Concrete Industry Sustainability Performance Report

12th report: 2018 performance data

Introduction

The Concrete Industry Sustainable Construction Strategy was first launched in 2008 and featured targets to be met in 2012. In 2012 the strategy was updated with targets set for 2020, and as 2020 approaches the concrete industry will soon be announcing the revised strategy for beyond 2020.

In this report, we summarise the 12th annual performance reporting of data from 2008 to 2018. All the indicators are based on data collated for concrete production. In addition, some also report on the additional effects of including a contribution from the reinforcing steel provided by BAR under the heading 'concrete + reinforcement'. More information about the strategy, previous reports, and details of the background and methodology for these indicators is available at www.sustainableconcrete.org.uk.

Our Strategy 2020

Vision

To be recognised as a leader in sustainable construction, by taking a dynamic role in delivering a sustainable, low carbon built environment in a socially, environmentally and economically responsible manner.

Strategic Objectives

1. Commit to our role in achieving a sustainable environment and contribute to construction industry and government initiatives.
2. Engage with the broader supply chain to inform good practice and continue to explore new ways of improving or sustainable production performance.
3. Communicate with clients to provide knowledge of concrete solutions to enable the design and construction of a sustainable built environment.

Commitments

1. Contribute to the delivery of a low carbon built environment.
2. Provide Life Cycle Assessment data compliant with codes and standards.
3. Develop a Material and Resource Efficiency Programme to inform best practice across the life cycle of concrete in the built environment.
4. Develop a low carbon freight initiative to support improvement in transport through the concrete supply chain to construction sites.
5. Develop a water strategy to support the measurement of sustainability performance and target setting.
6. Target continuous improvement of sustainable production performance and report annually.

BREEAM 'Excellent' George Green Library, Nottingham. This project involved the reuse, refurbishment and extension of an existing 1960s concrete building. The concrete structure of the new extension is exposed, and a high quality of surface finish providing thermal mass, and the concrete itself incorporates a low carbon cement. © Martine Hamilton Knight

Sustainability Insights

Performance proven

The Concrete Industry Sustainable Construction Strategy represents a commitment from 10 sectors to an agreed performance indicator framework. Underpinning the strategy are the best practice approaches represented by ISO 14001 on Environmental Management and ISO 9001 for Quality and Performance. Based on the latest data the industry has met its target for both EMS and QMS achieving 97% and 98% of sites now being certified respectively.

Cutting carbon

Embodied carbon can be reduced by the energy efficiency of manufacture and a designer's specification of concrete. Decisions can also be made now that will save operational energy and whole-life carbon. As shown by the George Street Library (pictured left), this includes the refurbishment and re-use of existing structures.

The industry has reduced the embodied carbon of a standardised mix of concrete to 72kg per tonne, a reduction of 29.7% from the 1990 baseline. To find out more about specifying low carbon concrete download *Specifying Sustainable Concrete*, published by The Concrete Centre.

Source smarter

Concrete and its constituent materials are produced by a UK supply chain providing ethically and responsibly sourced materials certified to BES 6001. The latest data shows that 91% of concrete is certified to BES 6001.

