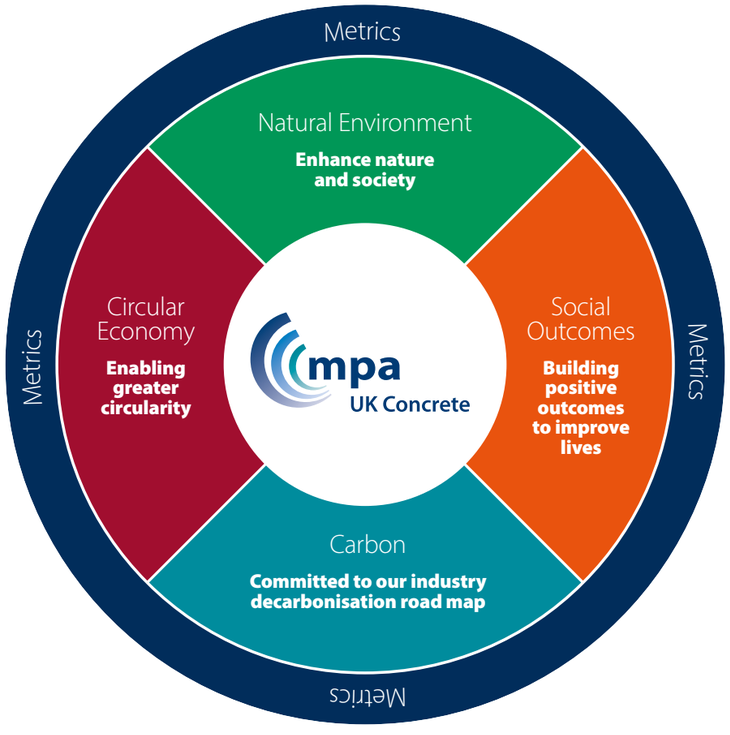
UK Concrete Sustainability Data Report 2023 Data

mpa UK Concrete

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. In 2023, the next iteration of the strategy which focuses on the sector's journey to 2030 was published. This revision sets a new vision for the sector aligned with new priorities and sustainability considerations that have emerged and evolved since the development of the original strategy, including the publication of the UK Concrete and Cement Industry Roadmap to Beyond Net Zero.

In this report, we summarise the annual performance reporting of data from 2018-2023. All indicators are based on data collated for concrete production. More information about the strategy, previous reports, and details of the background and methodology for these indicators is available at www.sustainableconcrete.org.uk.



1 Carbon

Progressing our UK Concrete and Cement Industry Roadmap to Beyond Net Zero, advancing carbon reduction plans and policies and developing the prerequisites by 2030 to fully decarbonise by 2050.

2 Circular Economy

Enabling greater circularity across the built environment using concrete and encouraging the retention of concrete's value throughout all stages of its life cycle.

3 Natural Environment

Developing solutions for a regenerative built environment, incorporate natural capital in decision making and deliver wider ecosystem benefits such as biodiversity net gain.

