Sustainability Report 2022

Annual Report
December 2022

BRICK DEVELOPMENT ASSOCIATION

Cover Image: The Ray, Timothy Soar. Back Page Image: York House.

Chairman's Summary

Welcome to the latest Brick Development Association (BDA) sustainability report which has been compiled by the BDA Sustainability Working Party. This annual publication is an opportunity to review the collective progress in sustainable operations made by the UK's brick manufacturing industry. It also focuses our attention on forthcoming challenges and the way in which we will approach them.

2021 was the year of COP 26 in the UK and carbon dominated the conversation in the run up to the Glasgow event with many organisations declaring climate emergencies or joining the Race to Zero. This underlines the importance to the sector of this group and the work is vital to demonstrate the overall benefits of clay brick construction through its longevity, resilience, and timeless beauty.

We must move forward and find innovative ways to become more energy efficient and reduce our overall carbon emissions to help the UK deliver on its Net Zero ambition so that we can continue to provide homes for the future.

2021 was also the year that the sector rebounded from the impacts of the pandemic in terms of production output and this has had an interesting effect on the data within this report. We are determined to move forward and continue to focus on reducing our carbon footprint, minimising the amount of plastic the sector uses to transport its products and improving the biodiversity, on and around our operations.

Our annual report helps us to publicly review the performance of the sector and identify the challenges we face and as a group identify the solutions – please take some time to read it and any comments or suggestions are welcome.

Dave Manley
Chairman of the Sustainable Production Working Party

People

Health Safety & Wellbeing

Our Aspiration

To ensure employee health, safety and wellbeing remains core to business operations across the sector and that health and safety performance continually improves.

The Challenge

Continual improvement in health and safety performance in a changing work and regulatory environment. Employee wellbeing is central to this and becoming increasingly significant.

Where We Are Now?

Over the last 20 years, UK brick manufacturers have come together as part of the wider ceramic sector Health and Safety Pledge Scheme, to improve health and safety performance through collaboration and sharing good practice. One example of this collective approach is the development of the sector Continual Professional Development scheme for clay quarry managers.

There are many examples of excellent health and safety leadership within the brick sector. In recent years, the health and safety agenda has widened, with companies broadening provision to embrace topics such as mental health and wellbeing for employees, with some extending this to their close family too.

What We Plan To Do

- Show leadership and proactively work with others across the industry to deliver Pledge Phase 5.
- Continue to focus on the effective management of respirable crystalline silica.
- Explore further opportunities for collaborative working on health, safety and wellbeing, including the development of sector specific resources and training
- Continue work to develop and deliver the sector CPD scheme and training for clay quarry managers.

Key Statistics

In 2021, the sector Lost Time Injury Rate was 0.29*. This is a decrease from the 2019 rate but an increase from 2020, however 2020 was an unusual year due to COVID.

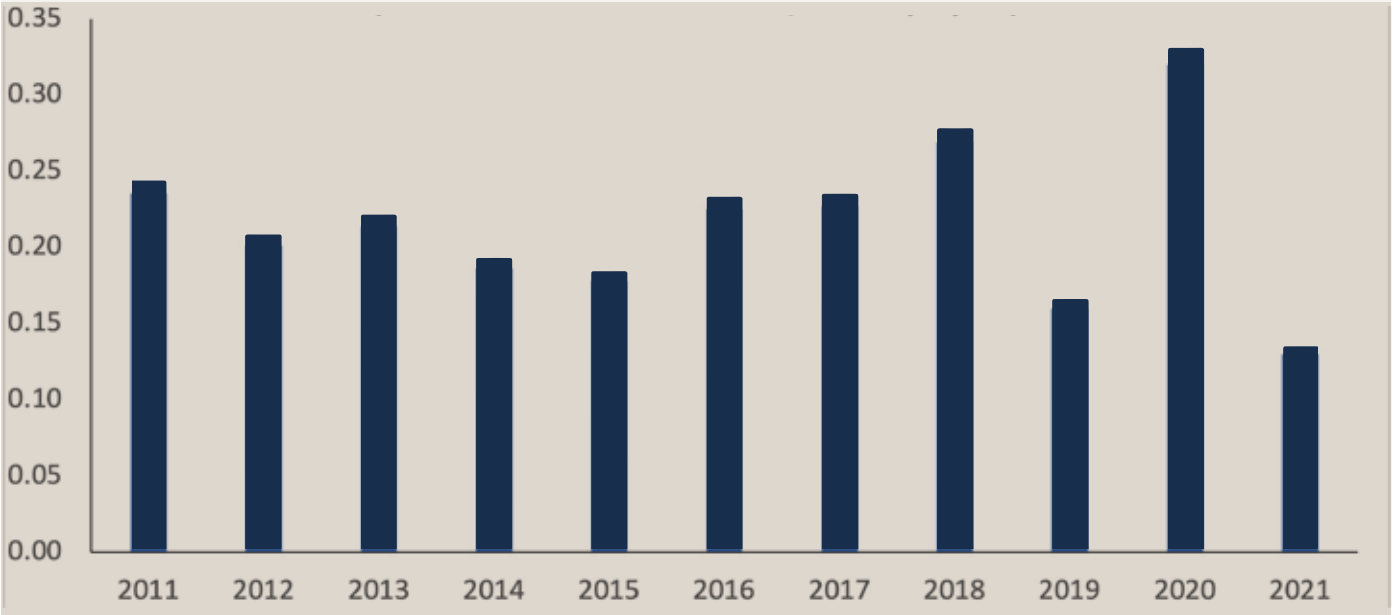
In 2021, the Accident Rate was 0.13* ,which is lowest rate in the last 10 years.