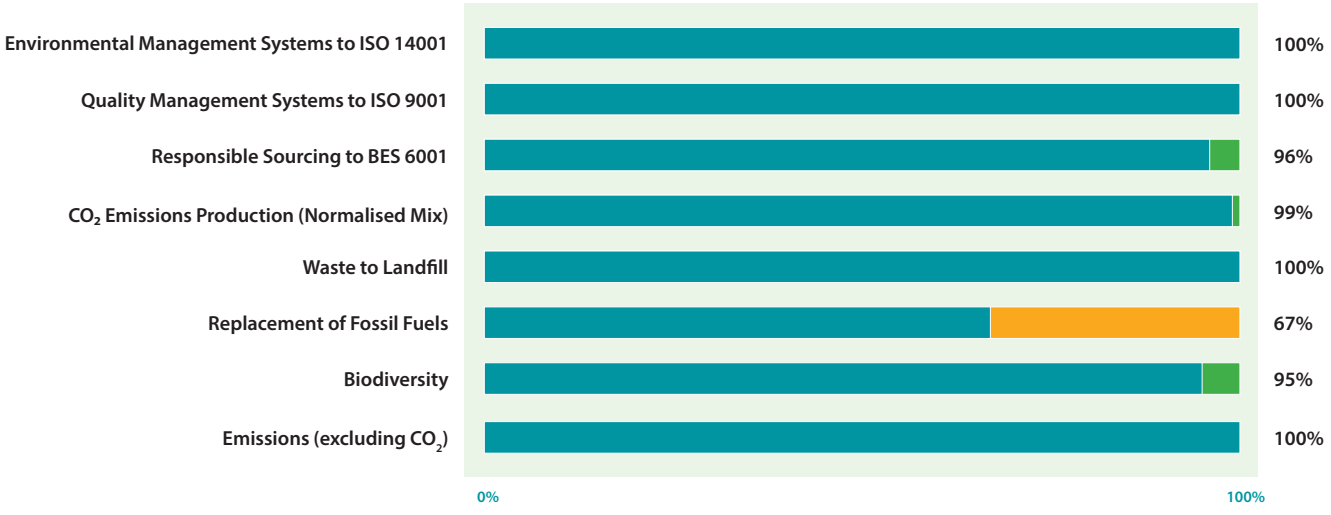
Materials matter

Minimising waste and using resources efficiently is common sense in the production of concrete and the design of buildings. The concrete industry is a net user of waste, using 271 times more waste and by-products than it produces. To understand how to design material efficient buildings using concrete download *Material Efficiency*, published by The Concrete Centre.

Beyond 2020

The Government's commitment to net zero carbon for UK is to be net zero by 2050. For concrete significant strides have been achieved already, and industry is working on a coherent package of strategies and innovations to contribute to the net zero challenge. Concrete is an essential contributor to our current and future built environment and resources are also available to ensure that concrete is used as efficiently as possible now. This is not just a material issue but also encompasses how we build; use, maintain and re-employ our new and old concrete structures to best effect.

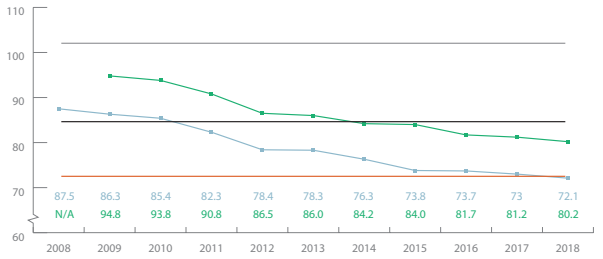
Progress to 2020 targets based on 2018 performance



The graph above is based on a 2008 baseline year for all targets, other than carbon targets, which are based on a 1990 baseline year.
For the latest updates on the data, visit **www.sustainableconcrete.org.uk**.

Climate Change and Energy **Action on Carbon**

		Baseline Concrete		Performance Concrete				Performance Concrete + reinforcement				Target
Sustainability Principle	**Performance Indicator**	**Year**	**Value**	**2015**	**2016**	**2017**	**2018**	**2015**	**2016**	**2017**	**2018**	**2020**
Energy Efficiency	Energy intensity as a proportion of production output Standardised Mix (kWh/tonne)	1990	132.1	122.7	118.9	122.3	119.1	146.5	140.5	146.2	145.3	Deliver the industry CO_2 target and achieve sector climate change agreement targets
CO_2 Emissions - Production	CO_2 emissions as a proportion of production output. Standardised Mix (kg CO_2/tonne).	1990	102.6	73.8	73.7	73.0	72.1	84.0	81.7	81.2	80.2	Reduce by 30% from 1990 baseline (72.2)
CO_2 Emissions - Transport	CO_2 emissions from delivery transport through the industry supply chain as a proportion of production output. (kg CO_2/tonne).	1990	7.2	8.4	7.3	8.6	8.9					Indicators and targets are still under review

