

# Concrete Industry Sustainability Performance Report

7th report: 2013 performance data

# Our Strategy

The UK concrete industry has a 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.

We know that to achieve a sustainable built environment we need to collaborate and work in partnership. The strategic objectives of the Concrete Industry Sustainable Construction Strategy reflect this priority - to contribute to construction industry and government initiatives, engage with the broader supply chain to inform good practice and communicate with clients to enable design and construction with concrete.

This report provides an annual update from the UK concrete industry and is a detailed record of progress against our strategic commitments and performance indicators. We also have a website where you can find out more [www.sustainableconcrete.org.uk](http://www.sustainableconcrete.org.uk)

## Our Seventh Report

This 7th annual report summarises performance from 2008 to 2013 across a range of indicators. The data is based on information provided by the UK Concrete Industry, represented by the trade associations and companies who have signed up to the Concrete Industry Sustainable Construction Strategy.

The concrete industry consists of nine production sectors that together provide ready-mixed concrete, precast concrete and constituent materials. The data provided in this report, compiled by a third party, is gathered from Forum members which represent an estimated 80% of UK concrete production.

The implementation and development of the Concrete Industry Sustainable Construction Strategy is overseen by the Sustainable Concrete Forum. Links to the website of the trade associations and founder members of the Forum are included on the back cover.

As introduced in our sixth report, the report also responds to the Green Construction Board "Act on" recommendations to demonstrate our ongoing progress.

# Our Progress

## An update from our Chairman



*Our chairman, speaking at a sustainability conference.*

A major achievement in this reporting year is the completion of Resource Efficiency Action Plans (REAPs) for concrete and masonry. The UK concrete industry collaborated with the brick industry to launch REAPs for clay bricks and blocks, ready-mixed concrete and precast concrete.

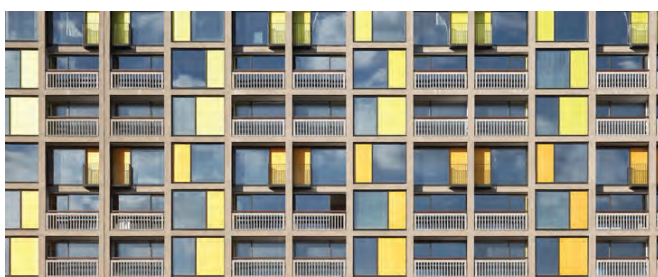
As an industry led initiative supported by WRAP the REAPs look at impact factors over the lifecycle of a construction product as defined in EN 15804 and will assist the supply chain in managing material efficiency from raw material extraction through to the demolition/deconstruction of buildings.

This approach to resource efficiency mirrors the industry's previous achievement in responsible sourcing accreditation; we are committed to a measure of sustainability that demonstrates whole-life product stewardship. Through holistic measures such as BES 6001 (responsible sourcing) and throughout the lifecycle (EN 15804) the industry can best communicate the contribution that concrete can make towards a more sustainable built environment.

The industry is currently investing in generic EPDs and BIM guidance to enable designers to utilise the sustainability credentials of the concrete industry from the earliest stage in building and infrastructure projects. We look forward to hearing from you on how we can help you further in using concrete as part of a sustainable built environment. You can make contact through the feedback form on the website at [www.sustainableconcrete.org.uk](http://www.sustainableconcrete.org.uk).

To achieve our vision as a leader in sustainability, we are also engaging in debates that will shape the future of construction products and our built environment as we recognise the role natural capital, ecosystem services and a circular economy will have in shaping our approach to sustainability.

**Andy Spencer**  
Chairman, Sustainable Concrete Forum



## Park Hill, Sheffield

Shortlisted for the Stirling Prize in 2013, Park Hill is an example of the reuse of a concrete frame. Refurbishing, rather than demolishing and rebuilding, has prevented four football stadia of material entering the waste stream. Building in concrete provides a long design life and a sustainable built environment.

Find out more at [www.thisisconcrete.co.uk](http://www.thisisconcrete.co.uk)

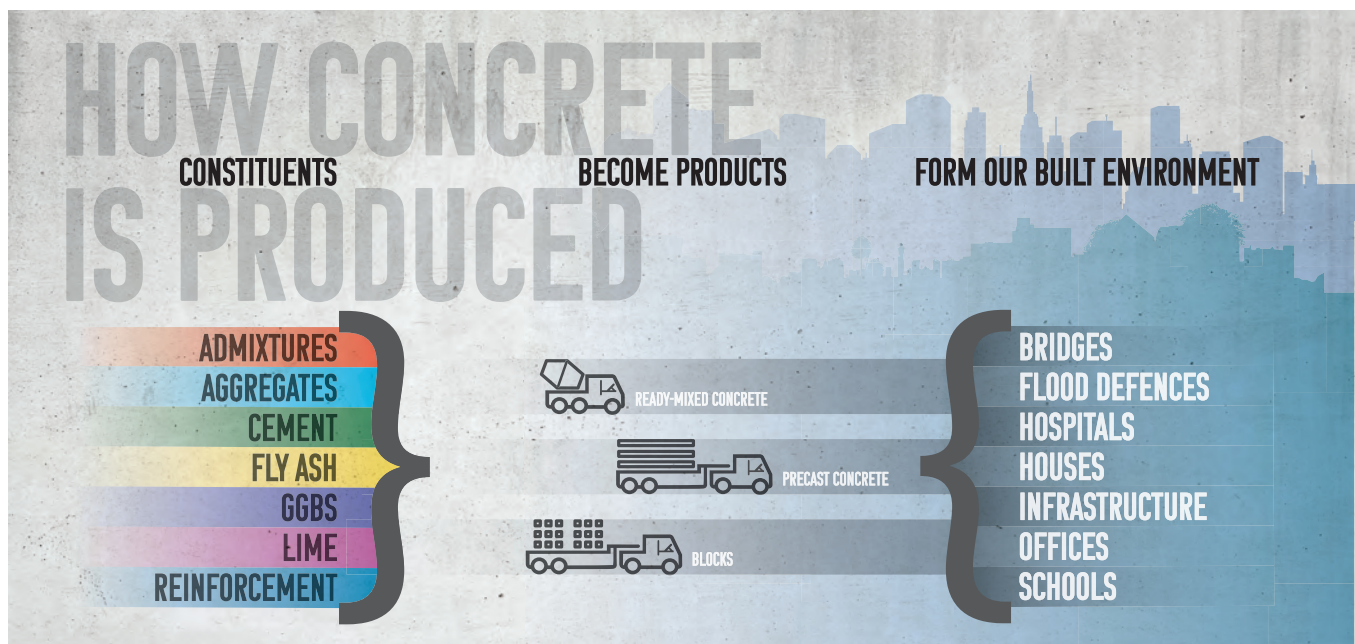
# ACTION towards a Sustainable Built Environment

Our focus on carbon reduction, in line with UK Government Strategy for sustainable construction, has achieved a **reduction in carbon dioxide per tonne** of 22%, based on the standardised or baseline mix and from a 1990 baseline.

Also, in line with European Commission aims for the Union to be more resource efficient, we report on the industry's **Resource Efficiency Action Plans (REAPs)**. The REAPs are a practical means to extend our sustainability strategy downstream, working more closely with concrete constructors and those responsible for projects at the end of their service life.

