

MPA Cement

Sustainable Development Report 2012





Foreword

Last year I introduced our first sustainable development report for the UK cement industry. This marked a progression from our traditional annual performance reports against specific environmental targets agreed with the Environment Agency (EA). While this report continues to provide key environmental performance results, we now move towards setting out our broader sustainable development aspirations not only in our manufacturing processes but also in how cement, as a product, can help contribute to a more sustainable environment, economy and society.

Cement, a vital ingredient in concrete, plays an unsung but key role in our country's economic and social development. Concrete is the most widely used man made substance in the world. It builds our homes, schools, hospitals, bridges, road, railways and much more. It underpins the £120 billion construction industry and contributes towards the 2.5million jobs in the industries which MPA members supply. And as the government's economic recovery plans, based on building our way to economic growth, begin to be delivered it will be cement and concrete that form the foundations for much needed sustained economic activity and employment. Nowhere will this be more important than in the transition to a low carbon economy. New electricity generating capacity, be it new nuclear, gas or coal fired power stations or off-shore wind will all require a reliable, quality assured and environmentally responsibly produced supply of cement. MPA Cement's member companies stand ready to meet this demand with domestically produced products from local and responsibly sourced materials.

2012 saw MPA Cement members focusing on how they will meet the expected demand for sustainably produced cement between now and 2050. This work culminated in the world's first national cement industry greenhouse gas reduction strategy being published early in 2013. It sets an ambitious vision for the supply of this essential material whilst cutting carbon emissions by 81% by 2050, over the Kyoto baseline year of 1990. Full details can be found at www.cementindustry.co.uk.

I am immensely proud that MPA Cement and its member companies have taken this world leading initiative and I would like to thank everyone involved for their vision and courage. Our pioneering work has been taken up by our European cement industry trade association, CEMBUREAU, who has recently published its own 2050 Roadmap which can be viewed at www.cembureau.eu

We will continue to work closely with our members and other stakeholders to help deliver on these bold commitments at both UK and EU levels and will report annually against progress.

Pal Chana
Executive Director

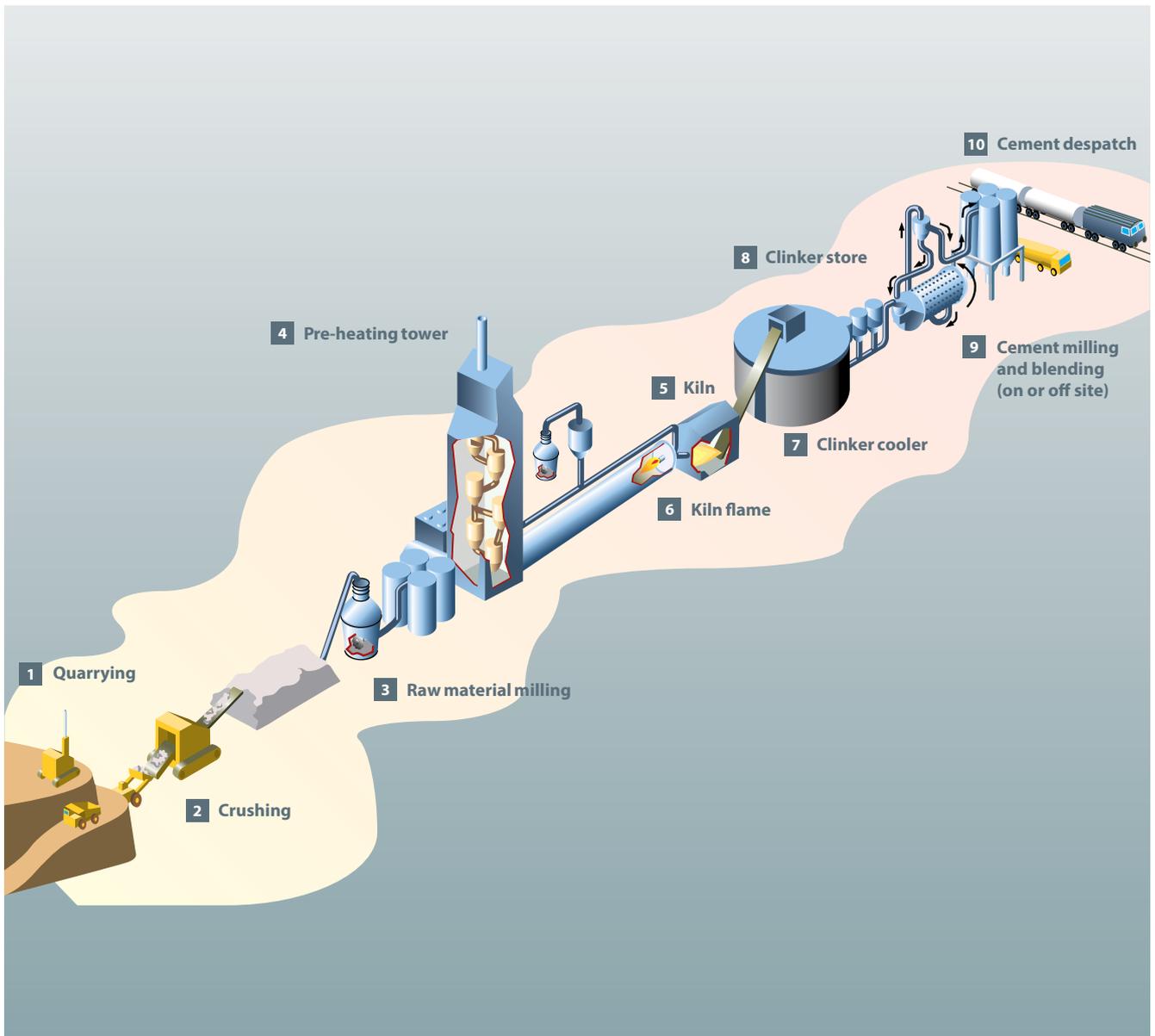
Front cover: Four-storey high concrete walls frame the stunning main entrance to Central St Martins College of Art and Design in Kings Cross, London