In 2021, the RIDDOR Reportable Injury Rate was 0.005* which is lowest rate in the last 10 years.

***The following four Key Performance Indicators (KPIs) are monitored and reported on each year:**

$$\text{Accident Rate} = \frac{\text{Total Number of Accidents}}{\text{Total Number of Employees}}$$

UK Brickmaker's Accident Rate 2011 - 2021



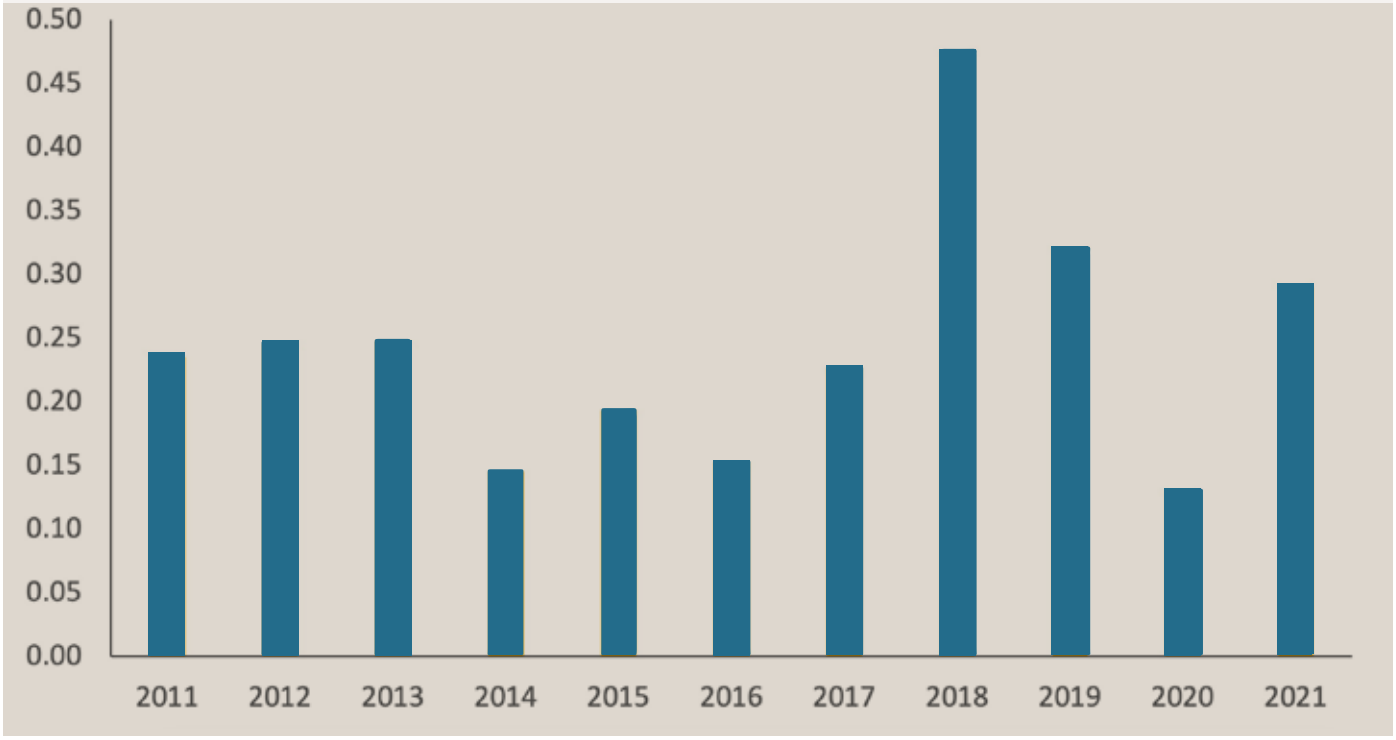
People

Health Safety & Wellbeing

Lost Time Injury (LTI) Rate=

$$\frac{\text{Total Number of Days Lost}}{\text{Total Number of Employees}}$$

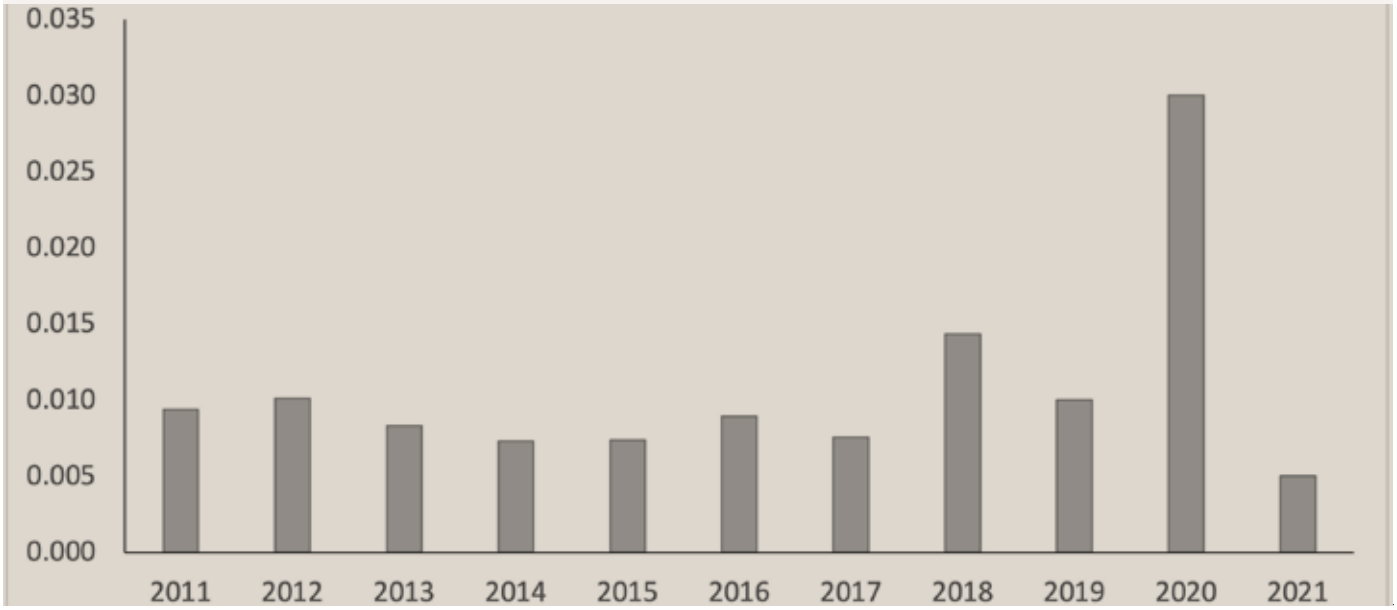
UK Brickmaker's Lost Time Injury (LTI) Rate 2011 - 2021



RIDDOR Reportable Injury Rate =

$$\frac{\text{Number of Injuries Reportable Under RIDDOR}}{\text{Total Number of Employees}}$$

UK Brickmaker's RIDDOR Reportable Injury Rate 2011 - 2021



Pledge

Ceramic Industry H&S Pledge Scheme

The **Pledge Scheme** was set up over 20 years ago to promote and support continual improvement in health and safety performance in the UK ceramics sector.

Vision: To work together (Industry, BCC, HSE and Trade Unions) to drive continual improvement in health, safety and wellbeing performance in the UK ceramics industry.

Objective: To continue to improve the health, safety and wellbeing performance of the ceramics sector and to make sure the industry a safe place to work. This will be achieved by:

- Engaging with industry and other stakeholders.
- Identifying priority workstreams.
- Developing and implementing a clear work plan.