The industry is also a **net user of waste**. 2013 has seen an increase in the use of waste as a fuel source and a reduction in waste to landfill. The current net waste ratio is 79, this means the industry uses 79 times more recovered and waste materials than it sends to landfill.

Data also shows an increase in the usage of **recycled and secondary aggregates**. Certification to **responsible sourcing standard BES 6001** has risen to 91% with some sectors having achieved certification for 100% of production. Guidance on specifying sustainable concrete is available from The Concrete Centre at [www.concretecentre.com/publications](http://www.concretecentre.com/publications).



## Our Strategy Development

Any strategy aiming to achieve a more sustainable built environment must consider the full lifecycle of products from materials extraction through product manufacture, construction, in-service life and end-of-life options.

The European Commission has published its roadmap to a more resource efficient Europe with a greater emphasis on a circular economy. For the concrete industry that circular economy encompasses a range of other sectors.

In setting out our strategy in 2008 the industry concentrated on aspects largely within its control i.e. the 'cradle to gate stage'. The updated strategy, from 2012 to 2020, is expanding to include downstream stages.

This development of the strategy aims to enable the industry to publish further best practice guidance on design and specification, site practice, climate change and adaptation, and end of life.

We are also looking at our indicators and how we can continue to improve the clarity and transparency of our data. The data

for this report is sourced from nine sectors that either produce concrete or supply materials into the manufacture of concrete and concrete products (cement, aggregates, fly ash, ground-granulated blast-furnace slag (ggbs), admixtures, mortar, ready-mixed concrete, precast concrete sectors and reinforcing steel).

To be able to provide indicators that demonstrate industry performance and are comparable annually, we use a consistent methodology, details of which can be viewed in our Performance Indicator Guidance Document available at [www.sustainableconcrete.org.uk](http://www.sustainableconcrete.org.uk).

Data is collated from confidential surveys of the concrete and materials producers in strict compliance with competition law requirements. Where possible the indicators relate to concrete production data combined with the contribution made by the constituent materials. For the latter, average consumption for the year of each type of material is calculated for all concrete types and combined with 'per tonne' data for each indicator from materials suppliers. Using this method provides an approximate cradle to gate value for concrete products.

# Action on Materials

Concrete is a locally produced, responsibly sourced and abundant material

## Our Strategy 2020 Commitment

- Target continuous improvement of sustainable production performance and report annually

This report is the 7th consecutive annual report and is aligned with Green Construction Board themes, as well as the key sustainability principles of our strategy.

The concrete industry sustainable construction strategy and the supporting performance indicators provide a framework for a common, transparent approach for the industry to measure, manage and reduce the impacts of manufacturing.

The use of the internationally recognised management systems ISO 9001 and ISO 14001 is widespread and the strategy recommends companies to have their systems independently certified.

Over 95% of the materials used in the manufacture of concrete are sourced from the UK. This provides our stakeholders with reassurance on the quality of our product and our processes as well as minimising embodied transport impacts.

- Provide Life Cycle Assessment data compliant with codes and standards

Information on the specification of concrete is published in The Concrete Centre guide *Specifying Sustainable Concrete*. This is updated regularly with information from the sectors and the latest best practice.

In 2013, the cement industry published its first verified Environmental Product Declaration (EPD) in conformance with European Standard EN 15804 and ISO 14025.

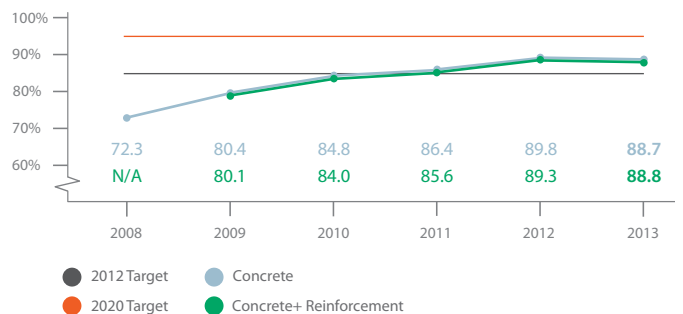
Generic concrete EPDs are currently in development and are on schedule to be launched in 2015. This project will also provide manufacturing members of the product associations with a consistent methodology to support the cost-effective production of product specific EPDs.

### Please note

The data collection system is reviewed annually to seek improvements in accuracy and reliability. The 2013 performance data for the 'Additional cementitious materials' indicator has been rebased due to a refinement in the calculation method. More information is available at [www.sustainableconcrete.org.uk](http://www.sustainableconcrete.org.uk)

## Environmental Management

The percentage of production sites covered by a certified ISO 14001 EMS



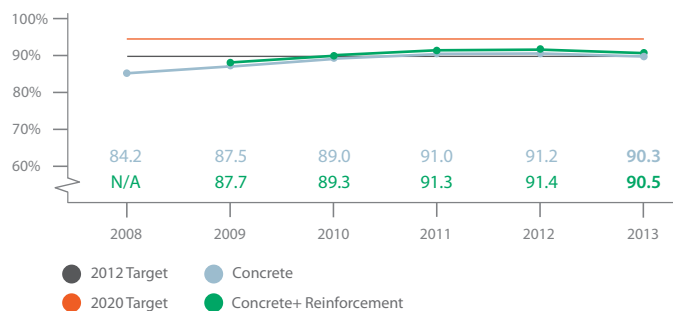
Controlling and managing the environmental impacts of procuring materials and manufacturing products is an essential requirement for sustainable development.

The adoption of Environmental Management Systems, such as ISO 14001, is a best practice approach to identifying impacts, assessing their importance and providing a structured approach to controlling, reporting and managing performance improvement.

Our indicator reports on the percentage of the sites that are independently certified to ISO 14001. 2013 data shows that 88.7% of sites are certified. The target for 2020 is 95%.

## Quality and Performance

Percentage of production sites covered by a certified ISO 9001 QMS



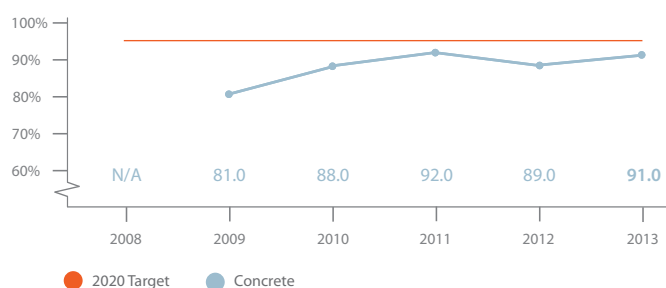
Product consistency, performance and being fit for purpose are crucial to sustainability and ensuring that materials are not rejected or potentially wasted, which is costly economically and environmentally.

Quality management systems have a vital role and our indicator reports on the percentage of the sites that are independently certified to ISO 9001:2008. 2013 data shows that 90.3% of sites are certified. The target for 2020 is 95%.

# Sustainable consumption and production

## Responsible Sourcing

### Percentage of production certified to BES 6001



The demand for evidence of the responsible sourcing of building products and materials is ever increasing together with the need to demonstrate compliance through a recognised responsible sourcing scheme, certified by a third party. Our indicator reports the proportion of concrete production that is certified to BES 6001.