Sustainable cement production – past, present and future

Cement manufacturing is a major industrial process that brings with it unavoidable emissions to air and a physical footprint on our natural environment. Yet as a key ingredient in concrete, the most widely used

man made substance on the planet, which it would be difficult to live without.

The illustration below sets out the key stages in the cement manufacturing process:



The cement making process

Sustainable cement production – past, present and future

The industry not only met all of its targets set out in the Sector Plan; it did so a number of years early in all cases.

MPA Cement members are, and always have been, acutely aware of their responsibilities towards the environment and their neighbours. In 2005 the British Cement Association (a predecessor to the MPA) initiated an historic Sector Plan agreement with the EA. This set highly demanding targets for a range of key environmental measures and community relations objectives to 2010 against which the industry reported publicly on an annual basis. This led to the development of our annual Performance Reports which can be accessed on our website: www.cementindustry.co.uk. The industry not only met all of its targets set out in the Sector Plan; it did so a number of years earlier than planned in all cases. This has transformed the industry's environmental footprint and considerably enhanced community relations.

The step changes that were seen in the industry's environmental performance over

the period of the Sector Plan have taken us to the boundaries of what is technically feasible and, as expected, we are now seeing a levelling out of progress. Nevertheless, the industry has now agreed a new Sector Plan with the Environment Agency (EA) which is broader in terms of its reach within the minerals sector and which aligns to the latest EA corporate strategy objectives.

The UK cement industry has not limited itself to domestic commitments or European legislative requirements in terms of its sustainable development goals. MPA Cement members are fully committed to the carbon reduction goals set out by the World Business Council for Sustainable Development's Cement Sustainability Initiative (WBCSD CSI), details of which can be found at www.wbcscement.org. WBCSD CSI have produced their own Greenhouse Gas Reduction Strategy to 2050; a world first for a global manufacturing sector.



Managing our physical footprint

MPA members, including the cement sector, have between them delivered 5000 hectares of priority habitats through the restoration of quarries.

MPA Cement members recognise their duty to protect and enhance the natural environment. UK cement producers are committed to the MPA Biodiversity Strategy which is based on seven commitments:

- 1.** To extend our knowledge of the wildlife on member sites – *MPA Collects information on habitats that have been created and new ones that are planned. We develop case studies and recognise outstanding achievements through our Biodiversity Awards scheme.*
- 2.** To share best practice between members – *Based on our case studies, we hold regular Biodiversity Exchanges and these are brought together at our Biodiversity Awards event.*
- 3.** Develop partnerships with other organisations – *MPA works closely with Nature After Minerals (RSPB), and has signed Memorandums of Understanding with Bumblebee Conservation Trust and the Freshwater Habitats Trust to exchange information and advice.*
- 4.** Celebrate successes – *MPA members, including the cement sector, have delivered 5,000 hectares of priority habitats through the restoration of quarries – the equivalent of at least five 'Richmond Parks' and a further 5,000 hectares are planned.*
- 5.** Understand our contribution to delivery of biodiversity targets – *For too long the minerals industry has hidden its light under a bushel, but we are building a new network of restored quarries to form a National Nature Park accessible to the public online. Consisting of 50 sites to date, MPA plans to double this over the next two years to add a whole new valuable asset to the country's rich biodiversity.*
- 6.** Increase our influence – *MPA is fully engaged in the policy development process to ensure we maximise our contribution to the national biodiversity strategy, including biodiversity offsetting.*
- 7.** Promote biodiversity through our assets – *MPA's National Nature Park will stand as a proud exemplar of the work our members are doing to enhance and diversify our nation's wildlife habitats.*

All of these actions are relevant to cement sites as well as aggregate and industrial minerals sites. However, we will look at how we can separate out data specific for cement sites for future reporting.

Our responsibility to biodiversity does not stop at our borders. Through our European cement industry trade association, CEMBUREAU, an EU wide biodiversity strategy is being developed to help member state Governments to reach their biodiversity ambitions. We will use our experience here in the UK to assist our European colleagues; for example old cement quarries can be used to provide diverse and rich habitats for flora and fauna and where appropriate and safe can provide community recreational areas.