- The identification of KPIs and the measurement, monitoring and reporting of performance

Pledge Phase 5 - Priority Workstreams:

Training

Achieving Full Potential

Our Aspiration
The brick manufacturing sector offers employment opportunities across a wide range of roles. The industry will continue to nurture and invest in the training and development of those who work in the sector so they can achieve their full potential.

The Challenge
One of the characteristics of the brick sector is that many employees stay in the industry throughout their careers, building a wealth of knowledge and experience over many years. It takes time and support for those new to the industry to build the knowledge and skills needed, requiring careful planning and support over the short, medium and long term.

Where We Are Now?
The industry is continuing to invest in the training and development of new and current employees, including apprentices .

What We Plan To Do
Training and development will continue to be high on the agenda, with the evolution of training programmes and opportunities to reflect changing industry needs, including the development and implementation of specialist apprenticeships.

Key stats:

- **The number of training days is relatively low when compared to 2019 but levels are recovering**
- **In 2021 there were 132 apprentices in the sector**

Biodiversity

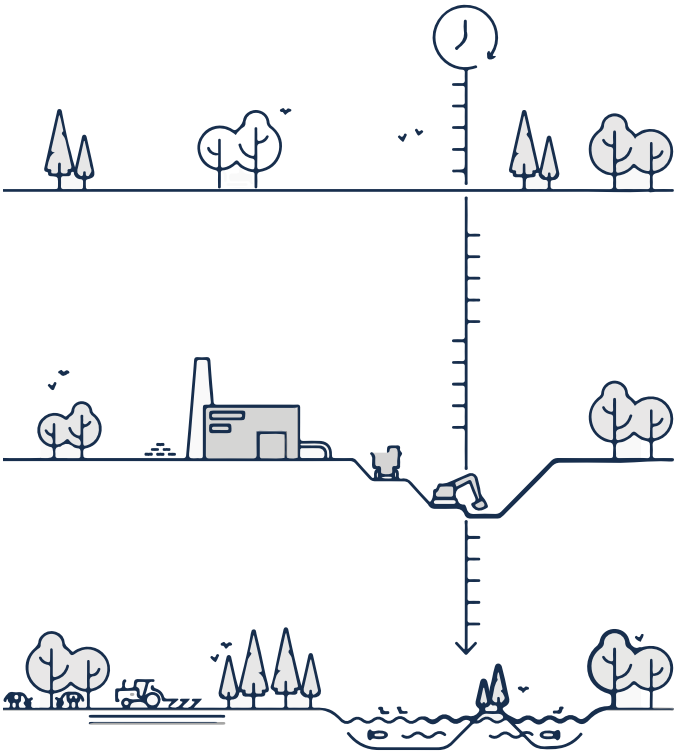
Natural Environment

Our Aspiration

To proactively support and enhance biodiversity through good site management and the restoration of quarries.