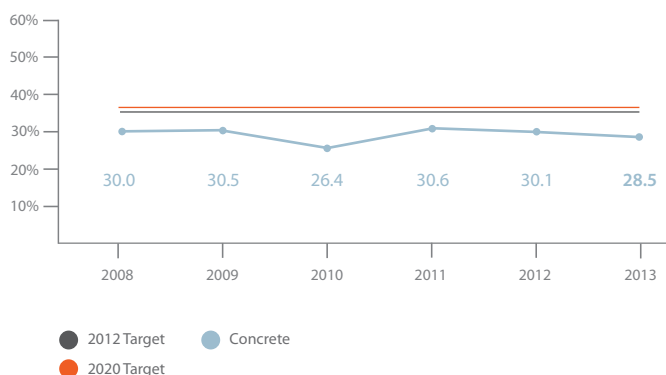
During 2013, certification of concrete products to BES 6001 increased by 2% from 2012 to 91% of the concrete tonnage produced. Of this certified product 85% achieved a performance rating of 'Very Good' or 'Excellent'.

The 2020 target is 95% and some sectors have already exceeded this in 2013, with 100% of UK cement certified to BES 6001.

## Resource Efficiency

### Additional cementitious materials

#### The amount of additional cementitious materials as a proportion of total cementitious materials

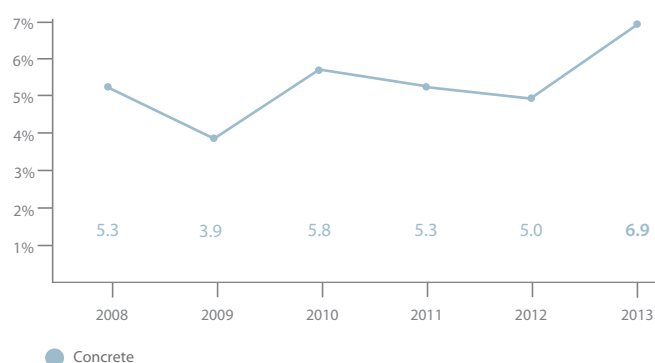


Concrete manufacture uses by-products that are cementitious and originate from other industries such as fly ash from power stations and ground granulated blastfurnace slag (GGBS) from the iron and steel industry. These materials have a lower embodied carbon than the cement they replace and can also influence the appearance and performance of concrete.

The indicator reports the percentage of additional cementitious material as a proportion of the total cementitious materials. In 2013 this was 28.5%. The target for 2020 is 35%. This indicator has been rebased following a review of the materials classified as 'additional cementitious'.

### Recycled/secondary aggregates

#### The use of recycled/secondary aggregates as a proportion of total aggregates used in concrete



Depending on the application and the type of concrete there is often an opportunity to incorporate recycled aggregates previously used in other projects and secondary aggregates that may be by-products from other processes e.g. 'stent' and granulated slag.

Environmentally it is preferable to use these materials as close as possible to their origin, otherwise their embodied carbon value can exceed virgin materials due to increased transportation impacts. This decision should be made on a project basis to ascertain benefit. For this reason the concrete strategy does not include a simple numerical target for the proportion of recycled/secondary aggregates of the total aggregates used but reports on the trend. This has been consistent at around 5% by mass, although some products can have significantly higher levels of recycled/secondary aggregates.

Specification of recycled/secondary aggregates is incentivised in schemes such as BREEAM. Guidance on the 2014 update to BREEAM is available from The Concrete Centre at [www.concretecentre.com/publications](http://www.concretecentre.com/publications)

### Recycled steel reinforcement

Steel reinforcement manufacturing BAR members used around 95.4% of recycled ferrous metal waste as a proportion of the raw materials consumed in their electric arc furnaces (EAF). While reinforcement fabricators used 100% EAF material in producing and supplying rebar for use in concrete.

# Action on Carbon

Concrete's thermal mass saves energy and carbon

## Our Strategy 2020 Commitment

- **Contribute to the delivery of a low carbon built environment**

The performance indicators and targets within the concrete industry strategy are aimed primarily at reducing the embodied carbon dioxide in concrete. The industry 2020 target of a 30% reduction from a 1990 baseline, is significantly ahead of the Green Construction Board (GCB) route-map.

There is increasing evidence in our built environment of the positive contribution concrete can make in reducing the operational carbon dioxide from buildings in use. Best practice guidance is available from The Concrete Centre and there are regular events to share knowledge from exemplar projects. In 2013 events provided guidance on High Thermal Mass with Passive and Active Flooring, Cost Carbon and Concrete, Designing 21st Century Homes and Low Energy Office Architecture.

- **Develop a Low Carbon Freight Initiative to support improvement in transport performance through the concrete supply chain to construction sites**

The industry is working with stakeholders to identify areas for improvement. There has been liaison with the rail freight industry with the aim of increasing the volume of our materials moved by rail. The REAP stakeholder process with contractors also identified areas where there may be efficiencies to be gained.

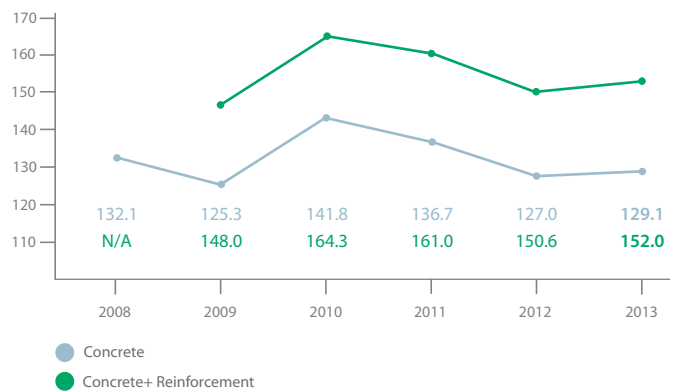
In comparison to other materials, concrete has low transportation CO<sub>2</sub>, as it is a UK manufactured product using locally sourced materials. The consistency of our indicator provides a generic figure that specifiers can use when making material comparisons.

### Please note

The data collection system is reviewed annually to seek improvements in accuracy and reliability. The 2013 performance data in this section has been rebased due to a refinement in the calculation method. More information is available at [www.sustainableconcrete.org.uk](http://www.sustainableconcrete.org.uk)

## Energy Efficiency

Energy used in production as a proportion of production output (kWh/tonne)



Reducing the carbon emissions associated with the production of concrete and its constituent materials can be achieved by improving energy efficiency or reducing consumption. The indicator (kWh/tonne) also referred to as 'energy intensity' reports energy consumption during the manufacture of concrete products added to proportional contributions from each of the constituent materials. This is effectively a measure of the average embodied energy of all concrete produced (by the Forum members).

In 2013, the energy intensity value for concrete is 129.1 kWh/t and concrete + reinforcement is 152.0 kWh/t.

