maximising the use of waste as fuels, avoiding emissions from landfill and incineration and contributing to the minimisation of non-renewable fossil fuel resources. The industry target is to grow our alternative fuel use from 6% in 1998 to 15% in 2010.
 - Producing cements that satisfy the requirements of our customers whilst minimizing total manufacturing energy input for a given performance level. This will occur, for example, with the use of by-product hydraulic binders such as pulverised fuel ash and ground granulated blast furnace slag and by growing the industry use of these alternative raw materials from 1.7% in 1998 to 8% in 2010.
2. Design and construction: Research into carbon capture solutions and modelling low energy design solutions potentially hold the key to a more sustainable cement industry. The BCA will work with government to maximise the potential benefits from the use of cement and concrete in construction and help deliver its contribution to sustainable communities and sustainable development. In the

Medium-term (2010 to 2030),

1. Emissions reduction: CO₂ reduction targets will be reviewed further to reflect additional reductions that could be achieved through improving kiln efficiency and replacing or upgrading to the most modern and efficient standards.

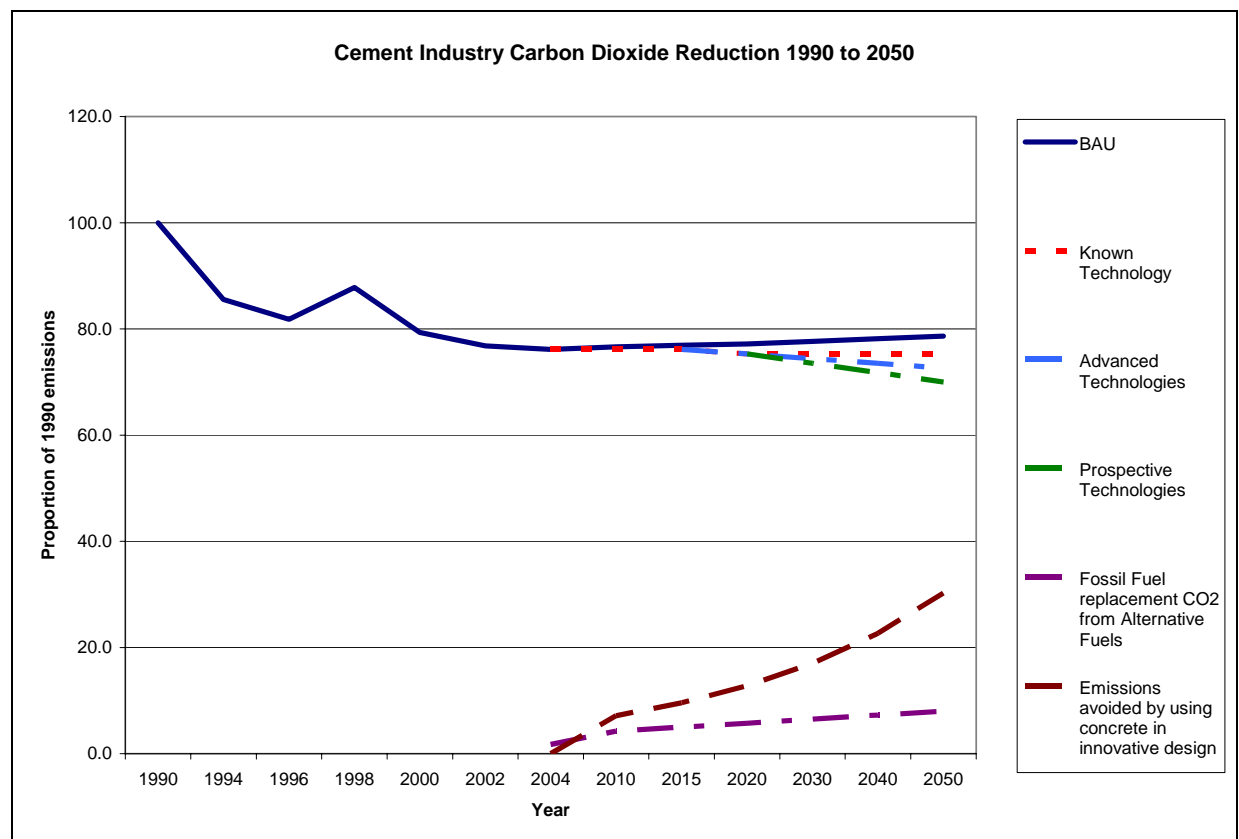
Other medium-term actions will also include:

- Encouraging least-cost emission reductions through emissions trading, and carbon dioxide reduction projects under the Kyoto Protocol's Joint Implementation and the Clean Development Mechanisms via cement company parent companies.
 - Measuring and reducing indirect emissions through efficient use of electricity and external transport emissions by efficient use of the vehicle fleets and selection of energy efficient equipment.
 - Measuring and maximising the effects of concrete re-carbonation
 - Maximising the use of renewable biomass fuels
2. Design and construction: Building on research carried out in the short term programme, pilot new construction solutions for faster, cleaner and low-energy design solutions, bringing modern methods of construction into use.

In the **long term** (2030 to 2050):

1. Emissions reduction: every opportunity will be explored to participate in industry and Government initiated research & development. Information and insights gained in the short and medium term programmes will help shape delivery on the long term CO₂ reduction horizons. These areas will include:
 - Innovative methods to reduce carbon dioxide emissions from the cement manufacturing process, such as, the use of non-limestone based binders;
 - Assessing the benefits of self generation of electricity and the production of cement and electrical energy using/utilising hybrid cement-energy facilities.
 - Investigate the extent to which CO₂ capture and sequestration is applicable to the cement industry

Success will depend greatly upon industry/government research and policies that will determine the amount of CO₂ savings in the long-term; these can be illustrated in the following chart:





2. Design and construction: having completed the research and pilot programmes in the short and medium term, we see the long term strategy further developing low energy and modern methods of construction where carbon dioxide accounting occurs for the whole life of a structure through its construction and use phases.

Our vision is that by 2050, the industry will be:

- A low energy using producer of an essential raw material by increasing the use of recovered and recycled materials and maximising the use of locally sourced raw materials.
- Assisting in the provision of design and construction solutions that maximise the potential of our essential construction materials so that they become the choice for sustainable construction in the face of climate change.

Many of these scientific issues involve cutting edge research and technology and thus will take time to complete. Nevertheless, the cement industry is committed to making a positive and valuable contribution to mitigating climate change and we will, in our annual reviews of this strategy, ensure that it aligns with the ambitions of national climate change goals and provide quantifiable targets where possible.

British Cement Association

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