Key Statistics

84% of production sites are covered by a site-specific restoration, biodiversity and/or geodiversity plan.



The Challenge

As a natural resource, clay should be extracted and used responsibly. The majority of clay brick manufacturers are landowners and are able to help offset the impact of quarrying on their sites and contribute positively to biodiversity, during extraction and also after through quarry restoration activities. The sector continues to work together to understand the contribution it makes to natural capital.

Where We Are Now?

The National Planning Policy Framework sets out sustainable development principles for the minerals sector and the framework for mineral safeguarding and extraction. Minerals can only be worked where they are located geographically and every quarry is carefully managed throughout the extraction process, and restored upon completion, in accordance with planning requirements.

The maintenance and enhancement of natural capital is a key priority for Government and, by implementing quarry biodiversity and restoration plans, the brick sector helps to enhance local wildlife and biodiversity.

The sector is also preparing for the implementation of Biodiversity Net Gain, a new planning approach to development that aims to leave the natural environment in a measurably better state than it was beforehand.

What We Plan To Do

- Continue close collaboration with conservation and wildlife organisations to inform effective biodiversity planning and management
- Contribute to emerging Government natural capital and biodiversity net gain approaches, where the sector has an important role to play.

Water

Resource Use & Materials

Our Aspiration
To use water as efficiently as possible in the manufacturing process and reduce our reliance on mains water supplies.

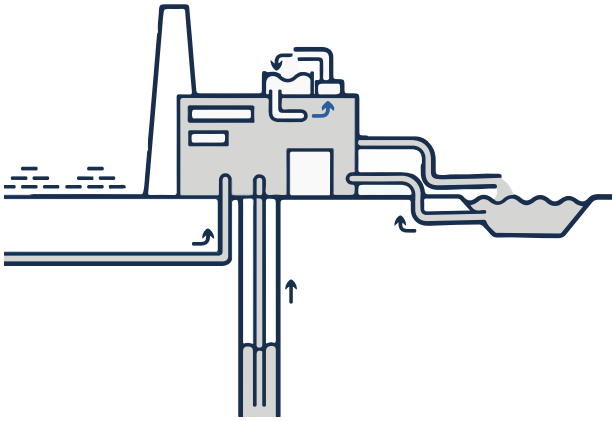
The Challenge
Water is needed in the brick manufacturing process to help shape bricks before they are dried and fired. The brick sector recognises the different environmental pressures on water resources and has continued work to reduce reliance on potable mains water supplies and maximise efficiency of water use where it is required.

Where We Are Now?
Through improved monitoring and understanding of quarry dewatering, more information is being collected about rainwater collection in clay quarries. This water can then be put to beneficial use in factories, rather than using mains water. In 2021, mains water use had reduced to 29% of water consumed.

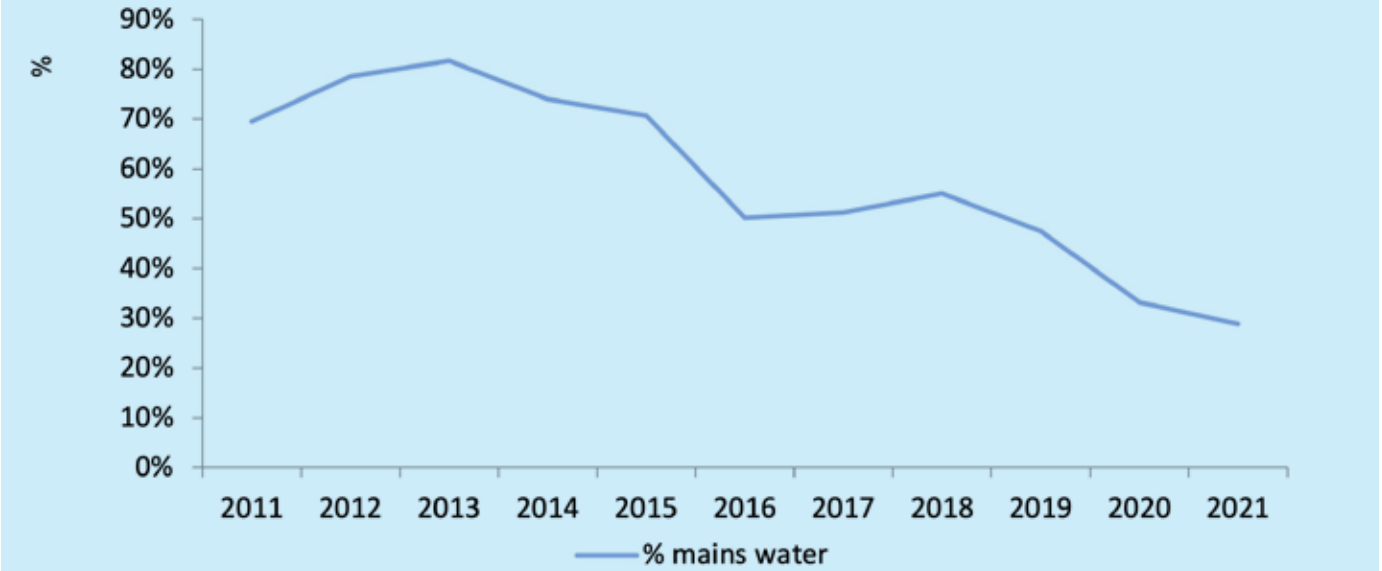
What We Plan To Do
- Monitor progress against the sector's Water Policy.
- Share best practice on the responsible use of non-mains water through member case studies