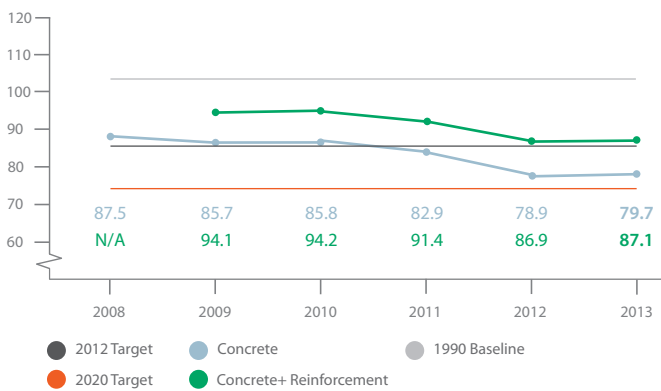


St Antony's College, Oxford. Architect: Bennetts Associates Architects. © VIEW/Hufton+Crow

## CO<sub>2</sub> Emissions – Production

The indicator for CO<sub>2</sub> emissions from production or carbon intensity is measured as CO<sub>2</sub>/tonne of concrete produced. Data from the energy use of concrete production and a proportional contribution from constituent materials are converted to CO<sub>2</sub> emissions. The indicator is influenced by both production CO<sub>2</sub> emissions and the average mix proportions of concrete. These proportions are directly affected by the relative market demand for different types of concrete. In order to differentiate between these two influences, we report CO<sub>2</sub> emissions based on a 'Standardised or Baseline mix' and a 'Rolling mix'.

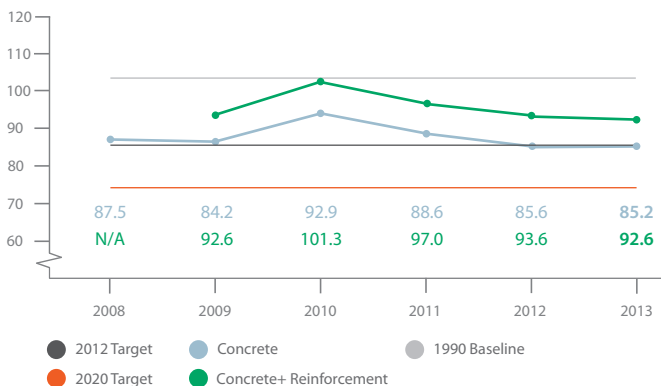
CO<sub>2</sub> emissions – Production (Standardised mix) (kg CO<sub>2</sub>/tonne)



The **Standardised or Baseline mix** is based on the average proportions of materials in concrete when the strategy was launched in 2008. By using these mix proportions we report the overall carbon intensity and show the performance directly under the industry's control. The Rolling mix value for each year is based on the average mix proportions for that year.

Based on the 2013 data the carbon dioxide intensity of concrete has reduced by 9% since 2008 and 22% since 1990.

CO<sub>2</sub> emissions – Production (Rolling mix) (kg CO<sub>2</sub>/tonne)

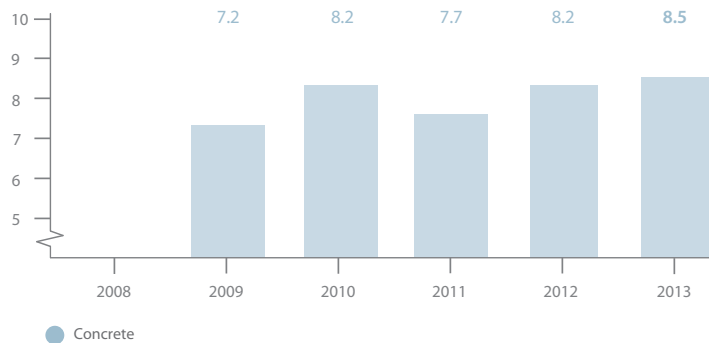


During 2013 the **Rolling Mix** value has shown a reduction to 85.2 kg CO<sub>2</sub>/tonne which represents a 17% reduction from the 1990 baseline.

This is the first reporting period where both indicators have achieved the 2012 reduction target.

## CO<sub>2</sub> Emissions – Transport

CO<sub>2</sub> emissions of total delivery transport through the industry supply chain (kg CO<sub>2</sub>/tonne)



Within the concrete supply chain, some elements of transport are relatively simple to measure; others are more complex potentially involving multiple modes of delivery with sub-contracted vehicles scheduling return loads in order to make efficient use of vehicles. Work is ongoing to ensure that a reliable baseline of data can be achieved.

This indicator of kg CO<sub>2</sub>/tonne is calculated from the conversion of concrete data and proportioned materials delivery data using DEFRA carbon factors. The value is consistent, at around 8kg CO<sub>2</sub>/tonne of concrete with 2013 at 8.5 kg CO<sub>2</sub>/tonne.

In 2013 the average delivery distance for all concrete was 41km (or 25 miles).

The average delivery distance for all raw materials for concrete in 2013 was 50km. This increase in distance from 2012 is in part due to an increase in rail transport, which, although it increases total distance travelled, is a more carbon efficient mode and now represents 12% of all materials moved.

# Action on Waste

Concrete is a net user of waste and provides material efficient structures

## Our Strategy 2020 Commitment

- **Develop a Material and Resource Efficiency Programme to inform best practice across the life cycle of concrete in the built environment**

In 2013, the ready-mixed concrete and precast concrete sectors partnered with the clay brick and block sector to launch Resource Efficiency Action Plans (REAPs); demonstrating their commitment to increasing the opportunity for recycling and using recovered materials, throughout the whole-life of these materials.

As an industry led initiative supported by WRAP and with technical input from Ceram (for clay bricks and blocks and precast concrete) and BRE (for ready-mixed concrete), the REAPs have been developed to assist the supply chain in managing material efficiency from raw material extraction through to the demolition/ deconstruction of buildings, and identifying and creating an actionable strategy for reducing waste and improving resource efficiency.

These Action Plans address a much wider scope and cover the main impact indicators of waste, water, carbon (energy usage and emissions), materials and biodiversity, over the lifecycle of a construction product as defined in EN 15804, as championed by the GCB's "Greening the Industry" campaign.

Creating an Action Plan brings together stakeholders from across the construction supply chain to identify and prioritise actions to work towards reducing the overall environmental impact of construction materials. This collaborative approach, underpinned by evidence based research, identifies practical recommendations, actions and targets that deliver upon industry commitments and Government targets.

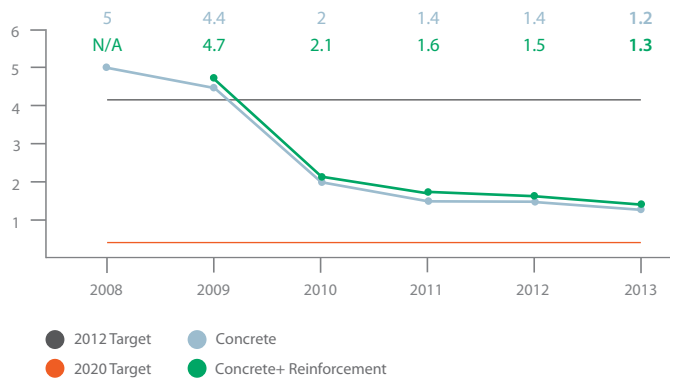
Progress on the action plans will be reported in future performance reports.

For more information and links to all the REAPs visit [www.sustainableconcrete.org.uk](http://www.sustainableconcrete.org.uk)

## Resource Efficiency

### Waste Minimisation

Waste to landfill as a proportion of production output (kg/tonne)



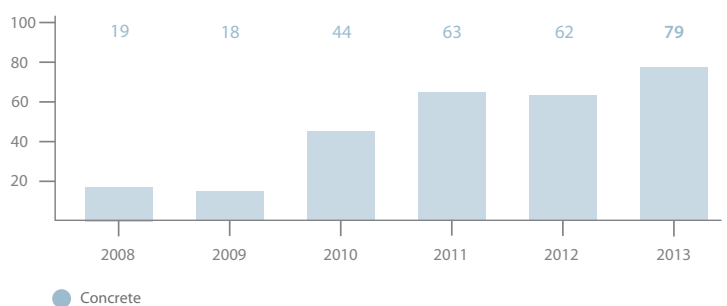
The indicator for waste minimisation relates to waste disposed to landfill per tonne of concrete produced and includes a proportional waste contribution from constituent materials.