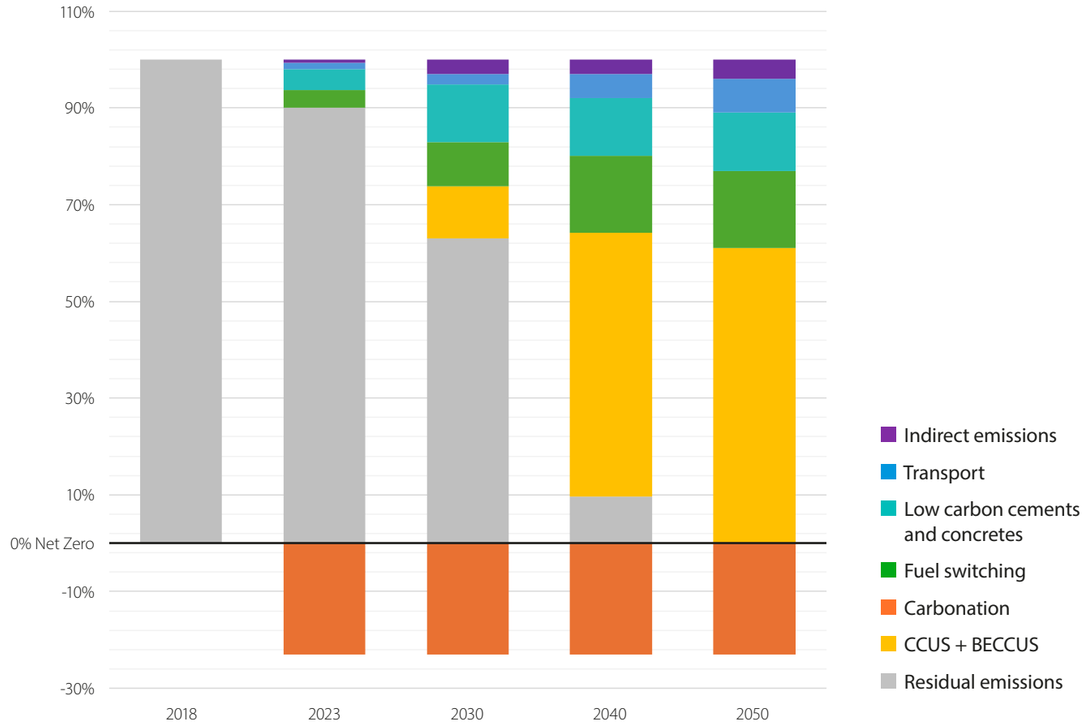
4 Social Outcomes

Building positive outcomes to improve lives through our activities, and use concrete to create a safe, comfortable and healthy built environment.

Metrics

Continuous improvement of the annual Concrete Industry Sustainability Performance reporting with relevant Performance Indicators.

UK cement and concrete possible Decarbonisation Trajectory to 2050



Decarbonisation trajectory is based on CO_2 emissions only.

The above is a detailed pathway to net zero, which represents just one possible trajectory to achieving our net zero ambition.

The pathway, set out in March 2025 is an estimate based on published information and our knowledge of current Government policies. It is subject to change and is reliant on the implementation of Government policy and regulation, as well as access to infrastructure and decarbonisation technologies. This includes cost competitive renewable electricity, access to waste biomass fuels and deployment of CO_2 transport and storage infrastructure.

Significant decarbonisation has already been achieved across the sector since 1990. However, in our roadmap we set 2018 as the baseline and based on this pathway scenario, we estimate a CO_2 reduction of approximately 37% by 2030, 90% by 2040, and achieving net zero by 2050.

Carbon capture, use or storage (CCUS) is key to the decarbonisation of cement and concrete. The pathway shown here assumes that the CCUS projects already announced, but in the early stages of development, will be fully implemented.

However, the timings of these projects will only become clear following further Government announcements on the cluster sequencing process. The roadmap's targets are based on an assumption that CCUS technology will be available in 2040, but this will require further clarity of the relevant policies.

It is important to note that the pathway focuses on the actions required to mitigate CO_2 emissions to reach net zero. Our roadmap also takes into account the benefits of concrete in use, such as carbonation and thermal mass, that will enable the cement and concrete sector to go beyond net zero and become net negative by 2050.

The MPA trajectory is based on the main technology levers previously set out in our industry roadmap. However, we acknowledge that other levers, such as material efficiency in design, can enable further carbon reductions. We have no current means or methodology in place for measuring this, and consequently it is not included in our roadmap.

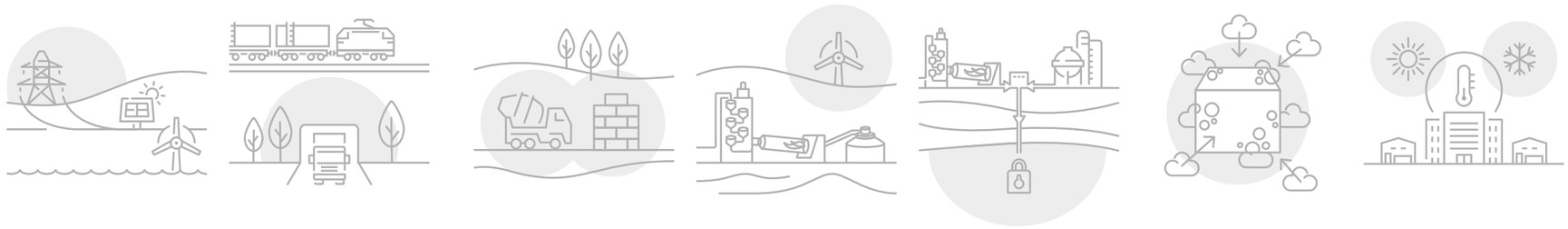
Estimates for potential reductions through concrete mix design, structural design and construction efficiencies can be found in the Global Cement and Concrete Association's (GCCA) carbon reduction monitoring and the LCCG routemap's recommendations.

Beyond net zero: our roadmap in numbers

Absolute 2050 CO_2 emissions reductions compared to 2018

Delivering beyond net zero is not a linear process but we forecast that seven technology levers will play an important and active part in delivering beyond net zero for concrete and cement.