Proportionally, the quantity of non-mains sourced water now accounts for 71% of total water consumption by the industry (as shown below).

Key Statistics
The proportion of mains water used per tonne of product fell to a low of 33% compared to a figure of 47% in 2019.



% Mains Water Used by UK Brickmakers (of total water consumption) 2011 - 2021



Waste

Our Aspiration
To reduce the amount of waste produced onsite during the manufacturing process and downstream in the supply chain and to minimise disposal to landfill.

The Challenge
Investment in plant upgrades and machinery refurbishment can lead to short-term spikes in the amount of waste produced in a year. For some materials such as emissions abatement waste, there are limited options other than disposal. It is important that the sector also considers further opportunities to reduce waste at source; for example, single use plastic transit packaging on outgoing goods.

Key Statistics

The sector single use plastic packaging working party is now well established as a way to share best practice and innovation on the reduction and elimination of single use plastics.

There was an increase in waste to landfill per tonne of production in 2021 when compared to 2020, although levels are broadly similar to 2019 and relatively low.

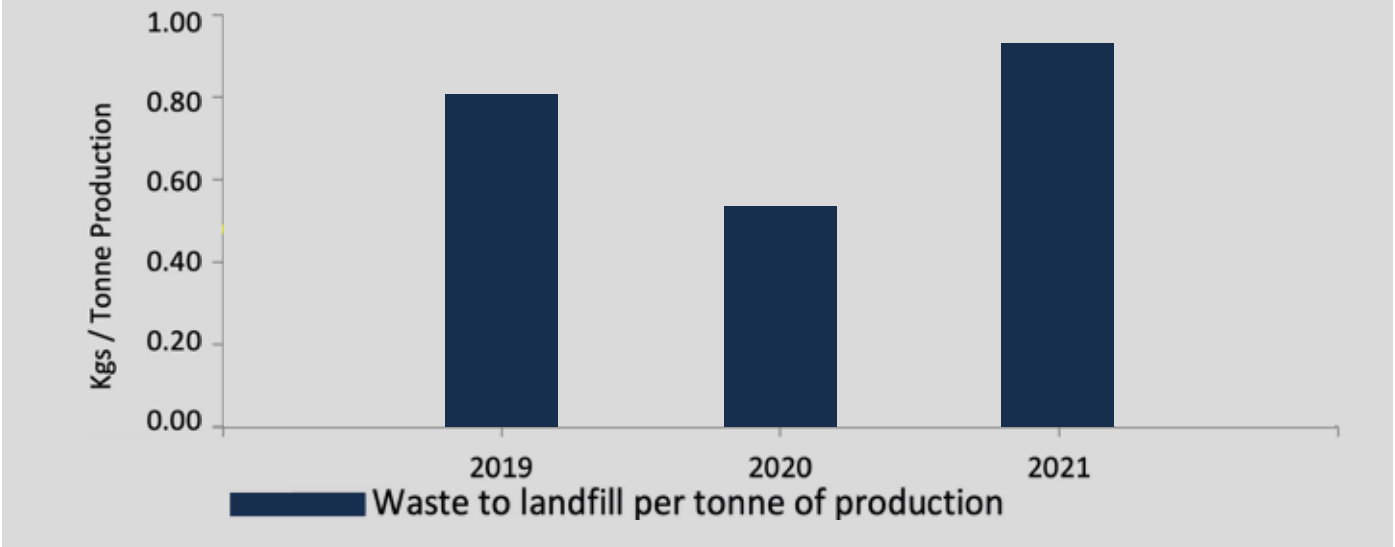
There was a slight recovery in the quantity of materials recycled but this is lower than pre-2020.

Where We Are Now?
The volume of waste per tonne of brick production is low and the total waste sent to landfill per tonne of production since 2014, has generally been on a downward trajectory. Even though low volumes of waste are produced at manufacturing sites, companies are continuing to explore opportunities to reduce the amount of waste generated in the supply chain and options to promote the circular economy.

The sector is continuing to work together to investigate options and take action to reduce and eliminate single use plastic packaging.