During 2013 the industry achieved further improvement in performance with a value of 1.2kg/tonne. This is a 76% reduction from the 2008 baseline. The 2020 target is a 90% reduction.

The inclusion of a waste contribution from the reinforcement industry adds only an additional 0.1 kg/tonne to the landfilled concrete + reinforcement value.

As part of our commitment to resource efficiency, the industry is also now measuring total waste from the production site and the amount of materials being recycled. This will be reported in future when we are confident of the accuracy and reliability of the survey data.

### The net waste consumption ratio



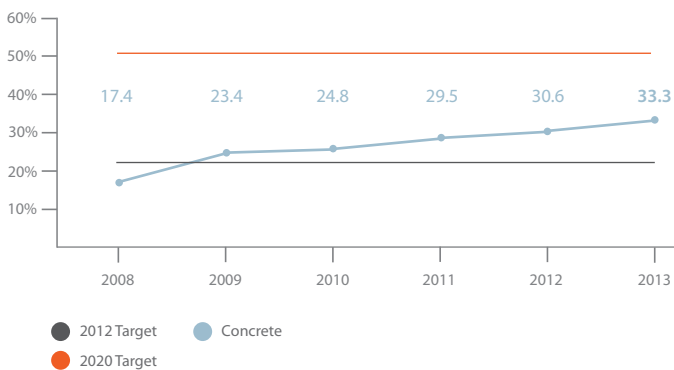
The graph shows the ratio of waste and by-products used in concrete manufacture divided by waste to landfill generated by concrete production and its constituent materials - the net waste ratio. Concrete is a net user of waste, consuming 79 times more recovered and waste materials than the waste it sent to landfill.



# Natural Resource Protection and enhancing the environment

## Replacement of fossil fuels

Material diverted from the waste stream for use as a fuel source, as a percentage of total energy use



The industry requires high temperatures for production, primarily in cement manufacture, and this is an opportunity to safely burn alternative combustible materials instead of non-renewable fossil fuels. Where the fuels used are recognised as carbon neutral under the EU Emissions Trading Scheme (EU ETS), this has the additional benefit of reducing the embodied carbon dioxide of cement.

The concrete industry indicator shows the proportion of energy derived from materials diverted from the waste stream as a percentage of total energy use. The value of 33.3% for 2013 is an increase from the 2012 value, a positive move towards the 2020 target of 50%.

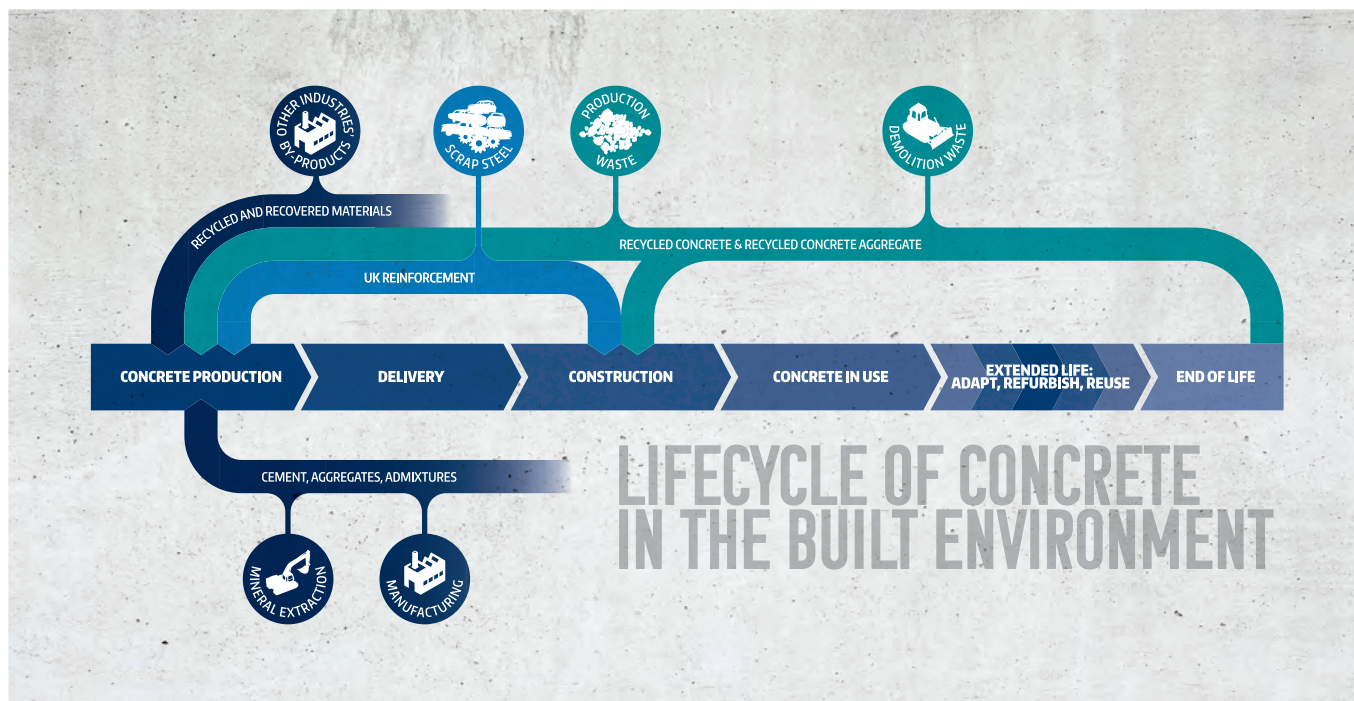
## Resource Efficiency Action Plans (REAPs)



Statistics published by WRAP state that the construction and operation of the built environment consumes 60% of all materials and produces 33% of all the waste in the UK.

Developing concrete industry REAPs is part of our commitment to helping the construction industry improve resource efficiency within the built environment.

The full reports, published by WRAP, and launched at a Parliamentary Reception in October 2013, can also be downloaded from [www.wrap.org.uk](http://www.wrap.org.uk).



# Action on Biodiversity

Restoring quarries and providing products to protect and enhance biodiversity

## Our Strategy 2020 Commitment

- Support the Mineral Products Association (MPA) Biodiversity Strategy “Building on our legacy... realising our potential”

The MPA is working with Government, on behalf of the minerals industry, to help ensure that the national 2020 Biodiversity Strategy introduced in 2012 is delivered. MPA is also a member of Government’s Terrestrial Biodiversity Group and works closely with many conservation organisations locally and nationally.

MPA members manage an area of land equivalent to a small National Park and RSPB research indicates that mineral sites could meet the targets for nine priority habitats (out of 11) in the UK Biodiversity Action Plan.

More information is available at [www.mineralproducts.org](http://www.mineralproducts.org)

- Develop a water strategy to support the measurement and reporting of sustainability performance and target setting

The concrete industry has set a commitment to developing a water strategy and is working with the industry through the MPA Water Group to analyse key factors in measuring and managing this vital resource.