Protecting our most valuable asset – our people

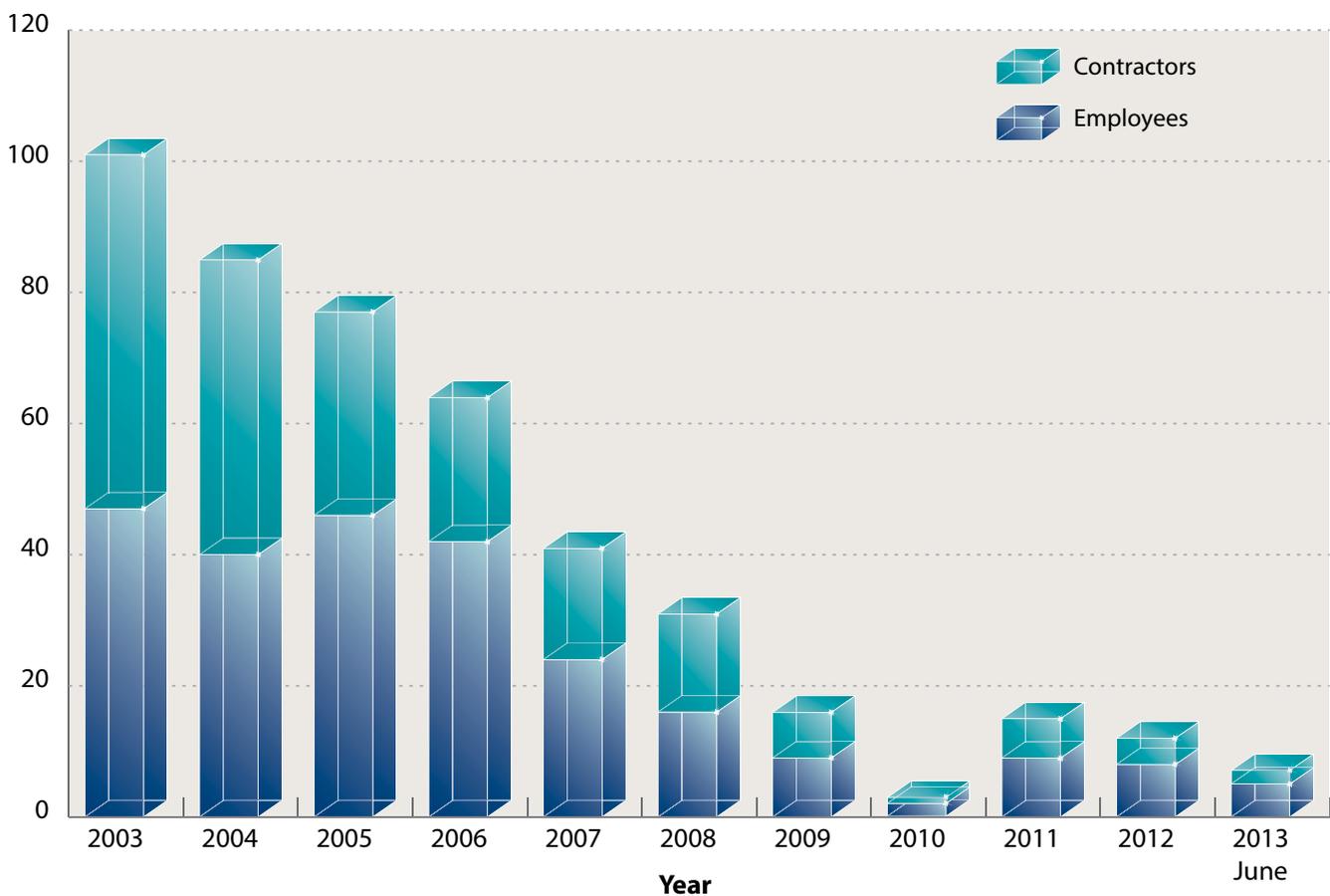
“Zero Harm” is the overriding health and safety priority for MPA Cement and its safety targets are to

- Halve the 2013 rate of lost time injuries by the end of 2018 for employees and;

- Halve the 2009 number of lost time injuries by the end of 2014 for contractors.

Actual performance has been as follows.

MPA Cement Lost Time Injuries



COMMUNICATION AND SHARING

- Designers, scaffolders, refractory specialists, plant engineers and managers, and safety specialists participated in a workshop with the aim of identifying best practice during the maintenance of pre-heater towers. This has been published in a guidance note and a new safety net, designed to

protect workers in the pre-heater tower, has been rapidly adopted.

- Details of incidents and near hits are discussed so that the learning points can be adopted across the MPA Cement membership. Details of international incidents are also being collected and shared. The aim is to reduce the number of *‘repeat’* incidents.

Protecting our most valuable asset – our people

MPA Cement is fully committed to all of MPA's H&S initiatives to achieve zero harm. The key initiatives are listed below:

■ **Safer by Competence:** the ambitious campaign to deliver demonstrable competence across the sector. This comprises a series of targets, for employees and contractors, to meet National Occupational Standards relevant to job function.

