



Concrete Industry Sustainability Performance Report

14th report: 2020 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 14th annual performance reporting of data from 2008 to 2020. 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.

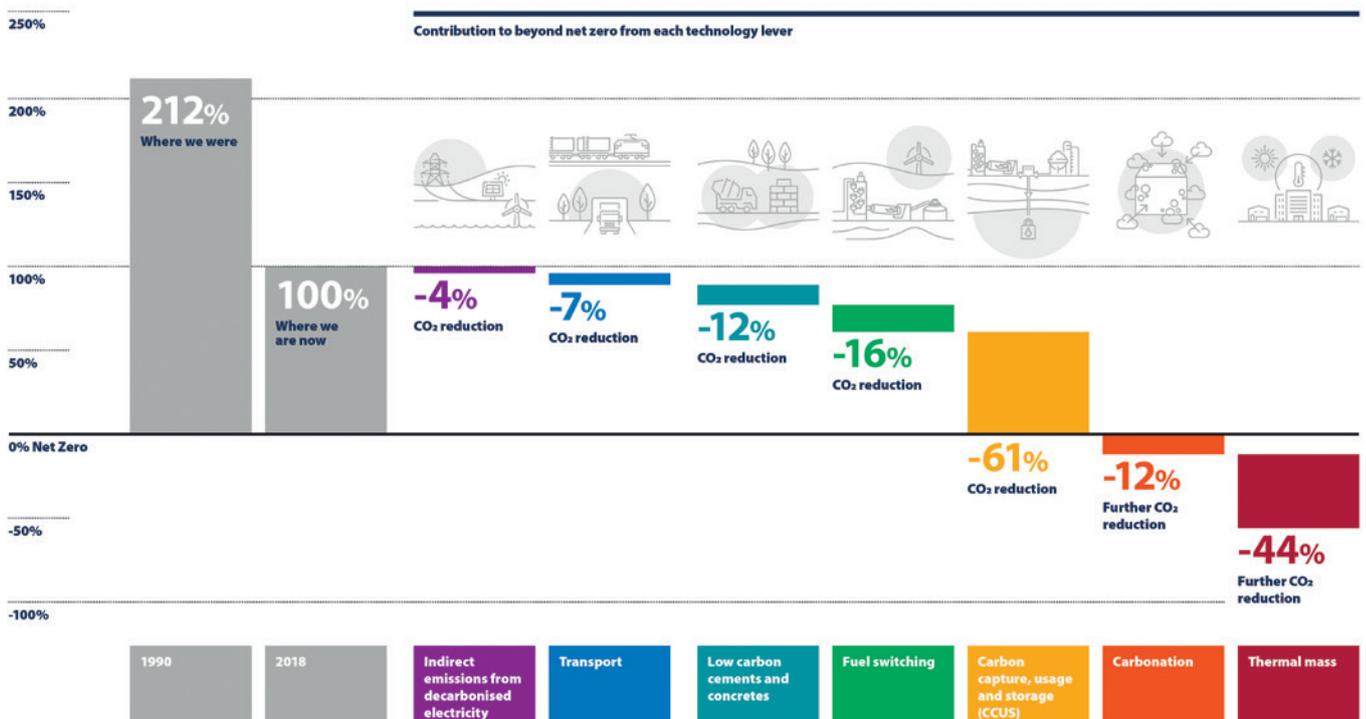
Strategic Objectives

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.

Beyond net zero: the roadmap in numbers



Sustainability Insights

Global COVID-19 pandemic

2020 saw a series of lockdowns as part of the UK's response to the global COVID-19 pandemic. UK Government quickly realised the essential nature of construction and mineral products and the concrete supply chain was quick to restart. However, there was a considerable impact on staffing and production levels throughout 2020 due to COVID. This disruption has had an impact on the data supplied from the product sectors.

The UK Concrete Sustainable Construction Group has made the decision to publish 2020 data, however it should be noted that 2020 data has the potential to be an anomaly in many cases. Many of the targets set as part of the strategy were based on a 2020 goal. Again, due to the disruption to the supply chain during 2020, no assessment of performance related to targets should be made based on the performance in 2020 alone.

Measurement and disclosure

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 being certified respectively.