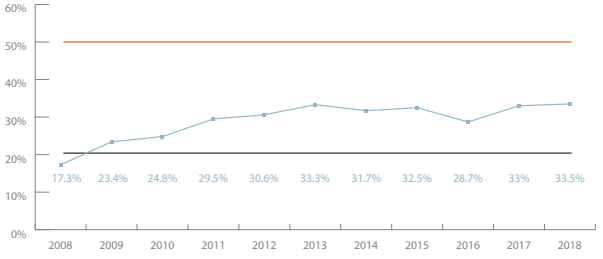


CO_2 Emissions - Production

THE CONCRETE INDUSTRY TARGET IS TO ACHIEVE A 30% REDUCTION IN CO2 EMISSIONS BY 2020, BASED ON A 1990 BASELINE. 2018 DATA SHOWS A 29.7% REDUCTION.

Natural Resource Protection and Enhancing the Environment **Action on Waste/Biodiversity/Water**

		Baseline Concrete		Performance Concrete				Performance Concrete + reinforcement				Target
Sustainability Principle	**Performance Indicator**	**Year**	**Value**	**2015**	**2016**	**2017**	**2018**	**2015**	**2016**	**2017**	**2018**	**2020**
Waste Minimisation	Materials diverted from the waste stream for use as a fuel source, as a % of total enery use.	2008	17.3%	32.5%	28.7%	33.0%	33.5%					50%
	Waste to landfill as a proportion of production output (kg/tonne).	2008	5	1.1	1.0	0.6	0.4	1.2	1.0	1.0	0.5	90% reduction from 2008 baseline (0.5)
	Net waste consumption ratio.	2008	19	99	116	210	271					
Water	Mains water consuption as a proportion of production output. (litres/tonne).	2008	86.0	74.3	78.1	69.7	55.8	78.3	81.8	74.2	59.6	To implement a water strategy with targets.
Site Stewardship & Biodiversity	% of relevant production sites that have specific action plans.	2008	94.3%	99.4%	99.4%	99.4%	99.7%					100%



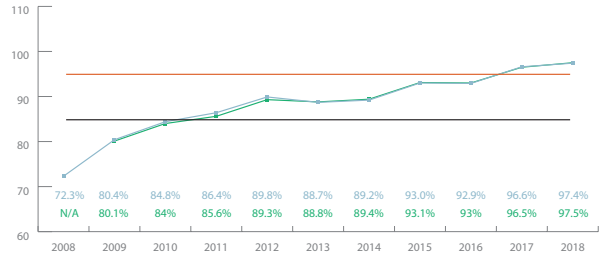
Waste Minimisation

CONCRETE IS A NET USER OF WASTE AND CONSUMES 271 TIMES MORE WASTE THAN IT SENDS TO LANDFILL. IN 2018, THE INDUSTRY SOURCED 33.5% OF ITS ENERGY FROM MATERIALS DIVERTED FROM THE WASTE STREAM AND THE AIM IS TO INCREASE THIS EVEN FURTHER.

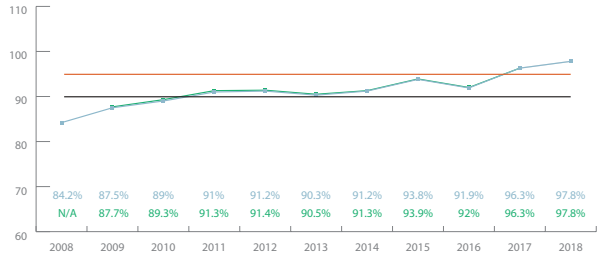
Sustainable Consumption and Production **Action on Materials**

Underpinning the strategy are the best practice approaches represented by ISO 14001 on Environmental Management and ISO 9001 for Quality and Performance. Based on 2018 data the industry has met its target for production sites covered by EMS (97%) and QMS (98%).