Sector guidance on managing water use is available and in 2013 the ready-mixed concrete sector published best practice guidance on managing concrete wash-waters on-site.

Concrete products also have a key role in providing durable infrastructure for sustainable urban drainage systems, flood management and water storage. The industry communicates with clients to provide knowledge of these solutions to enable the design of a sustainable and resilient built environment.

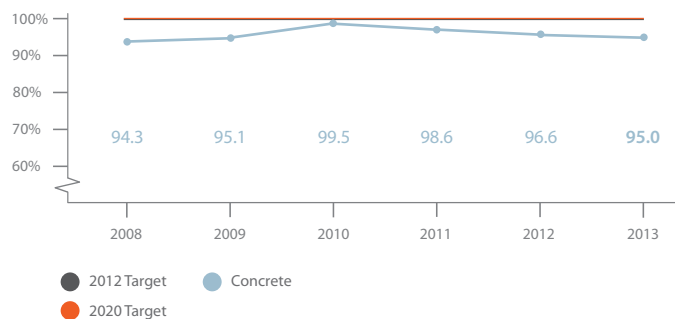
### MPA LAUNCH ITS NATIONAL NATURE PARK

This online map provides users with information on a nationwide network of over 50 quarry sites restored for wildlife and accessible to the public.

[www.mineralproducts.org/nature\\_map.htm](http://www.mineralproducts.org/nature_map.htm)

## Biodiversity

Percentage of relevant production sites that have site specific action plans



The concrete industry makes a significant contribution to biodiversity and nature conservation through the management and restoration of sites of mineral extraction.

The industry strategy prioritises its actions within quarries and the indicator reports on the proportion of relevant production sites that have an action plan relating to site restoration, biodiversity or geodiversity.

The value reported for 2013 is 95% of sites and our 2020 target is 100%.

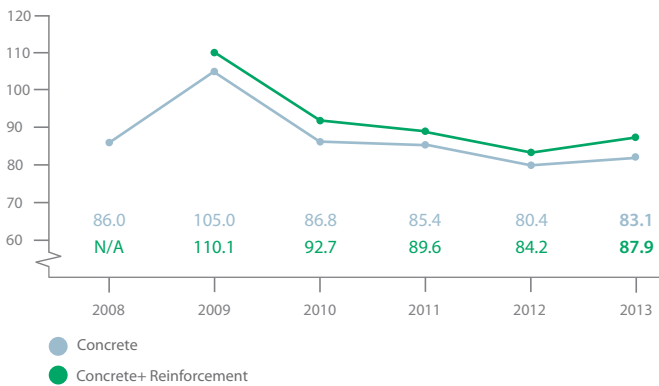
MPA data records that the industry has created 5189 hectares of priority habitats on land previously used for aggregates extraction and has plans to create a further 6706 hectares. In addition significant lengths of hedgerow have been created and rivers restored by the industry. These figures are likely to understate the total industry contribution to habitat creation as this is a new survey activity.



On the MPA map is Langford Lowfields, a working sand and gravel quarry on the River Trent. It is being transformed into the biggest reedbed in the East Midlands with habitats developing rapidly; over 40 hectares of reedbed has been planted here.

## Water

Mains water consumption as a proportion of production output (litres/tonne)



Water is an essential ingredient for the hydration of cement and is an important resource for concrete and its materials supply chain.

The industry indicator reports mains water in litres per tonne of concrete used directly in concrete production added to a proportioned contribution from raw materials production.

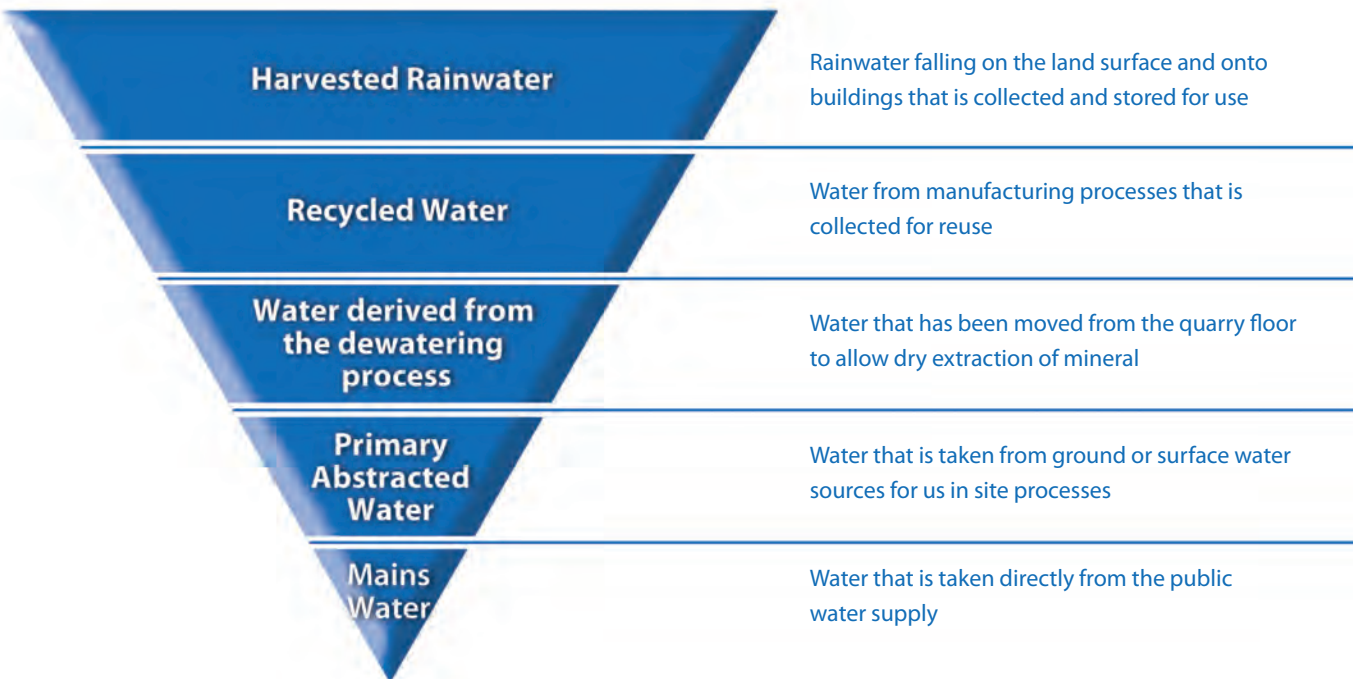
The annual indicator is showing a gradually reducing trend although water usage can vary seasonally and year on year as the amount of water retained in natural materials varies depending on weather conditions.

Water consumption is a more complex issue in relation to minerals extraction as processing often involves water, but there is a high degree of recycling such that measurement of water 'consumed' is relatively difficult to establish accurately.

As a result of these complexities, data currently being collected on the use of controlled water, such as boreholes and rivers, is regarded as being insufficiently reliable to be reported with confidence or to provide a baseline for target setting.

An additional complexity is the variability of the impact of water extraction across geographical areas of the UK, as different regions exhibit varying periods of water stress (where the accepted level of demand for fresh water is greater than availability).

The industry is developing a more comprehensive water strategy with the aim of improving understanding of overall water consumption, how it can be measured and managed and how performance improvements be achieved.