Contribution to beyond net zero from each technology lever



Sustainability Strategy and Sector Data

Measurement and disclosure

The UK Concrete Sustainable Construction Strategy fosters a culture of transparency and disclosure. Our member companies are active in identifying, measuring, and disclosing climate-related risks and opportunities in line with the relevant and emerging national and international standards. The sector also supports a regular review of current best practice.

As a result, we compile accurate data and report on the progress of decarbonisation in concrete and cement manufacturing through our annual sustainability reporting, our sector EPDs and by providing concrete benchmarking data based on UK production.

Annual sustainability data report

Our annual sustainability reports, covering both precast sector and ready-mixed concrete, represent a commitment 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 99% and 96% of sites being certified respectively.

This report covers ready-mixed and precast concrete. Production data for cement and cementitious content of ready-mixed concrete is collected by a third party, in compliance with Competition Law. As part of the new UK Concrete Sustainable Construction Strategy, the methodology for combining this third-party data with ready-mixed concrete data collected directly from MPA members has been revised to improve year-on-year consistency. The updated methodology has been retrospectively applied to data collected from the roadmap baseline year of 2018 onwards. This has resulted in changes to previously published values for several carbon and circular economy indicators.

Market variations

Indicators, such as 'Quality and Performance' or 'Environmental Management', are based on the number of sites covered by an appropriate QMS or EMS.

However, many of the performance indicator metrics in the UK Concrete Sustainable Construct Strategy, such as those for carbon, are based on material usage aggregated over all the different concrete mixes and products supplied by MPA members. Aggregating material usage in this way gives a rolling annual market mix but does not represent the performance of specific concrete mixes or products available on the market. This means that the overall sector performance indicators are very sensitive to market demands in a given year.

Cutting carbon

The industry has reduced the average embodied carbon of concrete to 84.5 kg CO_2e per tonne, a reduction of 26% 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 guidance publications.

Circular economy

The inherent low maintenance and durable nature of a concrete structure together with its resilience to fire and the impacts of climate change, mean that it can remain in use over a long period. Concrete structures can be repurposed and reused multiple times during their lifetime. This approach represents the most efficient use of resources and the best way of embracing circular economy principles and improving whole life carbon performance.

Source smarter

Concrete and its constituent materials are produced by a UK supply chain providing ethically and responsibly sourced materials certified to BES 6001. 96% of concrete is certified to a recognised responsible sourcing scheme. With UK production of concrete and a 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 2023, 54% of the energy used in cement manufacture came from fuels derived from waste materials. For the concrete sector as a whole, 41.4% of total energy use comes from material diverted from the waste-stream.

Environment

Restoring mineral extraction sites can contribute substantially to establishing, enhancing and expanding many of the UK's priority habitats. This in turn helps to deliver benefits for local ecosystems, as well as for natural capital.

We are therefore adopting the MPA Biodiversity strategy which aims to protect and enhance biodiversity and deliver net gain. The aims and objectives of this strategy cannot be achieved in isolation. It is important therefore that we continue to work with our partners and other relevant organisations.

This commitment includes ensuring that 100% of extractive sites have a Biodiversity Action Plan in place by 2025 to increase the area of priority habitats created by quarry restoration. We are committed to ensuring that in addition to quarries, all relevant operational sites will have Biodiversity Action Plans in place by 2030.

Quarrying, or mineral extraction, is a temporary activity, which once completed can result in land being restored for a range of uses. Restoring land to nature can deliver many benefits for people, nature and wildlife, as well as provide a range of wider 'ecosystem services' such as water storage and flood management, landscape enhancement and carbon sequestration.

Social outcomes

The central aspiration of all our activities is to "build positive outcomes to improve lives". The updated UK Concrete Sustainability Strategy is raising the bar when it comes to social outcomes for the concrete industry and its supply chain. We have co-developed a social action framework that demonstrates the short- and long-term social outcomes of our sector activities and will guide our social value actions.

The UK Concrete social outcome framework is aligned with the MPA Charter and its health and safety aspiration which is reflected in MPA Vision Zero. This always treats the health and safety of employees, contractors, and visitors as the number one priority.

Concrete's inherent strength, fire resistance, energy efficiency and durability helps to build safe, secure and comfortable buildings and resilient infrastructure that stand the test of time. Concrete remains essential for improving people's lives and delivering social outcomes. We will prioritise social outcomes alongside climate related risks and review and report regularly on our progress.

NOTES

Mineral extraction accounts for a very small proportion of the UK's total area, covering around 0.3% of land overall.