■ **Safer by Design:** which comprises of voluntary guidance to address the design vacuum that exists between many manufacturers and users of heavy mobile plant.

■ **Safer by Sharing:** MPA brokers expert mentoring and, furthermore, addresses a wide variety of operational audiences through the series of 'Safer by Sharing' mini seminars. Events in 2012 covered Contractor, Haulier, Mobile Plant and Respirable Crystalline Silica safety. MPA Cement members also provided advice on haulier safety to other industry sectors.

■ **Safer by Partnership:** focusing on contractor safety, this MPA initiative launched in 2012, aims to reduce the number of contractor safety incidents. A number of open forums were held with contractors to identify priorities and this has resulted in a Contractor Safety Charter, the PICS Contractor Database and a number of other initiatives.

■ **Stay Safe and Cycle Safe campaigns:** Looking beyond safety of employees and contractors to the general public, MPA Cement is also part of the *Stay Safe* and *Cycle Safe* campaigns. *Stay Safe* operates every year and aims to raise awareness amongst younger children, teenagers, parents, teachers and youth workers about the dangers of entering quarries uninvited and unsupervised.

MPA's *Cycle Safe* campaign aims to prevent collisions between cyclists and Large Goods Vehicles (LGVs) by raising awareness on both sides of how to cycle and drive safely.



Engaging our communities



COMMUNITY RELATIONS

The UK cement industry is principally rurally based and our communities are extremely important to us: they are not only our neighbours, but in many instances they are our co-workers and colleagues.

The UK cement industry employs approximately 2,000 people directly and 15,000 indirectly. The jobs that this industry sustains make a major contribution to local economies but in addition each cement plant has its own community engagement programme through which it invests in local activities and people directly. A few examples are:

Cemex

With its location close to the centre of the town, the CEMEX Rugby cement plant has a particular need to engage positively with the local community. Amongst a myriad of social, educational and charitable initiatives the company supports, it has for the last seven years also taken part in the national Heritage Open Days scheme supported by English Heritage. Over this time many hundreds of visitors have gained a particular understanding of the history and industrial heritage of cement manufacturing in and around the town over the centuries. The high point of these visits has been, quite literally, the views from the pre-heater tower over the plant site, Rugby town and most of Warwickshire.

Hanson

Open Door is a community newsletter produced at Hanson UK's three cement plants – Padeswood in Flintshire, Ketton in Rutland and Ribblesdale in Lancashire. The newsletters are published bi-annually and contain a range of news and information for local residents including an update from the plant manager, articles on site developments and investments and features on the people who work at the sites. They also provide contact details for site staff, who are briefed to deal with any issues that may arise. The newsletters are delivered to homes and businesses within a set radius of the plants.

Hope Construction Materials

At Hope Construction Materials' cement plant in the Hope Valley, Derbyshire, the company has extended its long-standing relationship with the local community in a variety of ways. For example, right next to the works on carefully restored former quarry land, Hope has continued to develop its very own community social and leisure club. The Earles Club is able to offer a range of social activities including fitness classes, bowling and fishing, while the Hope Golf Club offers a high quality 10-hole course and clubhouse. Anyone in the community can join either Club and Hope Construction Materials continues to upgrade and develop the facilities.

Lafarge Tarmac

Lafarge Tarmac's Caudon Plant in Staffordshire prides itself on being central to the local community. The Caudon Plant employs around 150 people with most employees living within 5 miles of the Plant. The Plant contributes indirectly around £8.5 million to the local economy each year, through salaries, rates and spending with local suppliers. Caudon has an active community liaison committee where members of the local councils, neighbours and other community groups can discuss any issues connected to the Plant. In the last 12 months, the Plant has supported many local community causes with small financial or 'in-kind' donations.

To ensure that the voice of local people is heard, each local operation has its own community liaison group which meets on a regular basis to discuss issues of concern. Local newsletters and open days keep people up to date and offer an opportunity for everyone to have a say.

Our neighbours want to know that we are operating our factories in an environmentally responsible way and so all 19 of our cement production sites are accredited to either ISO 14001 or EMAS: an external stamp of approval that our neighbours can take comfort in.

Our members are committed to maintaining excellent relations with their local communities.