		Baseline Concrete		Performance Concrete				Performance Concrete + reinforcement				Target
Sustainability Principle	**Performance Indicator**	**Year**	**Value**	**2015**	**2016**	**2017**	**2018**	**2015**	**2016**	**2017**	**2018**	**2020**
Environmental Management	% of production sites covered by a 'UKAS' Environmental Management System (EMS).	2008	72.3%	93.0%	92.9%	96.6%	97.4%	93.1%	93.0%	96.5%	97.5%	95.0%
Quality and Performance	% of production sites covered by a 'UKAS' certified ISO 9001 quality management system.	2008	84.2%	93.8%	91.9%	96.3%	97.8%	93.9%	92.0%	96.3%	97.8%	95.0%
Resource Efficiency	% of additional cementitious materials (GGBS, fly ash, etc.) as a proportion of total cementitious materials used.	2008	30.0%	29.0%	27.2%	25.1%	26.2%					35.0%
	Recycled/secondary aggregates as a proportion of total concrete aggregates.	2008	5.3%	6.4%	7.7%	8.3%	5.7%					No targets have been set as increasing recycled content is not always indicative of sustainable performance
	% of recycled scrap as a proportion of total constitutent raw materials used.	2009	97.0%	N/A	N/A	N/A	N/A	93.2%	90.1%	96.0%	92.5%	
Responsible Sourcing	% of production certified to BES 6001.	2008	N/A	89.0%	90.0%	92.0%	91.0%					95.0%



Environmental Management



Quality and Performance

Creating Sustainable Communities **Action on Wellbeing**

The concrete industry is committed to protecting life and quality of life. As part of the Mineral Products Association, the concrete industry is committed to initiatives for health & safety, employment & skills, vulnerable road users, and local community liaison.

		Baseline Concrete		Performance Concrete				Performance Concrete + reinforcement				Target
Sustainability Principle	**Performance Indicator**	**Year**	**Value**	**2015**	**2016**	**2017**	**2018**	**2015**	**2016**	**2017**	**2018**	**2020**
Health & Safety	Reportable injuries per 100,000 direct employees per annum.	2008	799	431	647	656	624					
	Lost Time injuries (LTI) for direct employee per 1,000,000 hours worked.	2010	6.5	4.3	3.9	4	3.5	4.3	3.8	3.9	3.6	From 2014-2019, reduce lost time incidents by 65% with an aim of zero harm
Employment & Skills	% of employees covered by 'UKAS' certified training and evaluation process.	2008	84.4%	95.4%	96.4%	99.1%	99.1%	95.8%	96.6%	99.2%	99.2%	100%
Emissions (excluding CO_2)	Number of convictions for air and water emissions per annum.	2008	6	0	1	0	0	0	1	0	0	Zero per Annum
Local Community	% of relevant sites that have community liaison activities.	2008	85.9%	100.0%	87.1%	90.3%	68.9%	100.0%	87.9%	90.4%	70.9%	100%

The data is sourced from the following sector associations, and we are grateful for their cooperation:

- British Association of Reinforcement (BAR) **www.uk-bar.org**
- British Precast **www.britishprecast.org**
- British Ready-Mixed Concrete Association **www.brmca.org.uk**
- Cement Admixtures Association **www.admixtures.org.uk**
- Cementitious Slag Makers Association **www.ukcsma.co.uk**
- Mineral Products Association **www.mineralproducts.org**
- MPA - Cement **www.cementindustry.co.uk**
- UK Quality Ash Association **www.ukqaa.org.uk**

We acknowledge the founders and members of the Sustainable Concrete Forum:

- Aggregate Industries **www.aggregate.com**
- Brett Group **www.brett.co.uk**
- CEMEX **www.cemex.co.uk**
- Hanson UK **www.hanson.co.uk/en**
- Marshalls plc **www.marshalls.co.uk**
- Tarmac **www.tarmac.com**

www.sustainableconcrete.org.uk

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Front cover: University College London's new student centre was awarded an 'Outstanding' BREEAM rating. It uses ground granulated blast-furnace slag (GGBS) and recycled aggregates within its concrete mix. The building fabric is also highly efficient, helping to regulate temperature and minimise energy use. Image: Nicholas Hare Architects © Alan Williams Photography