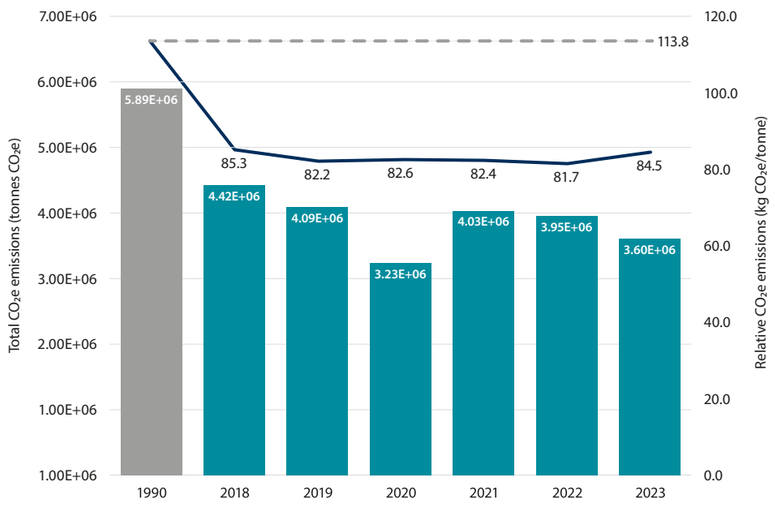
1 Carbon

			Concrete Sector Baseline		Concrete Performance					
Sustainability Principle	**Performance Indicator**	**Units**	**Year**	**Value**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Energy efficiency	Energy intensity as a proportion of production output	kWh/tonne	**2008**	**149.7**	**134.7**	**133.3**	**135.7**	**132.3**	**134.7**	**140.9**
CO_2e emissions – production	Total CO_2e emissions (materials and concrete manufacture, location basis)	Mt CO_2e	**1990**	**5.89**	**4.42**	**4.09**	**3.23**	**4.03**	**3.95**	**3.60**
	CO_2e emissions (materials and concrete manufacture) as a proportion of production output (location basis)	kg CO_2e/ tonne	**1990**	**113.8**	**85.3**	**82.2**	**82.6**	**82.4**	**81.7**	**84.5**
CO_2e emissions – transport	CO_2e emissions from transport of materials and concrete products as a proportion of production output	kg CO_2e/ tonne	**2009**	**8.0**	**9.0**	**8.0**	**6.8**	**6.9**	**8.0**	**6.9**
Transport mode	% of concrete materials transported by different modes calculated on tonne.km basis	Road	**n/a**	**n/a**	**50%**	**54%**	**62%**	**50%**	**48%**	**52%**
		Rail	**n/a**	**n/a**	**47%**	**45%**	**36%**	**49%**	**51%**	**47%**
		Water	**n/a**	**n/a**	**3%**	**1%**	**2%**	**1%**	**1%**	**1%**

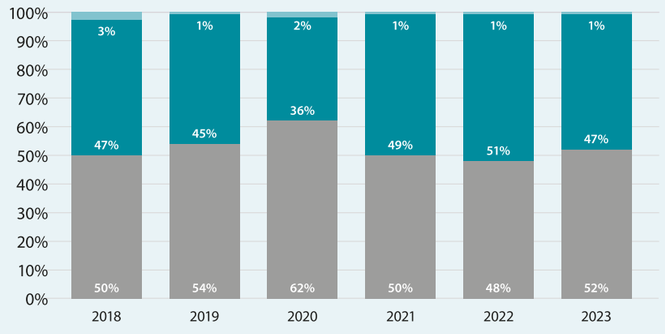
CO_2e emissions – production

CO_2e emissions from the concrete sector have fallen significantly since 1990. In 2023, total CO_2e emissions were 3.6 Mt CO_2e (61% of the 1990 total). Relative emissions per tonne of concrete produced were 84.5 kg CO_2e/ tonne (74% of the 1990 value).

- Total CO_2e emissions
- CO_2e per tonne concrete
- O_2e per tonne concrete (1990 baseline)



Transport mode



Transport modal split for concrete materials (tonne.km basis)

Around half of all concrete material transport is by rail and water, and therefore has significantly lower emissions than if transported by road.

- Water
- Rail
- Road

Methodology Notes

Energy efficiency and CO_2e emissions – production:

- Previously published values have been revised with updated methodology.
- Both indicators have been calculated using the rolling annual market mix, i.e. averaged across all concrete supplied to the market as reported annually by MPA members.
- The sector-wide values from 2018 onwards only include materials and products for which MPA collects data
  - materials: cement, GGBS, quicklime, aggregates, and
  - products: ready-mixed and precast concrete
- The sector-wide values exclude
  - materials for which MPA does not currently collect data: Fly Ash, limestone fines and other cementitious, and admixtures
- Baseline values have been recalculated using the 2018 market mix.