The industry is currently working to understand the quantities of water used from each of the sources shown. This data will then inform future actions to ensure that water is used efficiently and that the most sustainable sources are optimised.

# Action on Wellbeing

Protecting life and quality of life is a priority

## Our Strategy 2020

The concrete industry strategy is developed to reflect the three pillars of sustainability: environmental, economic and social. In this section of the report we focus on people and their wellbeing. This is not an area explicit within the current initiatives of the Green Construction Board.

- **The industry aim is to achieve zero harm**

The Mineral Products Association (MPA) has set the industry targets on Health and Safety. From 2009-2014 the industry is committed to reducing lost time incidents by 50%, with the aim of zero harm.

Health and Safety is the highest priority throughout the construction industry and is established as part of the culture of the concrete industry.

In 2013, MPA held a summit to discuss public safety at former quarry sites with representatives from 40 different organisations. The industry 'Stay Safe' campaign will develop collaborations and actions from the event.

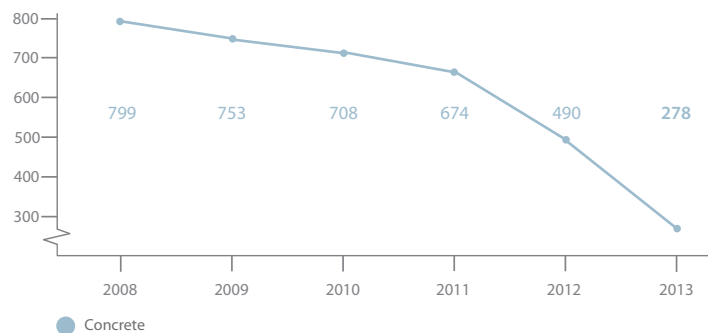
MPA launched a Contractors' Charter, a national PICS contractor database and a new and improved Safequarry.com website. MPA also provided 'Safer by Sharing' seminars across the country to over 200 attendees.

For more information visit [www.safequarry.com](http://www.safequarry.com)

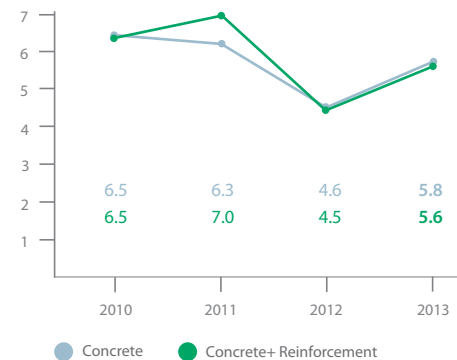


## Health & Safety

Reportable injuries per 100,000 direct employees per annum



Lost Time Incidents (LTI) for direct employees per 1 million hours worked



The health and safety of its employees is a key focus of the concrete industry strategy. Two indicators are used to report performance. These are established benchmarks of health and safety:

- The number of Reportable Injuries per 100,000 direct employees per annum.

A Reportable Injury is defined as any injury that is reportable under the Reporting of Injuries, Disease and Dangerous Occurrences Regulations 1995 (RIDDOR). In 2012 the HSE definition of reportable changed to from three days to seven days. The concrete industry indicator will remain at three days.

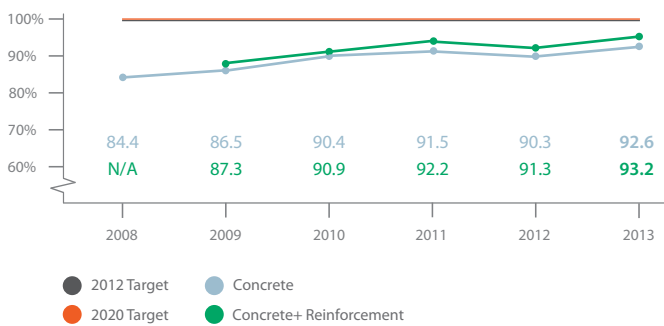
- Lost Time Incidents for direct employee per 1 million hours worked.

A Lost Time Injury is defined as an occupational injury resulting in the absence of the injured party for one or more working shifts

Although the indicator for reportable injuries has shown a consistent improvement, the 2013 value represents a 65% reduction from the 2008 baseline, the LTI increase in 2013 is a cause for concern which is being addressed by the industry. The data for LTIs is showing more fluctuation than that of the RIDDOR indicator. Collecting and analysing LTI data is essential, enabling industry to provide guidance to support our aim of zero harm.

## Employment and Skills

Percentage of employees covered by certified training and evaluation processes



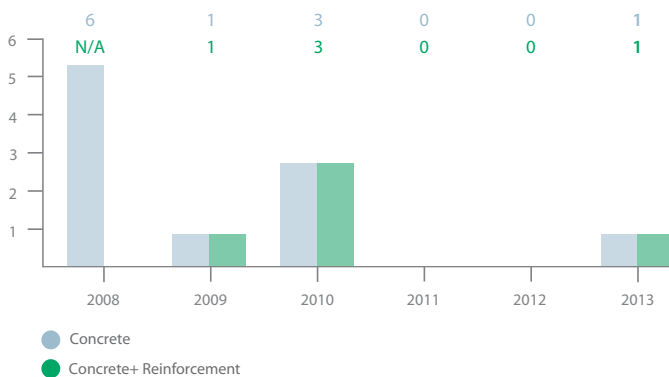
Having a skilled, competent and informed workforce is essential for the industry to remain competitive, safe and capable of meeting the requirements of our customers and the objectives of the concrete industry strategy.

Measurement of competency can be challenging and the current indicator essentially measures the management of training by reporting on the proportion of employees whose training is monitored and managed within certified management systems such as ISO 9001, ISO 14001, BS OHSAS 18001 and others.

The industry figure for 2013 is up to 92.6% for concrete and 93.2% for concrete + reinforcement. The 2020 target is 100%.

## Emissions (Excluding CO<sub>2</sub>)

Number of convictions per annum for air and water emissions

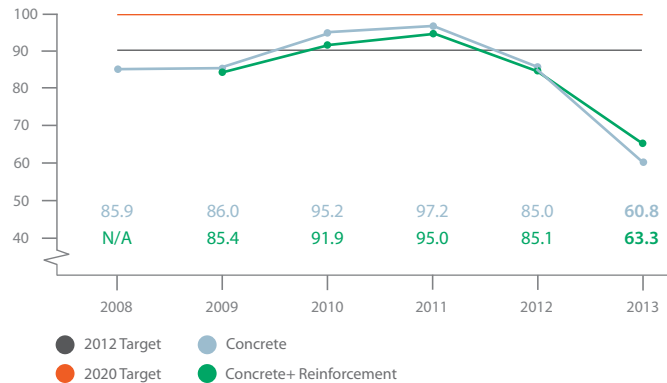


Our indicator relating to emissions excluding CO<sub>2</sub> reports the number of convictions for emissions to air and water within the industry per annum.

Unfortunately, following two years of zero convictions there was one conviction during 2013.

## Local Community

Percentage of relevant sites that have community liaison activities



It is often the case that concrete supply chain production sites have close links with the local communities through the employment of local people and the use of local materials.

However, because of the potential impacts from vehicle movements, dust and noise, some sites may be regarded as relevant for having more formal local community liaison activities.

The indicator defines a 'relevant' site as mineral extraction sites and other specific operations that have a potential significant impact on the local community.