What We Plan To Do
- Monitor compliance with the sector's Waste Policy, published in 2017
- Continue to work together to improve understanding about the use of single use plastic packaging in the sector and to explore options and take action to reduce or eliminate its use.
- Establish the contribution that the brick and paver industry can make to the circular economy.

'Waste to Landfill' per Tonne of Production 2011 - 2021



Circular Economy

Our Aspiration

To use resources as effectively as possible; demonstrated through the assessment and understanding of clay bricks' role in a circular economy, supported by a robust methodology and evidenced through case study examples.

The Challenge

Clay is the principal material used in the manufacture of clay bricks. Its product transformation provides inherent durability, strength and long-lasting performance. Clays are responsibly and locally sourced by companies, and whilst a small quantity of alternatives (Materials from Alternative, Recycled and Secondary Sources - MARSS) are used, further research is needed for clays to be further substituted to ensure the performance characteristics are not compromised.

Clay bricks lend themselves to the design of buildings along circular economy principles, where their long service-life and adaptability are key features, for a truly sustainable building. Nevertheless, application of the circular economy model to long-life construction products, like clay bricks, needs more development as to-date activities have tended to focus on high-value, short-life consumer products such as electronic goods.

Where We Are Now?

The Environmental Product Declaration (EPD) for clay brick demonstrates that over the product's whole lifecycle - which also includes construction, in use phase as well as end of life of a building - overall carbon emissions per year of service life are low. At their end-of-life, products can also be re-used and recycled.

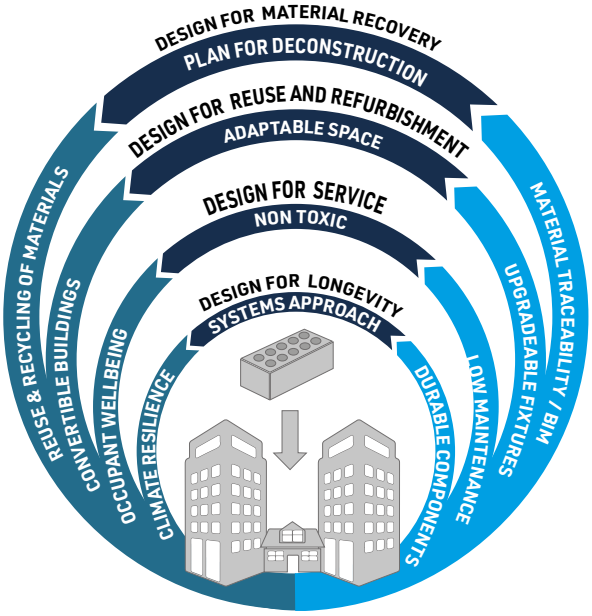
What We Plan To Do

- Continue sector-specific circular economy modelling and production of case studies, to encourage decision-making based on whole-life product performance.
- Continue reporting on the use of MARSS materials within the brick industry.

Key Statistics

Where installed and maintained correctly, clay bricks can have a minimum service life in excess of 150 years.

BES 6001 'Responsible Sourcing' certification covered 99% of clay brick production in 2021.



Climate Change 1

Energy Efficiency

Our Aspiration

In order to reduce the impact on climate change the sector is working to:

- Improve energy-efficiency in the manufacturing process and, reduce associated carbon emissions (from energy use) generated during manufacturing.
- Use resources as effectively as possible and reduce embodied carbon.

The Challenge

The high firing temperature associated with brick manufacturing is energy-intensive. Once a kiln is up to temperature it will run most efficiently if production levels are maximised. Energy-efficiency and CO2 emissions are therefore linked to market demand for brick, which was drastically impacted by the COVID shutdown period.

Whilst incremental efficiency improvements are important, more fundamental 'step-changes' in decarbonisation require new manufacturing technologies, such as fuel switching. Research and development is key in ensuring that technical challenges are overcome. Clays also generate process emissions, which are technologically difficult to abate.

Where We Are Now?

The clay brick Environmental Product Declaration (EPD) shows that over the product's whole lifecycle, including construction / in use / end of life of a building, overall carbon emissions are low per year of service life.

What We Plan To Do

- The industry is following a Decarbonisation and Energy Efficiency Roadmap. Supported by various innovation and funding opportunities, companies are developing projects to help reduce energy consumption and carbon emissions. The industry has already switched from higher CO2 emitting fuels (like coal) to natural gas. Other low-carbon fuels like hydrogen and electric-firing will be needed in the future to contribute to the UK Government's 'net zero' 2050 emissions target.
- Members are involved in discussions to explore on-site technical challenges with the adoption of alternative fuels; aligning with key Government policies and initiatives as they emerge. Hydrogen is recognised as a key technology for the industry, and any roll-out will need to be coordinated with national infrastructure planning.

On energy-efficiency (per tonne of product), this was impacted by the COVID shutdown, particularly in 2020, but in 2021 returned to pre-pandemic levels.