Energy efficiency:

- The 2008 baseline value has been recalculated using the revised methodology, by applying 2008 energy factors to the 2018 product mix.
- Energy efficiency fluctuates with changes in market demand and operational changes, e.g. new equipment installation.

CO_2e emissions – production:

- The calculation of greenhouse gas emissions (in terms of CO_2e equivalent) is carried out on a location-basis, i.e. electricity purchased from the grid for use in manufacturing is converted to CO_2e emissions using the government conversion factors for company reporting of greenhouse gas emissions.
- The sector-wide values exclude any economic allocation for co-products such as GGBS.
- The 1990 baseline value has been recalculated using the revised methodology, by applying 1990 carbon factors to the 2018 mix.

CO_2e emissions – transport:

- The choice of UK government GHG emissions factors used in the calculation has been reviewed and transport CO_2e emissions have been recalculated for 2018 to 2023:
  - Road
    - Cement road transport emissions are based on diesel fuel consumption.
    - Fuel consumption data is not available for other materials and products. Therefore, return distances are multiplied by the following GHG conversion factors:
      - ▲ HGV (all diesel) Rigid (>17 tonnes)/50% laden for aggregates and ready-mixed concrete,
      - ▲ HGV (all diesel) Articulated (>33 tonnes)/50% laden for precast concrete products and GGBS.
  - Rail calculations use the Freight train GHG conversion factor.
  - Shipping calculations use the Cargo ship Bulk carrier, 100,000-199,999 dwt GHG conversion factor.
- In line with CMA requirements, rail and water data for cement transport are aggregated and reported as rail.
- Based on the data collected, the following assumptions have been made about material transport:
  - Cement: 100% transported by road, between one third and half has an additional transport leg by rail/water
  - GGBS: 100% transported by road, a small amount (5% or less) has an additional water transport leg
  - Aggregates are transported by a single mode, either road, rail or water
- The calculation of modal transport split is done on a tonne.km basis, i.e. it considers volume x distance for each mode of transport (road, rail, water). This takes into account that, although overall volumes transported by rail or water are less than for road, the distances involved are significantly greater.

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.

2 Circular economy

		Concrete Sector Baseline		Concrete Performance					
Sustainability Principle	**Performance Indicator**	**Year**	**Value**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Waste Minimisation	Materials diverted from the waste stream for use as a fuel source, as a % of total energy use.	2008	17.4%	32.8%	34.6%	35.3%	33.1%	36.2%	41.4%
	Waste to landfill as a proportion of production output (kg/tonne).	2008	5	0.4	0.3	0.1	0.6	0.8	0.3
	Net waste consumption ratio.	2008	19	238	298	884	158	112	285
Resource Efficiency	% of additional cementitious materials (GGBS, fly ash, etc.) as a proportion of total cementitious materials used.	2008	30.0%	28.5%	28.0%	28.7%	28.0%	31.1%	30.6%
	Recycled/secondary aggregates as a proportion of total concrete aggregates.	2008	5.3%	5.2%	5.2%	4.4%	5.7%	5.0%	4.7%
Quality and Performance	% of production sites covered by a 'UKAS' certified ISO 9001 quality management system.	2008	84.2%	97.8%	98.7%	98.0%	97.6%	97.8%	95.7%

Methodology Notes

The previously published values of many indicators have been revised following the updated methodology for the cementitious content of ready-mixed concrete, first introduced for the publication of 2022 data.

Materials diverted from the waste stream for use as a fuel source, as a % of total energy use:

- Values for 2018 to 2020 have been updated to align with updated methodology.

Waste to landfill as a proportion of production output refers to waste from the manufacturing process.

Net waste consumption ratio:

- Values for 2018 to 2020 have been updated to align with the updated methodology.
- Decreased values for 2021 and 2022 are due to increased waste to landfill.

N.B. This indicator is highly variable, mainly due to variation in the [extremely low] waste to landfill amount.