The trend from 2008 showed an increase in formal local community liaison and this was reflected in a reduction in complaints received. In 2013, the indicator shows that the proportion of sites that undertake regular community liaison has fallen. Anecdotally, this reduction is due to less demand from communities and also less staff within companies employed on such initiatives. The number of complaints is monitored and has not increased.

[www.sustainableconcrete.org.uk](http://www.sustainableconcrete.org.uk)

Copies of this report can be downloaded from this industry website. There is also more information about the concrete industry sustainable construction strategy as well as useful links to relevant guidance, literature and sector trade associations.

# Concrete Industry Sustainable Construction Targets

## Sustainable Consumption and Production **Action on Materials**

Sustainability Principle	Performance Indicator	Baseline Concrete		Performance Concrete			Performance Concrete + reinforcement			Target	
		Value	Year	2011	2012	2013	2011	2012	2013	2012	2020
Environmental Management	% of production sites covered by an Environmental Management System (EMS).	72.3%	2008	86.4%	89.8%	88.7%	85.6%	89.3%	88.8%	85%	95%
Quality and Performance	% of production sites covered by a certified ISO 9001 quality management system.	84.2%	2008	91.0%	91.2%	90.3%	91.3%	91.4%	90.5%	90.0%	95.0%
Resource Efficiency	% of additional cementitious materials (GGBS, fly ash, etc.) as a proportion of total cementitious materials used.*	30.0%	2008	30.6%	30.1%	28.5%	N/A			33.0%	35.0%
	Recycled/secondary aggregates as a proportion of total concrete aggregates.	5.3%	2008	5.3%	5.0%	6.9%	N/A			No targets have been set as increasing recycled content is not always indicative of sustainable performance	
	% of recycled scrap as a proportion of total constituent raw materials used.	97.0%	2009	N/A	N/A	N/A	94.0%	94.0%	95.4%		
Responsible Sourcing	% of production certified to BES 6001.	81.0%	2009	92.0%	89.0%	91.0%					95.0%

## Climate Change and Energy **Action on Carbon**

Sustainability Principle	Performance Indicator	Baseline Concrete		Performance Concrete			Performance Concrete + reinforcement			Target	
		Value	Year	2011	2012	2013	2011	2012	2013	2012	2020
Energy Efficiency	Kilowatt hours of energy used in production as a proportion of production output (kWh/tonne).*	132.1	2008	136.7	127.0	129.1	161.0	150.6	152.0	Deliver the industry CO <sub>2</sub> target and achieve sector climate change agreement targets	
CO <sub>2</sub> Emissions - Production	CO <sub>2</sub> emissions as a proportion of production output. Rolling Mix (kg CO <sub>2</sub> /tonne).*	102.6	1990	88.6	85.6	85.2	97.0	93.6	92.6	Reduce by 17% from 1990 baseline (85.2)	Reduce by 30% from 1990 baseline (71.8)
	CO <sub>2</sub> emissions as a proportion of production output. Standardised Mix (kg CO <sub>2</sub> /tonne).*	102.6	1990	82.9	78.9	79.7	91.4	86.9	87.1		
CO <sub>2</sub> Emissions - Transport	CO <sub>2</sub> emissions from delivery transport through the industry supply chain as a proportion of production output. (kg CO <sub>2</sub> /tonne).	7.2	2009	7.7	8.2	8.5				Additional indicators and targets to be developed by 2015	

\* Please note that the data collection system is reviewed annually to seek improvements in accuracy and reliability. The performance data for this indicator has been rebased due to a refinement in the calculation method. More information is available at [www.sustainableconcrete.org.uk](http://www.sustainableconcrete.org.uk)

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

Sustainability Principle	Performance Indicator	Baseline Concrete		Performance Concrete			Performance Concrete + reinforcement			Target	
		Value	Year	2011	2012	2013	2011	2012	2013	2012	2020
Waste Minimisation	Materials diverted from the waste stream for use as a fuel source, as a % of total energy use.	17.4%	2008	29.5%	30.6%	33.3%				21.0%	50.0%
	Waste to landfill as a proportion of production output (kg/tonne).	5	2008	1.4	1.4	1.2	1.6	1.5	1.3	Reduce by 15.0% (4.3)	Reduce by 90.0% (0.5)
	Waste diverted from potential landfill divided by waste generated and sent to landfill (Ratio).	19	2008	63	62	79					
Water	Mains water consumption as a proportion of production output. (litres/tonne).*	86.0	2008	85.4	80.4	83.1	89.6	84.2	87.9	The current water strategy programme will review and propose further metrics and targets.	
Site Stewardship & Biodiversity	% of relevant production sites that have specific action plans.	94.3%	2008	98.6%	96.6%	95.0%				100%	100%

## Creating Sustainable Communities **Action on Wellbeing**

Sustainability Principle	Performance Indicator	Baseline Concrete		Performance Concrete			Performance Concrete + reinforcement			Target	
		Value	Year	2011	2012	2013	2011	2012	2013	2012	2020
Health & Safety	Reportable Injuries per 100,000 direct employees per annum.	799	2008	674	490	278					
	Lost Time Incidents (LTI) for direct employee per 1,000,000 hours worked.	6.5	2010	6.3	4.6	5.8	7.0	4.5	5.6	From 2009-2014, reduce lost time incidents by 50% with an aim of zero harm	
Employment & Skills	% of employees covered by certified training and evaluation process.	84.4%	2008	91.5%	90.3%	92.6%	92.2%	91.3%	93.2%	100%	100%
Emissions (excluding CO <sub>2</sub> )	Number of convictions for air and water emissions per annum.	6	2008	0	0	1	0	0	1	Zero per Annum	Zero per Annum
Local Community	% of relevant sites that have community liaison activities.	85.9%	2008	97.2%	85.0%	60.8%	95.0%	85.1%	63.3%	90.0%	100%

*The data is sourced from the following sector associations, and we are grateful for their co-operation:*

- British Association of Reinforcement (BAR) [www.uk-bar.org](http://www.uk-bar.org)
- British Precast [www.britishprecast.org](http://www.britishprecast.org)
- British Ready-Mixed Concrete Association [www.brmca.org.uk](http://www.brmca.org.uk)
- Cement Admixtures Association [www.admixtures.org.uk](http://www.admixtures.org.uk)
- Cementitious Slag Makers Association [www.ukcsma.co.uk](http://www.ukcsma.co.uk)
- Mineral Products Association [www.mineralproducts.org](http://www.mineralproducts.org)
- MPA - Cement <http://cement.mineralproducts.org>
- UK Quality Ash Association [www.ukqaa.org.uk](http://www.ukqaa.org.uk)

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

- Aggregate Industries [www.aggregate.com](http://www.aggregate.com)
- Brett Group [www.brett.co.uk](http://www.brett.co.uk)
- CEMEX [www.cemex.co.uk](http://www.cemex.co.uk)
- Hanson UK [www.heidelbergcement.com](http://www.heidelbergcement.com)
- Lafarge Tarmac [www.lafargetarmac.com](http://www.lafargetarmac.com)
- Marshalls plc [www.marshalls.co.uk](http://www.marshalls.co.uk)

**[www.sustainableconcrete.org.uk](http://www.sustainableconcrete.org.uk)**

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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](http://www.concretecentre.com)**

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Front Cover Image:

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