



Concrete Industry Sustainability Performance Report

13th report: 2019 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 this document reports against those targets. In 2020, the *UK Concrete and Cement Sector Roadmap to Beyond Net Zero* was published. The industry is now updating its Sustainable Construction Strategy and targets to 2030 are in development.

In this report, we summarise the 13th annual performance reporting of data from 2008 to 2019. 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 our 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.



The concrete structure of The Standard Hotel, originally built in the mid-70s as an annexe to Camden Town Hall, was repurposed, adapted and the exterior cleaned to now house an upmarket 266-room hotel. © Timothy Soar

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 99% 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 Standard Hotel, London (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 72.5kg per tonne, a reduction of 29.3%** from the 1990 baseline. To find out more about specifying low carbon concrete there are a wealth of resources available from The Concrete Centre including on-demand webinars and the popular *Specifying Sustainable Concrete* publication.

To enable designers to accurately measure carbon MPA UK Concrete has partnered with One Click LCA to develop generic Environmental Product Declarations (EPDs) to EN 15804 for a range of concretes. The partnership will also enable members of MPA to produce EPDs for their concrete products. The aim is to increase the amount of UK specific embodied carbon data for concrete, so that designers do not have to rely on databases that use international data for concrete and its constituents.

Source smarter

This report provides data from 2019. However, since then security of supply and the benefits of a local supply chain have become headline news. 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 **95% of concrete is certified to a recognised responsible sourcing scheme**.

Materials matter

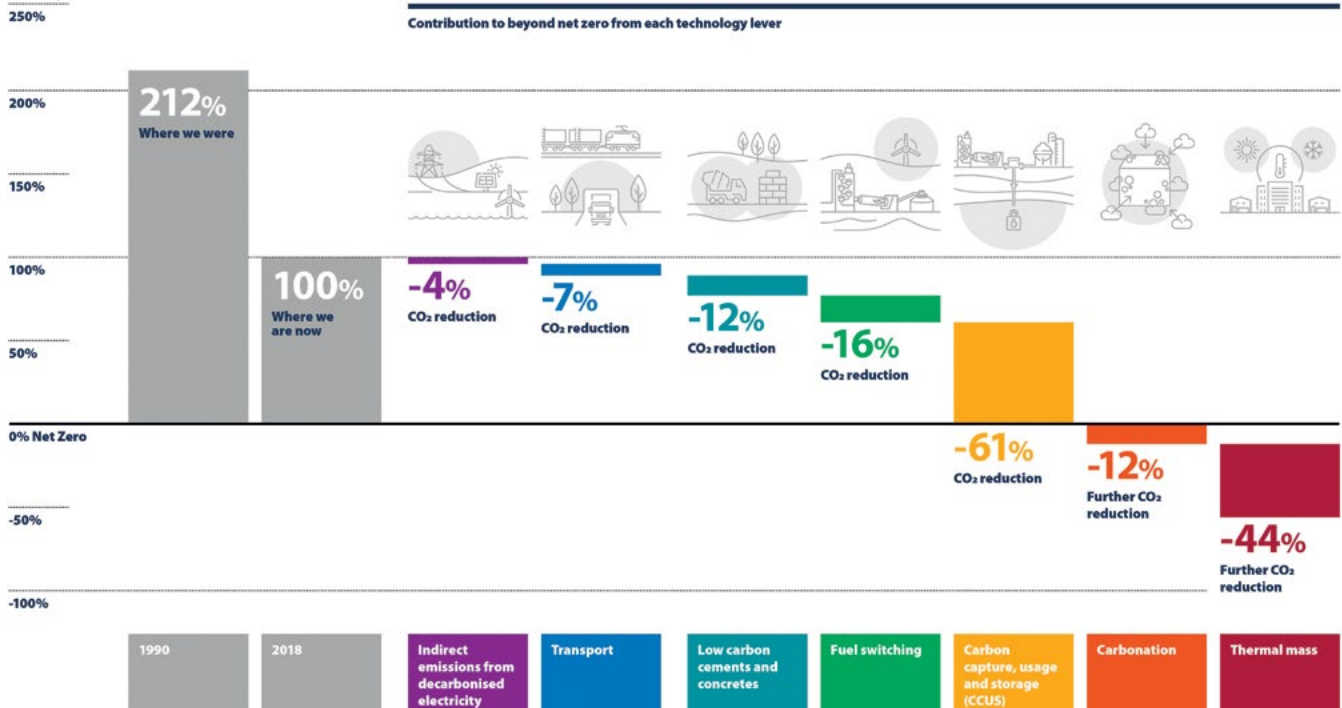
Minimising waste and using resources efficiently is common sense in the production of concrete and the design of buildings and saves resources and carbon. The concrete industry is a **net user of waste, using 314 times more waste and by-products** than it produces.