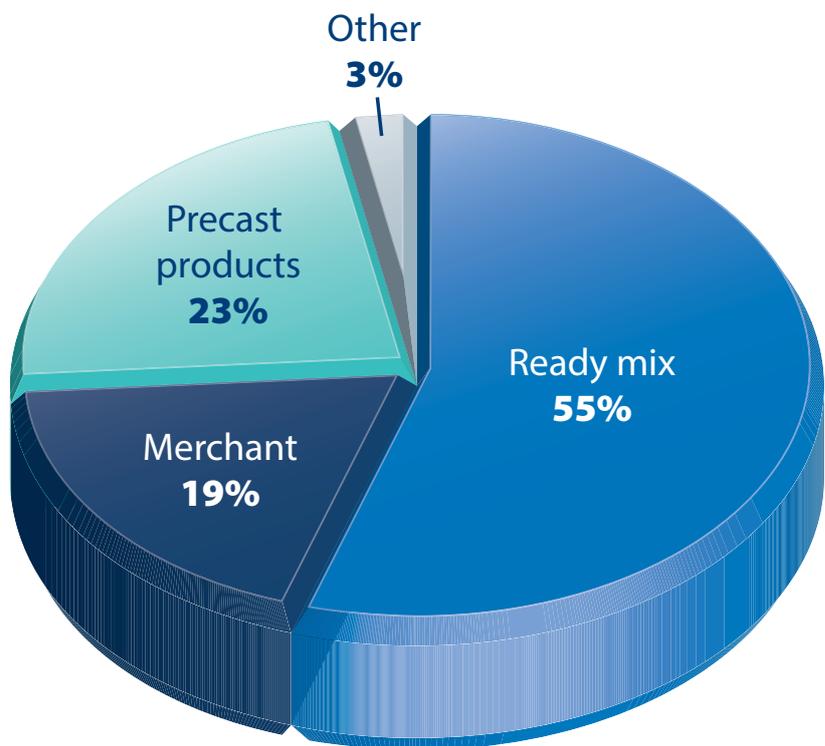
Where cement is used



In 2012 8,900,000 tonnes of cement were sold in Great Britain. Based on the sales of home produced cement 55% went to ready-mixed concrete producers, 23% to precast

concrete products, 19% to merchants e.g. packed cement and 3% went to other uses, such as soil stabilisation, as shown in the following pie chart.

2012 Cement Channel of Sale



RESPONSIBLE SOURCING

The cement sector takes responsible sourcing seriously and each year all MPA Cement members gain third party certification to demonstrate that the production of cement meets the standard required by BES 6001. In 2012 100% of cement manufactured by MPA members was rated as 'very good' under the standard BES 6001.

EPDs

Environmental Product Declarations (EPDs) provide verified and comparable information about the environmental impact of goods and services. As consumers become more aware of the environmental impact of the

products and services they use, the demand for EPDs increases. The cement industry has been working on producing an EPD for the average UK Portland cement. This is due to be published shortly and will contain the key environmental information required either by the concrete industry to feed into a concrete EPD or for any specifiers and designers using Portland cement.

RESPONSIBLE USE OF WATER

Cement manufacture is not a large water consumer, and much of that abstracted from the local environment is returned. However, there are increasing pressures on water use in the UK and the cement industry recognises

First class performance



that water must be used responsibly. In order to more accurately measure water use, MPA members agreed to collect detailed water data on an annual basis. This covers all water inputs, including abstracted groundwater, abstracted surface water, municipal water, estimated rainfall etc, water consumption, including water evaporated for cooling purposes, water used directly in products and onsite etc, water recycled and all water outputs including to surface water, sub-surface wells, to sea or to sewer. This detailed data collection is still in its infancy but it is hoped that in the next few years the sector will have a much more accurate picture of how water is used in cement manufacture.

RAW MATERIALS AND VIRGIN FOSSIL FUELS MINIMISATION

The trend reported over the last few years has been for the use of virgin raw materials and fossil fuels to reduce. This is still the case for fossil fuels. However, on first sight it appears that the use of virgin raw materials per tonne of product has increased in 2012. Since 2008 the structure of the cement sector has changed. Previously cement was produced at the kiln site and then sold onto the market. In order to make efficiency savings the cement sector has mothballed several kilns in recent years and moved production to more efficient kilns. In place of some of the mothballed kilns, some MPA members have installed specialised grinding and blending facilities. Grinding facilities take cement clinker from kiln sites and grind it with other additives to produce a range of cement types. Blending plants take the raw product from cement plants, clinker, and blend it with other cementitious materials such as ground granulated blast furnace slag and pulverised fly ash to produce other cement types known as CEM II and CEM III. These specialised plants are located close to the markets they serve. This reduces the amount of transport required for these materials to reach the end user.

MANAGING OUR EMISSIONS TO AIR

All figures relate to 2012 actual performance against a 1998 baseline and are on a per tonne of product basis.

- Oxides of nitrogen emissions **down 58%**
- Sulphur dioxide emissions **down 80%**
- Dust emissions **down 80%**
- Carbon dioxide emissions **down 21%**