In the 2020 report, there are also some updates to 2019 data (marked with an asterisk in the following tables). Cement sector data is collected by a third party, as part of sector compliance with the Competition and Markets Authority. Data provided by the third party was included in the 2019 report. Based on an MPA Cement request, due to an unexplained anomaly, data for part of the survey was resent by members to the third party, and consequently some 2019 data has been updated.

Cutting carbon

The industry has **reduced the embodied carbon of a standardised mix of concrete to 73.1kg 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

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 a recognised responsible sourcing scheme**. During COVID many construction product shortages were reported. With UK production of concrete and constituent materials security of supply is less of a risk.

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 cement sector is uniquely placed to consume hard to recycle waste. In 2020 46.8% of fuel comprised waste material. For the concrete sector as a whole, 36.2% of total energy use is from material diverted from the waste-stream.

Decarbonising the UK and our Built Environment

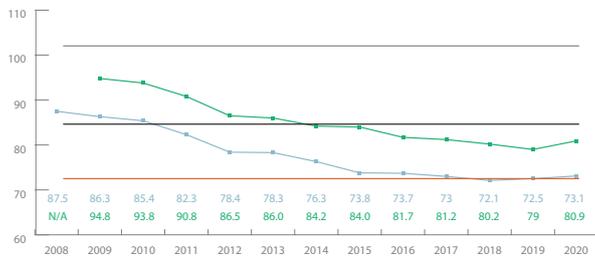
In 2020, the UK concrete and cement industry published a credible and transparent [roadmap](#) which sets the direction to get to net zero and beyond. The roadmap shows how a **UK concrete and cement industry can be net negative, removing more carbon dioxide from the atmosphere than it emits each year**. 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.

Climate Change and Energy **Action on Carbon**

		Baseline Concrete		Performance Concrete				Performance Concrete + reinforcement				Target
Sustainability Principle	Performance Indicator	Year	Value	2017	2018	2019	2020	2017	2018	2019	2020	2020
Energy Efficiency	Energy intensity as a proportion of production output Standardised Mix (kWh/tonne)	1990	132.1	122.3	119.1	122.1	123.6	146.2	145.3	145.4	147.6	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	73.0	72.1	72.5	73.1	81.2	80.2	79.0	80.9	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	8.6	8.9	7.6*	8.5*					CO ₂ emissions – transport increased in 2020 due to a drop in rail transport and shift towards road transport during the COVID pandemic.

* Previously published values revised with updated data on cementitious content of ready-mixed concrete.



FROM THE 1990 BASELINE OF 102.6KGCO₂/TONNE, THE UK CONCRETE SECTOR HAS REDUCED CARBON EMISSIONS AS A PROPORTION OF PRODUCTION BY 29% TO 73.1KGCO₂/TONNE.



CO₂ Emissions - Production

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	2017	2018	2019	2020	2017	2018	2019	2020	2020
Waste Minimisation	Materials diverted from the waste stream for use as a fuel source, as a % of total energy use.	2008	17.3%	33.0%	33.5%	34.7%*	36.2%					50%
	Waste to landfill as a proportion of production output (kg/tonne).	2008	5	0.6	0.4	0.3	0.1	1.0	0.5	0.4		90% reduction from 2008 baseline (0.5)
	Net waste consumption ratio.	2008	19	210	271	314	881					
Water	Mains water consumption as a proportion of production output. (litres/tonne).	2008	86.0	69.7	55.8	78.2	84.2	74.2	59.6	82.8	87.8	To implement a water strategy with targets.
Site Stewardship & Biodiversity	% of relevant production sites that have specific action plans.	2008	94.3%	99.4%	99.7%	99.6%	100%					100%

* Previously published values revised with updated data on cementitious content of ready-mixed concrete.



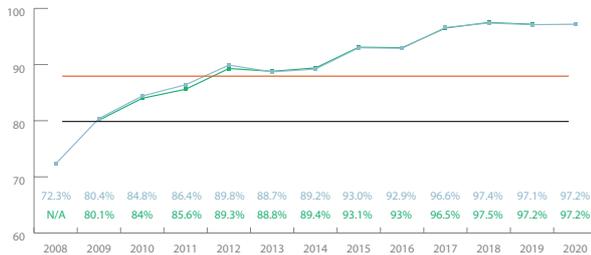
THE UK CEMENT AND CONCRETE SECTOR IS UNIQUELY PLACED TO CONSUME HARD-TO-RECYCLE WASTE AS FUEL. IN 2020, 36.2% OF FUEL WAS FROM ALTERNATIVE SOURCES.