Decarbonising the UK and our Built Environment

UK Government has a binding legal target to deliver net zero. The UK concrete and cement industry has published a credible and transparent [roadmap](#) which sets the direction to get to this destination and beyond. The roadmap shows how a **UK concrete and cement industry can be net negative, removing more carbon dioxide from the atmosphere than it emits each year**. Achieving this goal requires innovation, investment in low carbon energy infrastructure, transport and storage, cross-industry partnership, behavioural change and Government support.

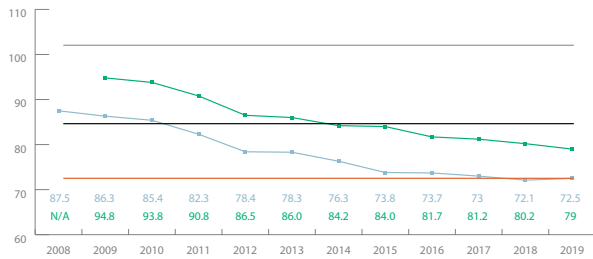
This is not just a material issue but also encompasses how we build, use, maintain and re-use our new and old concrete structures to best effect. Through the MPA, industry is engaged with a number of organisations including UK GBC, Green Construction Board, and the professional institutions to improve the carbon literacy of the supply chain and show how concrete is part of a net zero, circular economy.

Beyond net zero: the roadmap in numbers



Climate Change and Energy **Action on Carbon**

Sustainability Principle	Performance Indicator	Baseline Concrete		Performance Concrete				Performance Concrete + reinforcement				Target
		Year	Value	2016	2017	2018	2019	2016	2017	2018	2019	2020
Energy Efficiency	Energy intensity as a proportion of production output Standardised Mix (kWh/tonne)	1990	132.1	118.9	122.3	119.1	122.1	140.5	146.2	145.3	145.4	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	73.7	73.0	72.1	72.5	81.7	81.2	80.2	79.0	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).	2009	7.2	7.3	8.6	8.9	7.9					Indicator and potential for targets to be reviewed



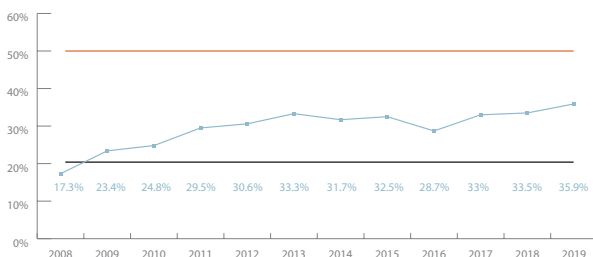
CO₂ Emissions - Production

THE CONCRETE INDUSTRY TARGET IS TO ACHIEVE A 30% REDUCTION IN CO₂ EMISSIONS BY 2020, BASED ON A 1990 BASELINE. 2019 DATA SHOWS A 29.3% REDUCTION.



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

Sustainability Principle	Performance Indicator	Baseline Concrete		Performance Concrete				Performance Concrete + reinforcement				Target
		Year	Value	2016	2017	2018	2019	2016	2017	2018	2019	2020
Waste Minimisation	Materials diverted from the waste stream for use as a fuel source, as a % of total energy use.	2008	17.3%	28.7%	33.0%	33.5%	35.9%					50%
	Waste to landfill as a proportion of production output (kg/tonne).	2008	5	1.0	0.6	0.4	0.3	1.0	1.0	0.5	0.4	90% reduction from 2008 baseline (0.5)
	Net waste consumption ratio.	2008	19	116	210	271	314					
Water	Mains water consumption as a proportion of production output. (litres/tonne).	2008	86.0	78.1	69.7	55.8	78.2	81.8	74.2	59.6	82.8	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%	99.7%	99.6%					100%