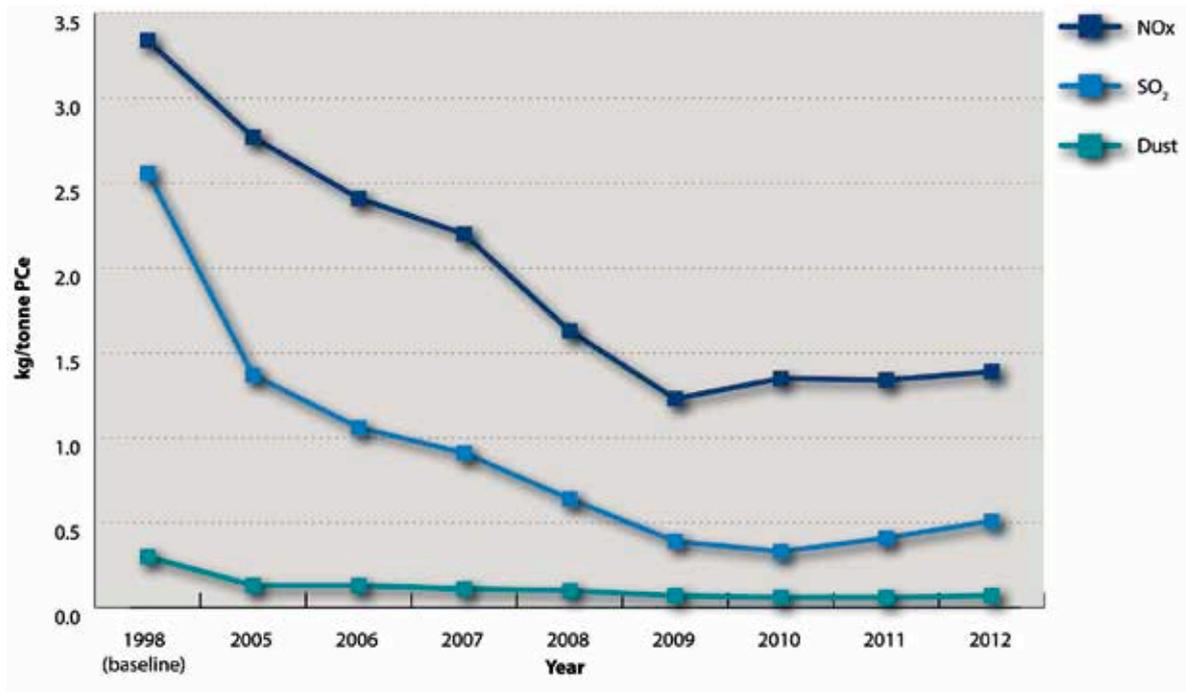
A slight increase in these emissions has occurred compared to that reported for 2011, however all emissions are well below the targets set for the sector and within the limits required by the Environmental Permitting Regulations. The increases result from a combination of factors. Sulphur dioxide emissions are related to the natural composition of the limestone used to produce cement. Several sites have been anticipating an increase in sulphur dioxide emissions due to the natural variation in the stone they are quarrying.

Oxides of nitrogen arise naturally in all combustion activities. Although there was a slight increase in NOx emissions in 2012, emissions are well below permitted limits.

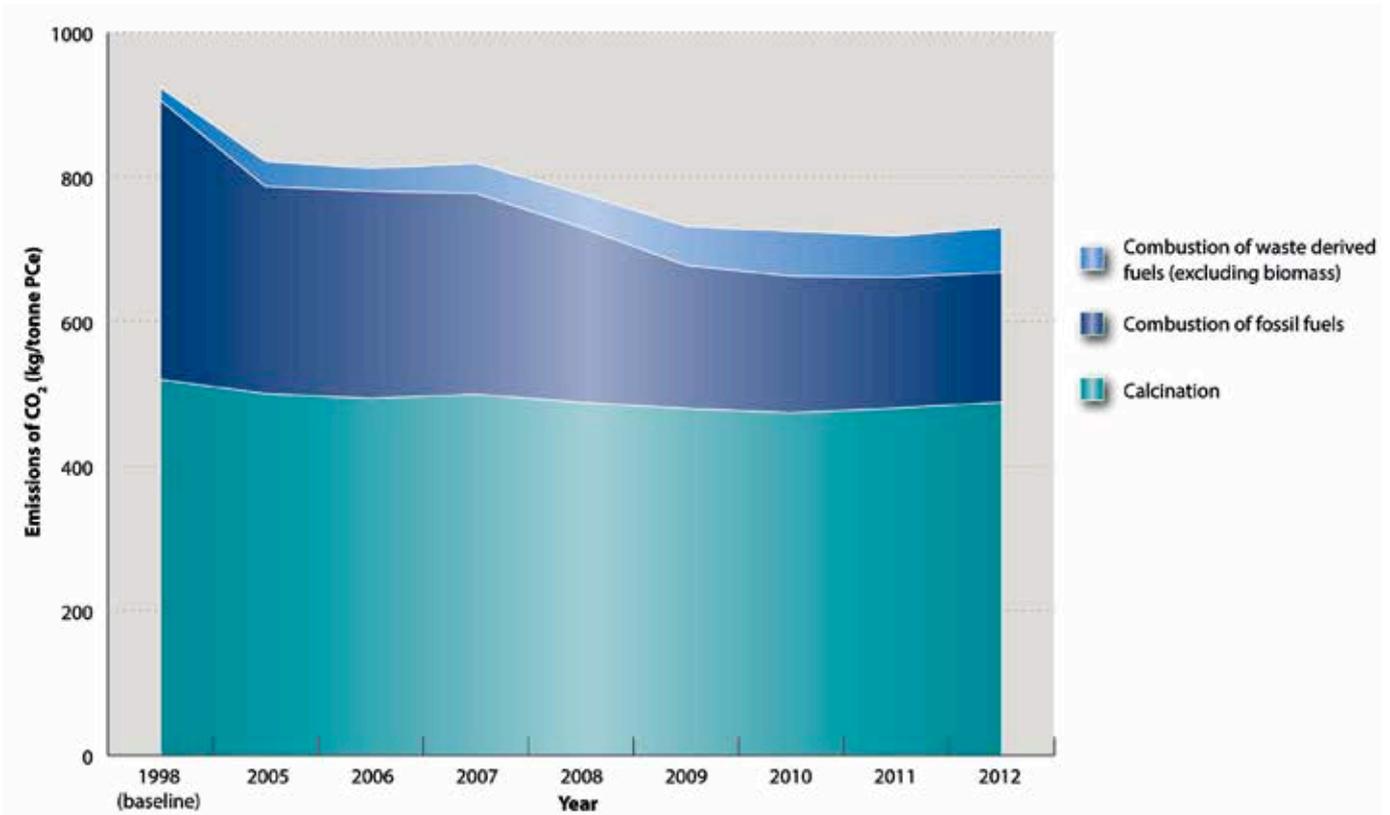
Emissions of carbon dioxide have increased slightly as a result of some companies producing more CEM I (the most carbon intensive) product at cement kiln sites, rather than the less carbon intensive CEM II or CEM III. These less carbon intensive cements are still being produced but at specialised grinding and blending sites that are located closer to the markets they serve. As a consequence the emissions of carbon dioxide appear higher for the cement kiln sites reported here but when the grinding and blending site production is also included emissions are actually 25% lower than those in 1998.