Waste Minimisation

Sustainable Consumption and Production **Action on Materials**

		Baseline Concrete		Performance Concrete				Performance Concrete + reinforcement				Target
Sustainability Principle	Performance Indicator	Year	Value	2017	2018	2019	2020	2017	2018	2019	2020	2020
Environmental Management	% of production sites covered by a 'UKAS' Environmental Management System (EMS).	2008	72.3%	96.6%	97.4%	97.1%	97.2%	96.5%	97.5%	97.2%	98.4%	95.0%
Quality and Performance	% of production sites covered by a 'UKAS' certified ISO 9001 quality management system.	2008	84.2%	96.3%	97.8%	98.7%	98.0%	96.3%	97.8%	98.7%	98.0%	95.0%
Resource Efficiency	% of additional cementitious materials (GGBS, fly ash, etc.) as a proportion of total cementitious materials used.	2008	30.0%	25.1%	26.2%	28.0%*	28.6%					35.0%
	Recycled/secondary aggregates as a proportion of total concrete aggregates.	2008	5.3%	8.3%	5.7%	5.3%	4.5%					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	96.0%	92.5%	92.4%	97.5%	
Responsible Sourcing	% of production certified to BES 6001.	2008	N/A	92.0%	91.0%	95.0%	91.0%					95.0%

* Previously published values revised with updated data on cementitious content of ready-mixed concrete.



FOR BOTH ENVIRONMENTAL, AND QUALITY & PERFORMANCE MANAGEMENT SYSTEMS THE SECTOR TARGET WAS 95%. THIS HAS BEEN EXCEEDED SINCE 2017.

Environmental Management

Creating Sustainable Communities **Action on Wellbeing**

		Baseline Concrete		Performance Concrete				Performance Concrete + reinforcement				Target
Sustainability Principle	Performance Indicator	Year	Value	2017	2018	2019	2020	2017	2018	2019	2020	2020
Health & Safety	Reportable injuries per 100,000 direct employees per annum.	2008	799	656	624	538	430					
	Lost Time injuries (LTI) for direct employee per 1,000,000 hours worked.	2010	6.5	4.0	3.5	3.4	3.3	3.9	3.6	3.5	3.3	
Employment & Skills	% of employees covered by 'UKAS' certified training and evaluation process.	2008	84.4%	99.1%	Discont.	Discont.	Discont.	99.2%	Discont.	Discont.	Discont.	100%
Emissions (excluding CO ₂)	Number of convictions for air and water emissions per annum.	2008	6	0	0	0	1	0	0	0	1	Zero per Annum
Local Community	% of relevant sites that have community liaison activities.	2008	85.9%	90.3%	68.9%	68.3%	n/a*	90.4%	70.9%	70.8%	n/a*	100%

n/a* due to COVID-19 this activity was not recorded.

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

*As of Jan 2022 British Precast became part of MPA as the product groups MPA Precast and MPA Masonry.

www.mpaprecast.org / www.mpamasonry.org

www.sustainableconcrete.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



Published by MPA The Concrete Centre, on behalf of the Sustainable Concrete Forum

Gillingham House, 38-44 Gillingham Street, London SW1V 1HU

www.concretecentre.com

© MPA The Concrete Centre, 2023

All advice or information from MPA The Concrete Centre is intended only for use in the UK by those who will evaluate the significance and limitations of its contents and take responsibility for its use and application. No liability (including that for negligence) for any loss resulting from such advice or information is accepted by Mineral Products Association or its subcontractors, suppliers or advisors. Readers should note that the publications from MPA The Concrete Centre are subject to revision from time to time and should therefore ensure that they are in possession of the latest version.

Front cover: Town House, Kingston. This tailored hybrid structure combined offsite concrete and a cast in situ topping slab to reduce the volume of concrete required and minimise construction waste. All fire and aesthetic requirements were met without the need for additional linings, providing durable and low maintenance surfaces. A Thermally Active Building System uses the concrete's thermal mass to reduce energy use.