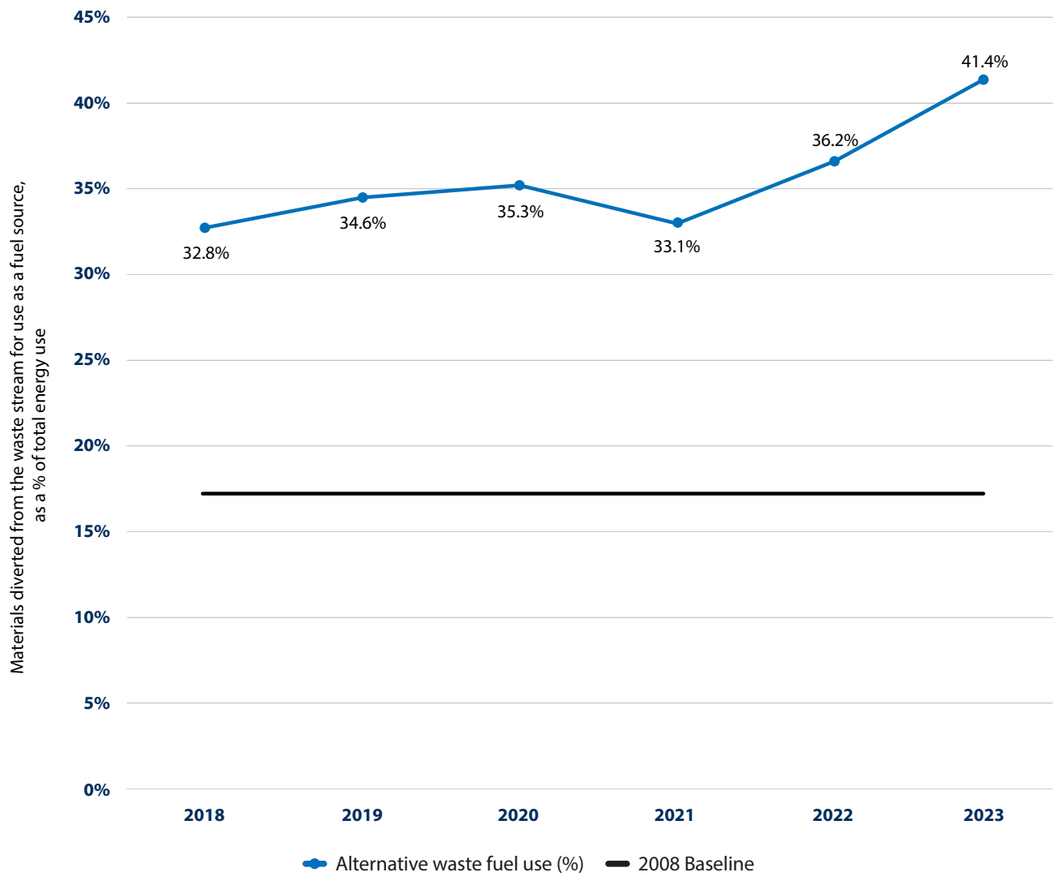
Percentage of additional cementitious materials (GGBS, fly ash, etc.) as a proportion of total cementitious materials used:

- Values for 2018 to 2020 have been updated to align with the updated methodology.
- Assumptions regarding proportions of additional cementitious materials in non-CEM I cements have been revised. Combination cements are assumed to have the following composition:
  - CEM II is either CEM II A-L or CEM II B-V
    - CEM II A-L 15% limestone fines (standards allow up to 20%)
    - CEM II B-V 30% fly ash (standards allow 20-35%)
  - The ratio of CEM II A-L to CEM II B-V is
    - 50% CEM II A-L, 50% CEM II B-V for precast concrete
    - 80% CEM II A-L, 20% CEM II B-V for ready-mixed concrete
  - CEM III A 50% GGBS (standards allow 36-65%)

Recycled/secondary aggregates as a proportion of total concrete aggregates:

- Previously published values revised with the updated methodology.

The UK cement and concrete sector is uniquely placed to consume hard-to-recycle waste as fuel. In 2023, 41.4%% of fuel energy used in concrete manufacture was from alternative sources. The performance of the cement sector leads this indicator and here 54.1% of fuel comprised waste material in 2023.



3 Natural environment

		Concrete Sector Baseline		Concrete Performance					
Sustainability Principle	**Performance Indicator**	**Year**	**Value**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Environmental Management	% of production sites covered by a 'UKAS' Environmental Management System (EMS).	2008	72.3%	97.4%	97.1%	97.2%	98.6%	98.0%	98.6%
Site Stewardship & Biodiversity	% of relevant production sites that have specific action plans.	2008	94.3%	99.7%	99.6%	99.7%	99.7%	99.7%	99.7%
Water	Mains water consumption as a proportion of production output (litres/tonne).	2008	86.0	53.2	76.9	83.3	94.6	77.4	89.2

Methodology Notes

Water – Mains water consumption:

- Members abstract water from their own sources, such as boreholes. The volume of water abstracted, and therefore the mains water consumption, vary from year to year depending on weather and other factors.
- The 2008 baseline has not been revised.