First class performance

NO_x, SO₂ and Dust emissions to air per tonne of Portland Cement Equivalent (PCE) manufactured 1998-2012 kg/tonne PCE



UK Portland Cement Industry Emissions of Carbon Dioxide per tonne of Portland Cement Equivalent 1998-2012



First class performance



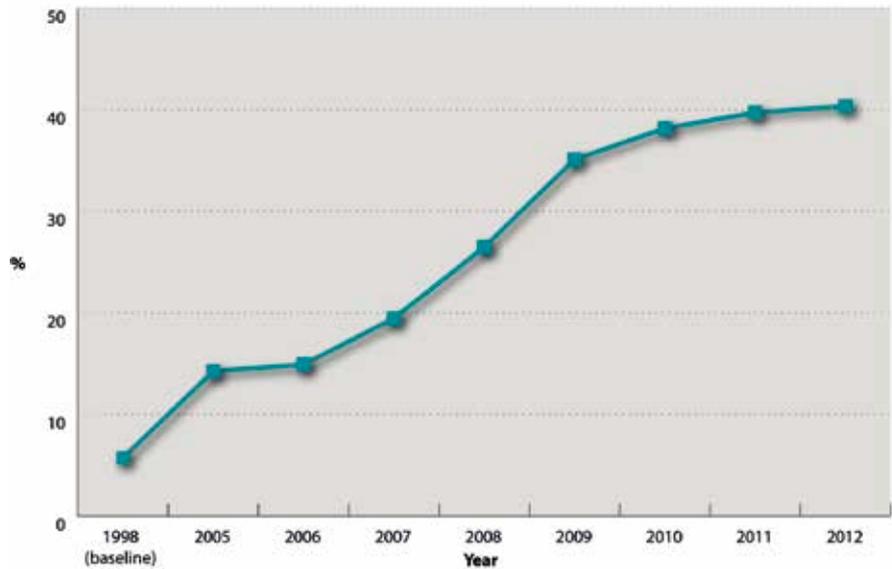
In 2012 the cement industry used 1.38 million tonnes of waste and by-product as fuel and raw materials. Waste derived fuels accounted for just over 40% of the thermal input to cement kilns meaning that valuable fossil fuels like coal can stay in the ground. In addition alternative raw materials derived from waste accounted for almost 8% of total raw material use; this extends the operating life of the quarries and reduces the amount of natural material extraction.

The figure below shows that the use of waste as fuel is beginning to level off compared

to the sharp increase seen between 2006 and 2009. Government incentives such as the Renewables Obligation are incentivising power generators to use more biomass. Additionally, the Renewable Heat Incentive, which encourages business and domestic consumers to install technologies such as biomass boilers, is now increasing the market demand for fuels which are useful to the cement industry. We shall continue our work to overcome these challenges in the coming years to meet our sector targets.



UK Cement Kiln sites: proportion of fuel comprising waste material



In 2012 the cement industry used 1.38 million tonnes of waste and by-products as fuel and raw materials.