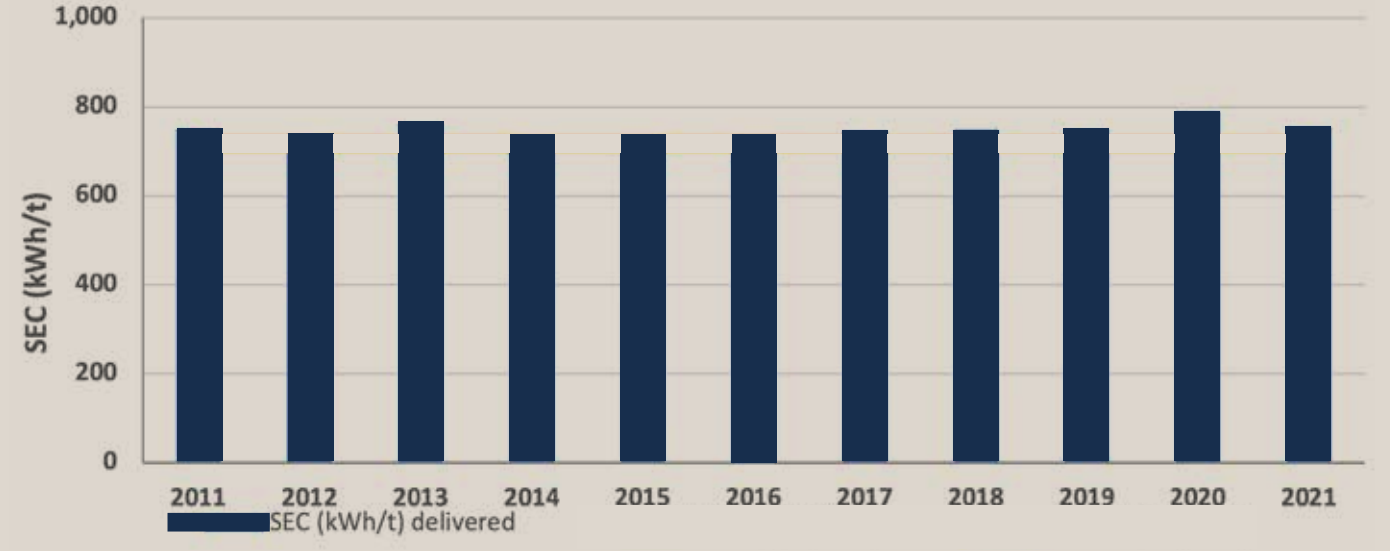
Key Statistics

Around 90% of the sector's overall electricity use is generated on-site or procured from certified renewable energy sources

The UK Emissions Trading Scheme continues to be a key driver for industry improvement.

Almost 100% of production is covered by a certified Energy Management System (EnMS), ISO 50001.

Energy: Specific Energy Consumption 2011 - 2021



Climate Change 2

Decarbonisation

Carbon Emissions

Carbon emissions from brick production are linked to direct fuel use (primarily natural gas), emissions associated with electricity consumption, as well as process emissions from clays and additives when they are fired

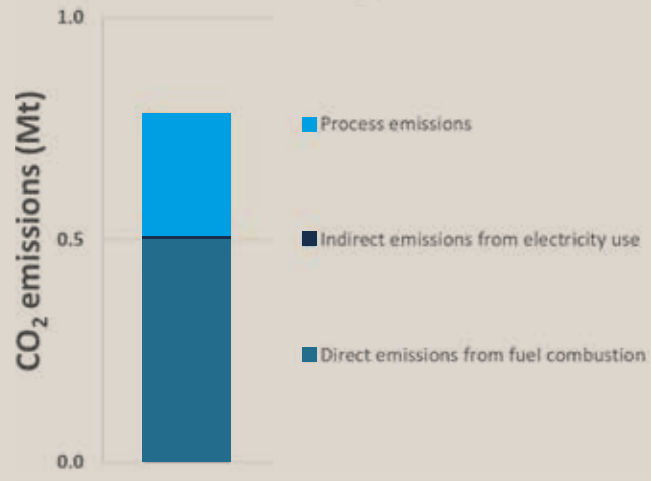
A detailed assessment of carbon emissions was undertaken in 2022 involving all BDA members. This exercise factored in that most companies now purchase certified electricity Renewable Energy Guarantees of Origin (REGO), and amendment to indirect carbon emissions factors compared to previous years.

Overall carbon emissions have been calculated at 26kg per m2 of brickwork (as an average of all clay bricks). Specifically looking at carbon emissions from direct / indirect fuel consumption, 2021 carbon emissions reduced by 21%.