Within the mineral products sector our aim is to protect and enhance biodiversity and deliver biodiversity net gain wherever possible. The process of restoration to nature can deliver multiple benefits including landscape and nature, recreation, and a range of wider 'ecosystem services' such as water storage and flood management, landscape enhancement, and carbon sequestration.

Concrete can also be used to support regenerative design and nature-based solutions in development projects. New products are evolving to provide conditions suitable as a natural habitat on or in the concrete itself.

4 Social outcomes

		Concrete Sector Baseline		Concrete Performance					
Sustainability Principle	**Performance Indicator**	**Year**	**Value**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Health & Safety	Reportable injuries per 100,000 direct employees per annum.	2008	799	437	447	354	409	426	360
	Lost Time injuries (LTI) for direct employee per 1,000,000 hours worked.	2010	6.5	3.42	3.48	3.32	3.69	2.52	2.53
Emissions (excluding CO_2)	Number of convictions for air and water emissions per annum.	2008	6	0	0	1	0	0	0
Responsible Sourcing	% of production certified to BES 6001.	2008	n/a	91%	95%	91%	91%	94%	96%

Methodology Notes

Reportable injuries per 100,000 direct employees per annum:

- The definition of reportable injuries was revised by HSE in 2012. Prior to 2012 an injury was "reportable" if it resulted in more than 3 complete days unfit for work. In 2012 this was changed to more than 7 complete days unfit for work.

Additional social outcome indicators are currently under review.

Product level data

Carbon benchmarking

The concrete industry's annual sustainability report has been demonstrating the carbon reduction of the sector since 1990. However, there is a need for more granular product level data to inform a benchmarking framework that will clarify the definition of low carbon concrete available in the market.

A preliminary UK concrete benchmarking framework was developed by the Low Carbon Concrete Group (LCCG) which was published in its route map. The LCCG market benchmark is updated regularly, and published by the Concrete Centre, to help support the procurement of lower carbon concretes.

UK Concrete and its members are committed to providing data and supporting the initiatives by the construction industry and Government to create a robust and consistent methodology for carbon measurement and continuous concrete benchmarking.

The Market Benchmark summarises the distribution of cradle-to-gate carbon emissions of normal weight concrete recently produced in the UK. It covers LCA stages A1 to A3 ("cradle to batching plant gate", or "cradle to precasting mould").

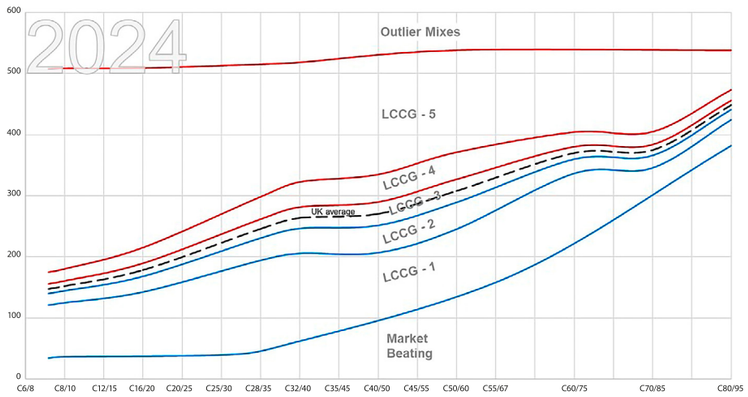
The Market Benchmark provides a mechanism for rating the embodied carbon of concrete within the range of concretes in use across the market based on strength. There is an acknowledgement that $kgCO_2e/m^3$ connected to strength is not applicable for all concrete, nor for one concrete application at all times in all regions. However, the Market Benchmark is a tool to understand the embodied carbon of concrete available in the market and define lower carbon concrete. The tool must be used in the context of reducing overall project and global greenhouse gas (GHG) emissions. Sometimes concrete with higher embodied carbon used more efficiently may result in lower carbon project and / or global GHG emissions.

Sector EPDs

Environmental product declarations (EPDs) for construction products provide transparent data to help designers choose building materials with lower environmental impacts. An EPD is based on a life cycle assessment (LCA) over the full product value chain. It uses the methodology set out in international standards, such as the European standard for EPDs, EN 15804, to calculate indicators for climate change and other environmental impacts, as well as resource use. UK Concrete provides training and tools for member companies to create EPDs for their product lines.

