



BritishSugar

A Very British Success Story



FOREWORD

The British beet sugar industry is thriving. The sector supports around 7,000 jobs and grows, processes, and delivers high-quality sugar to people across the United Kingdom, the Republic of Ireland, the European Union and beyond. In fact, British beet sugar makes up more than half of the UK sugar demand.

British Sugar is at the heart of the UK beet sugar sector. We work with around 2,300 growers across the East of England, East Midlands and Yorkshire. Our four factories, the oldest of which – Cantley in Norfolk - has been running for over 110 years, can produce up to 1.2 million tonnes of sugar annually.

While we have a long history of producing high-quality sugar, we are looking to the future. At British Sugar, we are innovating continuously to build upon the UK's position as a leading agricultural technology (agri-tech) pioneer, to decarbonise our operations and help the UK Government meet its 2050 net zero targets, and to minimise waste in our industrial processes.

In this report, we outline the vital role that British Sugar plays in the economy of the East of England and the wider UK. We also highlight the innovative and important work that British Sugar undertakes to create co-products that benefit not only our business, but the general public and industry at large.

I hope you enjoy learning about British Sugar's role in the local economies we operate in and where we see our role in creating a sustainable future for the UK sugar industry.



Keith Packer, Managing Director, British Sugar



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EXECUTIVE SUMMARY

The British beet sugar industry dates back to the early 1900s, with the UK's first beet processing factory opening in 1912 in Cantley, Norfolk. Over the past century, our industry has grown into a significant part of the UK's agriculture sector.

We're the leading provider of sugar for the British and Irish food and beverage markets, supplying many household names, from manufacturers of soft drinks and confectionery to yoghurt and pickles, and we also sell directly to consumers through our sister company, Silver Spoon.

Working with growers and industry partners, including the National Farmers' Union (NFU) and the British Beet Research Organisation (BBRO), we have seen sugar beet yields increase by 21% in the past 15 years. We supply more than half of the UK's sugar demand.

Although we're best known for our sugar, we also create a wide range of co-products. We generate green electricity. We produce bioethanol fuel for vehicles. We make animal feed and fertiliser. We've even grown crops for medicinal use in conditions made possible thanks to our sustainable use of energy and water. In all, we create more than 27 different sugars and co-products, and less than 200 grams of waste is produced for every tonne

of sugar beet processed. We want to remain at the forefront of innovation, and we're embracing opportunities to decarbonise to meet our environmental responsibilities. We're committed to reducing our CO₂ emissions by 30% by 2030. British Sugar is fostering the UK's position as a pioneer of agricultural technology.

As our climate changes, so too will pests and diseases continue to evolve, threatening food security and livelihoods. We want to drive forward research and innovation to improve crop yields for sugar beet growers, and preserve our industry's place at the heart of local British communities for the long term.

Our entrepreneurial passion and determination mean we are one of the world's most competitive sugar industries¹. And while British Sugar is a cornerstone of the local economy in the East of England and East Midlands, our ambitions are global - we're championing British-made sugar across the world.

¹LMC 2017 Report: Sugar & HFS Production Costs Global Benchmark.

British Sugar's four factories can process up to eight million tonnes of sugar beet each year

Driving the Future of Agriculture

The global sugar industry is highly competitive. To remain at the forefront, we must innovate continuously to ensure that we are creating high-quality sugar as efficiently and sustainably as possible.

To achieve this goal, we have invested around £300 million in our factories over the last five years to support our circular economy approach and to pioneer exciting new agricultural practices.

We have installed cutting-edge technology to become even more energy efficient and we are continually improving our use of raw materials.

We also work closely with our UK growers to improve the environmental performance of farms. Britain can now produce as much sugar as we did 20 years ago on 90,000 fewer hectares of land. Sugar beet also acts as a key 'break crop' in arable farm rotations, increasing nitrogen in the soil which is beneficial for soil health.