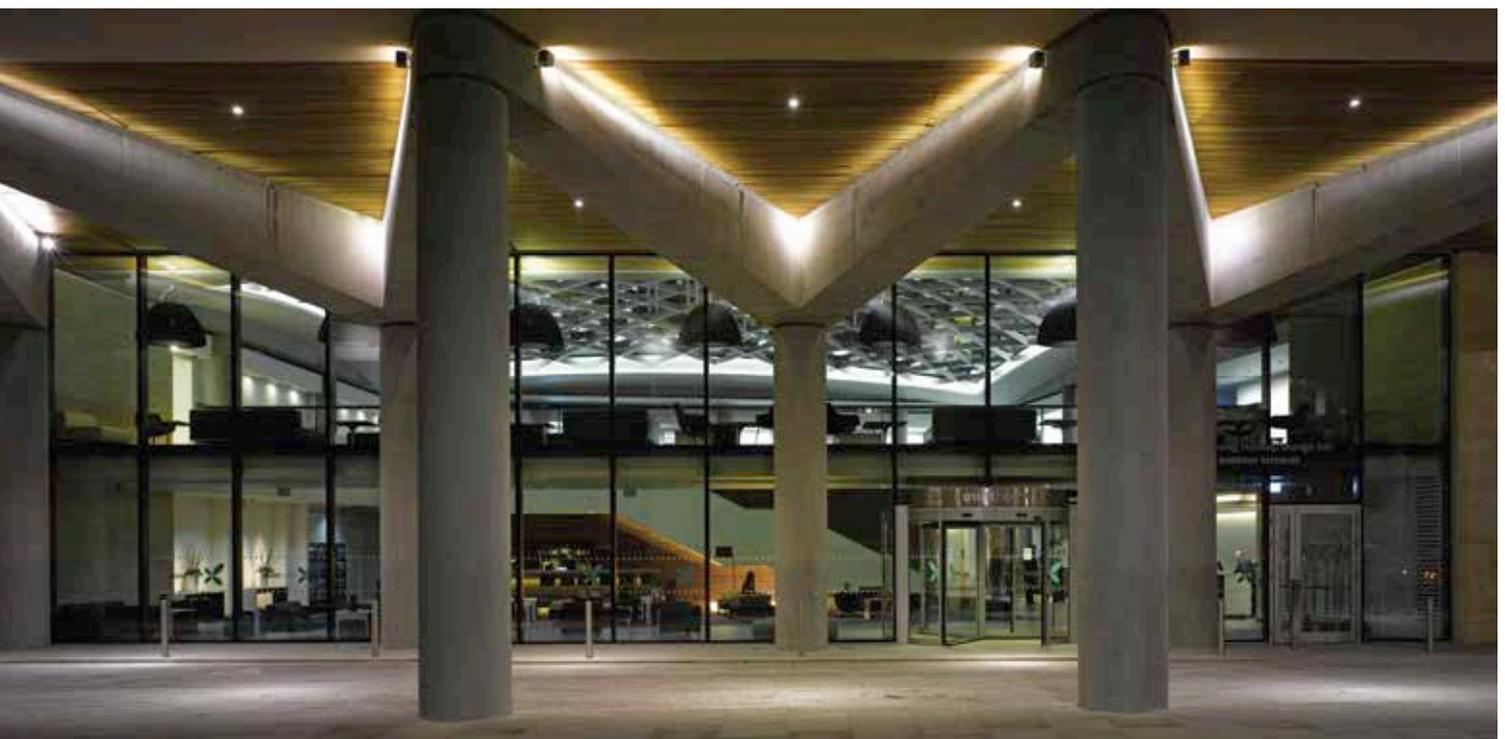
Building for the future

Cement is a key ingredient in the manufacture of concrete, the most widely used construction material and a fundamental part of the UK's built environment; essential for the construction of our housing, schools, hospitals, transport networks, water and energy infrastructure. Its use directly supports the environmental, economic and social elements of sustainable construction. The environmental aspects of concrete production are being optimised through the industry's commitment to a Sustainable Construction Strategy, launched by the concrete industry in 2008. This includes a range of strategic objectives and targets, which are reported on annually. A practical example is the sector's ambitious 2020 goal of ensuring 95% of UK concrete is certified to the BES 6001 Responsible Sourcing standard; a target towards which good progress has been made over the last four years. For more information on sustainable concrete visit: www.sustainableconcrete.org.uk

Buildings account for 35-40% of energy usage in Europe

In terms of its in-use performance, concrete continues to provide a broad range of benefits, unparalleled by other construction materials. These include superior durability, fire resistance, adaptability, acoustic performance and energy efficiency through its inherent thermal mass; a property that can be used to reduce a building's heating and cooling requirements. For example, the use of thermal mass in concrete frame office buildings can significantly cut the cooling load, helping reduce overall CO₂ emissions by around 60% compared to a typical air conditioned office. For more information on the potential use of thermal mass in concrete construction, please go to www.concretecentre.com where extensive advice, research and guidance is available.

Buildings account for 35-40% of energy usage in Europe, with traditional buildings consuming annually 200kWh per square metre. Minimising this impact is therefore a critical challenge for the building industry and concrete construction allows for substantial energy savings.







mpa cement members

CEMEX UK
Hanson Cement
Hope Construction Materials
Lafarge Tarmac



essential materials
sustainable solutions

The Mineral Products Association is the trade association for the aggregates, asphalt, cement, concrete, dimension stone, lime, mortar and silica sand industries.

MPA Cement

Gillingham House
38-44 Gillingham Street
London SW1V 1HU

Tel +44 (0)20 7963 8000
Fax +44 (0)20 7963 8001
mpacement@mineralproducts.org
www.cementindustry.co.uk