MPA has partnered with the Global Cement and Concrete Association and with One Click LCA to develop sector EPDs to EN 15804 for a range of UK-produced cements and concretes. These provide designers with high quality, reliable, up-to-date carbon data that is specific to the UK. The partnership with One Click LCA also enables members of MPA to produce EPDs for their concrete products. Up-to-date, UK-specific embodied carbon data for cement and concrete means that designers do not have to rely on databases that use international data for concrete and its constituents.

LCCG Market Benchmark for embodied carbon, normal weight concrete, LCA stages A1-A3 (ready-mix: cradle to batching plant gate, precast cradle to mould)



◆ The benchmark ratings are based on embodied carbon of normal weight concrete mixes used recently in the UK
◆ Performance requirements may make it impractical to achieve some ratings for a particular application
+ Opportunities for reducing the carbon rating my typically be achieved by adjusting: type and % of SCM, requirements for early strength gain, consistence, environment (e.g. by use of protective barrier layers) minimum cement content (kg/m³), w/c ratio, use of admixtures, type and grading of aggregates, age at which the specified strength must be achieved, sources of constituents

This 2024 update of the Benchmark is based primarily on embodied carbon data for normal weight ready-mix concrete produced in the UK by MPA members in 2023. Additional data received from contractors and independent concrete suppliers in the UK has helped to define the lower boundary of the embodied carbon of concretes recently produced in the UK, this includes data on alkali activated cementitious material (AACM).

The MPA data has been used to calculate a volume weighted mean and volume weighted standard deviation of the concrete produced in each strength class. For each strength class the mean and standard deviation were used to estimate the embodied carbon of concrete by market fractile (lowest 20% etc).

The most recent sector EPDs for cement and ready-mixed concrete products

EPD	Manufacturing data from year	Registration date	Valid until	GWP-fossil gross kg CO_2e per tonne at factory gate*
MPA UK Average CEM I Sector EPD	2020	14th April 2022	13th April 2027	**839.8**
MPA UK Average Portland Cement Sector EPD	2020	14th April 2022	13th April 2027	**812.3**

Ready-mixed Concrete Sector EPDs	Manufacturing data from year	Registration date	Valid until	
	2021	4th March 2024	28th Feb 2029	
GWP-FOSSIL GROSS				
			Beyond the construction works life cycle – benefits and loads beyond the system boundary	
Ready-mixed Concrete† Sector EPDs	Modules A1-A3	Modules A to C	Module D Substitution of primary aggregates	Additional information Carbonation associated with reuse of recycled concrete
GWP-fossil gross	**kg CO_2e/m^3**	**kg CO_2e/m^3**	**kg CO_2e/m^3**	**kg CO_2e/m^3**
C28/35 CEM I Sector EPD	272	258	-17.6	-58.2
C28/35 CIIB-V+SR Sector EPD	228	219	-16.9	-47.5
C28/35 CIIC-SL+SR Sector EPD	176	175	-16.7	-32.7
C28/35 CIIIA+SR Sector EPD	175	173	-16.5	-31.7
C28/35 CIIIB+SR Sector EPD	145	150	-15.7	-22.1

An update of precast and masonry sector EPDs is in progress.

NOTES

- MPA sector EPDs report GWP-fossil gross as the headline indicator. This includes emissions from combustion of all fossil-based fuels used in the cement kiln, both virgin fuels and waste-derived secondary fuels. Net GWP values are provided in the EPDs for comparison purposes.
- In the RICS whole life carbon assessment professional standard, all modules are included within a whole life carbon assessment. Embodied carbon refers to the life cycle embodied carbon as given by modules A-C (excluding operational carbon, which is zero and therefore not declared for ready-mixed concrete). Embodied carbon includes the whole life cycle not just the product manufacturing information in module A1-A3.

* As cement is chemically bound into concrete, and cannot be physically separated, cement EPDs only declare modules A1-A3, i.e. the impacts for the manufacturing stage up to when the cement leaves the factory.

† The reference unit for the ready-mixed concrete sector EPDs is one m^3 of normal density (2380 kg/m^3) concrete. UKC sector metrics include a wide range of ready-mixed and precast concrete products, with significant variation in concrete density. Therefore, for the UKC metrics (p8-13), the reference unit is one tonne.

UK concrete is essential, sustainable, protecting people, innovating, helping to tackle climate change and enabling great design

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UK Concrete is part of the Mineral Products Association, the trade association for the aggregates, asphalt, cement, concrete, dimension stone, lime, mortar and industrial sand industries.

www.mineralproducts.org

UK Concrete would like to acknowledge the support of MPA members in producing this document.

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