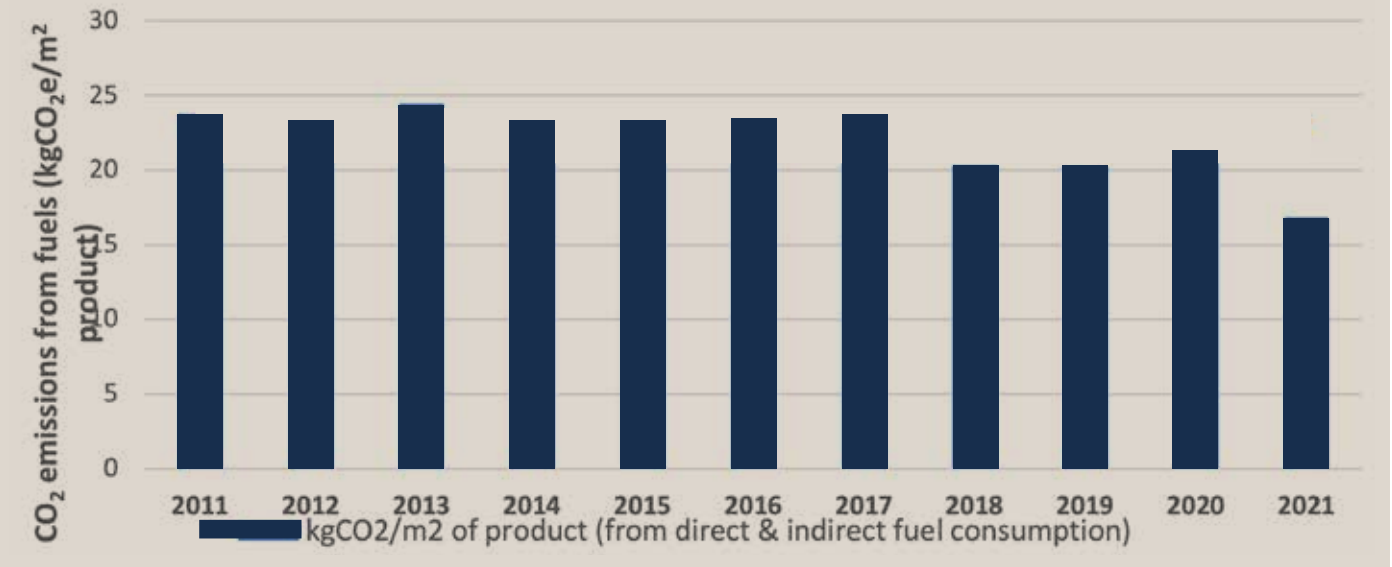
What We Plan To Do

- Companies in the UK clay brick sector, both individually / collaboratively (and supported by various innovation and funding opportunities) are developing projects to help reduce energy consumption and carbon emissions.
- The industry has already switched from higher CO2 emitting fuels (like coal) to natural gas, other low-carbon fuels, like hydrogen or electric-firing will be needed in the future to contribute to the UK Government's 'net zero' 2050 emissions target.
- Companies are already involved in ongoing work or projects to explore on-site technical challenges with the adoption of alternative fuels. These include firing with hydrogen and biomass. Such technologies are recognised as key for the industry, and any roll-out will need to be coordinated with national energy infrastructure planning decisions.
- Most BDA companies are signed-up to the British Ceramics: Towards Net Zero initiative to assist in the roll-out of best practice and support collaboration amongst the industry and key stakeholders.

Total CO_2 emissions ($MtCO_2$) from the brick manufacturing sector in 2021



Carbon: CO_2 emissions from direct & indirect fuel consumption



Industry Value

Investment & Continual Improvement

Our Aspiration

To demonstrate the industry's ongoing commitment to investment in plant, machinery and new technologies.

The Challenge

Capital investments are made on the basis of long-term planning / investment cycles, typically spanning ~40 years for a brick manufacturing plant. There are around 40 brick manufacturing sites in the UK and it is imperative that investment is focussed where it is needed to support the industry's future.

Where We Are Now?

As the industry recovered from Covid, members reported over £65M investment in 2021, which was more than double the investment in 2020 and also higher than 2019 levels. This has included significant investments in new 'state-of-the-art' factories; illustrating the sector's long-term commitment to UK manufacturing and helping deliver continuous improvements, particularly in energy-efficiency and carbon reduction in the sector's transition to a net zero future.

The sector's commitment to continual improvement is illustrated by the impressive statistics on implementation of formal management systems; with the production process almost in its entirety covered by certified environmental, quality and energy management systems.

What We Plan To Do

- Continued investment in factories, plant and machinery.
- Investment in technology and innovation to aid the transition to net zero.

Key Statistics

Over £65M of investment in 2021 (around 10% of sales across sector).

In the past five years, around £250 million has been invested by the sector.

Almost 100% of production was covered by certified Quality, Energy and Environmental Management Systems.

Community

Common values & Social Cohesion

Our Aspiration

To be a positive and proactive contributor to the local communities in which we operate.

The Challenge

The geographic distribution of clay construction product manufacturing operations in the UK largely reflect locations where suitable mineral reserves are situated, with clays often sourced from company owned quarries located near to their manufacturing plant. Companies are often located in close proximity to residential and other areas, therefore the sector's proactive engagement with local communities is especially important.

Where We Are Now?

Community engagement by brick companies continues to be high, with educational visits and site tours hosted by manufacturers to build a better understanding of clay quarrying and brick manufacturing. Quarry excavation can often uncover exciting historical finds, which allows specialists group like archaeologists to better understand our past.

What We Plan To Do

- The sector will continue to facilitate community engagement with local communities across the UK.

Key Statistics

All UK brick manufacturers are involved in community liaison activities. Many run active liaison committees.

Other ways in which companies support local communities include the sponsorship of local groups and events, employee volunteer programmes and charitable donations.

Published by the Brick Development Association. (BDA).

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