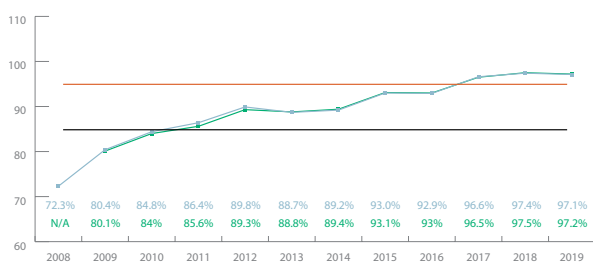
Waste Minimisation

CONCRETE IS A NET USER OF WASTE AND CONSUMES 314 TIMES MORE WASTE THAN IT SENDS TO LANDFILL. IN 2019, THE INDUSTRY SOURCED 35.9% OF ITS ENERGY FROM MATERIALS DIVERTED FROM THE WASTE STREAM AND THE AIM IS TO INCREASE THIS EVEN FURTHER.

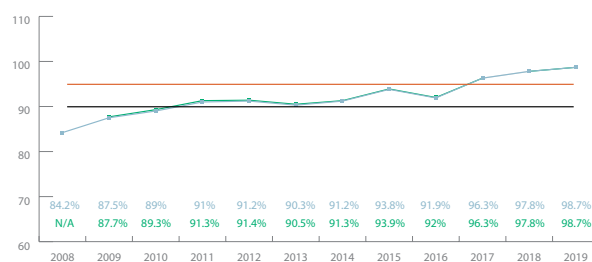
Sustainable Consumption and Production **Action on Materials**

Underpinning the strategy are the best practice approaches represented by ISO 14001 on Environmental Management and ISO 9001 for Quality and Performance. Based on 2019 data the industry has met its target for production sites covered by EMS (97%) and QMS (99%).

Sustainability Principle	Performance Indicator	Baseline Concrete		Performance Concrete				Performance Concrete + reinforcement				Target
		Year	Value	2016	2017	2018	2019	2016	2017	2018	2019	2020
Environmental Management	% of production sites covered by a 'UKAS' Environmental Management System (EMS).	2008	72.3%	92.9%	96.6%	97.4%	97.1%	93.0%	96.5%	97.5%	97.2%	95.0%
Quality and Performance	% of production sites covered by a 'UKAS' certified ISO 9001 quality management system.	2008	84.2%	91.9%	96.3%	97.8%	98.7%	92.0%	96.3%	97.8%	98.7%	95.0%
Resource Efficiency	% of additional cementitious materials (GGBS, fly ash, etc.) as a proportion of total cementitious materials used.	2008	30.0%	27.2%	25.1%	26.2%	25.8%					35.0%
	Recycled/secondary aggregates as a proportion of total concrete aggregates.	2008	5.3%	7.7%	8.3%	5.7%	5.3%					No target. Increasing recycled content is not always indicative of sustainable performance
	% of recycled scrap as a proportion of total constituent raw materials used.	2009	97.0%	N/A	N/A	N/A	N/A	90.1%	96.0%	92.5%	92.4%	
Responsible Sourcing	% of production certified to BES 6001.	2008	N/A	90.0%	92.0%	91.0%	95.0%					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.

Sustainability Principle	Performance Indicator	Baseline Concrete		Performance Concrete				Performance Concrete + reinforcement				Target
		Year	Value	2016	2017	2018	2019	2016	2017	2018	2019	2020
Health & Safety	Reportable injuries per 100,000 direct employees per annum.	2008	799	647	656	624	538					The 46% reduction in LTI's achieved from 2014-2019 missed the 65% target. In 2019 MPA launched Vision Zero and issued new targets to 2025.
	Lost Time injuries (LTI) for direct employee per 1,000,000 hours worked.	2010	6.5	3.9	4	3.5	3.4	3.8	3.9	3.6	3.5	
Employment & Skills	% of employees covered by 'UKAS' certified training and evaluation process.	2008	84.4%	96.4%	99.1%	Discont.	Discont.	96.6%	99.2%	Discont.	Discont.	100%
Emissions (excluding CO ₂)	Number of convictions for air and water emissions per annum.	2008	6	1	0	0	0	1	0	0	0	Zero per Annum
Local Community	% of relevant sites that have community liaison activities.	2008	85.9%	87.1%	90.3%	68.9%	68.3%	87.9%	90.4%	70.9%	70.8%	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: Christie Proton Beam Centre, Manchester. The mix used contained 70% GGBS cement replacement, drastically reducing the embodied carbon of the structure and also minimising heat gains and thermal cracking during curing. Image courtesy of Interserve.