Together with our partners at the NFU and BBRO, we're committed to finding sustainable ways to increase sugar beet yields and improve resilience to diseases. For example, we're running trials on the impact of beneficial insects on crops. We also established the most extensive Virus Yellows screening programme in Europe, the Virus Yellows Pathway, through which the BBRO has inoculated more than 90,000 plants by hand.

Around £0.5 million of the BBRO's annual investment is focused on plant breeding and genetics. We estimate that this work delivers between 1-2% yield improvements each year.



Invested around **£300 million** in our factories over the last five years



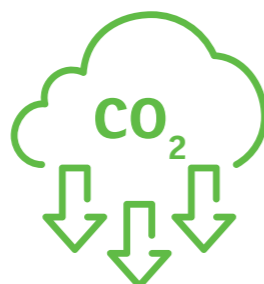
21% increase in sugar yields over the last 15 years



10% reduction in energy use over the last five years



17% reduction in water usage in the last five years



CO₂ emissions down 22% over the last five years (Scope 1 & 2 emissions)

Gene Editing: Creating Ever More Resilient Sugar Crops

British Sugar is working with the UK Government and industry partners to bring forward the benefits of gene editing (GE). GE is a precision tool that permits controlled adjustments to a plant's own DNA to boost its defences against pests and diseases, increasing its resistance to viruses and thus boosting yields.

GE technology can play a critical role in protecting sugar beet from invasive species, such as virus-carrying aphids, while enabling growers to move away from using pesticides. Crucially, GE technology poses no risk to humans or to wildlife².

We have invested in R&D programmes to demonstrate how gene editing can be used to produce a new sugar beet variety resistant to Virus Yellows.

²John Innes Centre, 'Game-changing Genetic Technology Bill passes into law in England' (2023).

In 2020, at least 40% of the UK sugar beet crop was affected by diseases such as Virus Yellows, so we need to find innovative, pesticide-free ways to protect domestic sugar beet yields. We therefore supported the UK Government's introduction of legislation in 2022 to bring forward GE technology in the UK as a sustainable solution to this issue.



The British beet sugar industry has spent £25m on tackling Virus Yellows disease, and continues to invest in finding solutions

Innovating to Protect Our Environment

We recognise that we have a crucial role to play in creating a sustainable sugar industry and helping the UK Government meet its net zero targets.

As part of our 2030 sustainability commitments, we're focusing on reducing our end-to-end supply chain water use and CO₂ footprints by 30%. By 2030, our goal is to ensure that all our plastic packaging is reusable, recyclable, biodegradable or compostable.

We're working closely with our partners to ensure they also reach their sustainability goals. Our growers must all ensure that their sugar beet crop is covered under the Red Tractor Farm Assurance scheme and are audited yearly on this.

At British Sugar, we are on a mission to minimise waste. Beyond sugar, our circular economy approach avoids waste by turning outputs from the sugar production process into inputs for a wide range of co-products – from animal feed to topsoil and renewable energy - that have a positive impact on the environment. After extracting the sugar from sugar beet, the pulp is pressed to generate around 300,000 tonnes of high-quality dried animal

feed every year, reducing farmers' reliance on imported ingredients like soya beans. Our high-quality topsoil co-product has been used in high-profile landscaping projects, such as at the London 2012 Olympic Park.

In 2007, we were the first company in the UK to manufacture bioethanol from sugar beet residues. We now produce up to 75 million litres of bioethanol each year, which is used as a petrol substitute for road transport vehicles. A blend of up to 10% bioethanol is contained in standard E10 unleaded petrol, which is used by most cars on the roads today.

We also produce renewable energy in the anaerobic digestion plant on our Bury St Edmunds site, that uses pressed sugar beet pulp to generate green electricity. We collate and grade much of the 4,800 tonnes of stones that our farmers collect each year, during the sugar beet harvest, so that they can be repurposed for civil engineering, roadbuilding and construction projects.

Among our wide range of co-products, we also use the heat from our production processes to grow a non-psychoactive variety of the cannabis plant family, used in medicine to treat rare and life-threatening forms of childhood epilepsy.

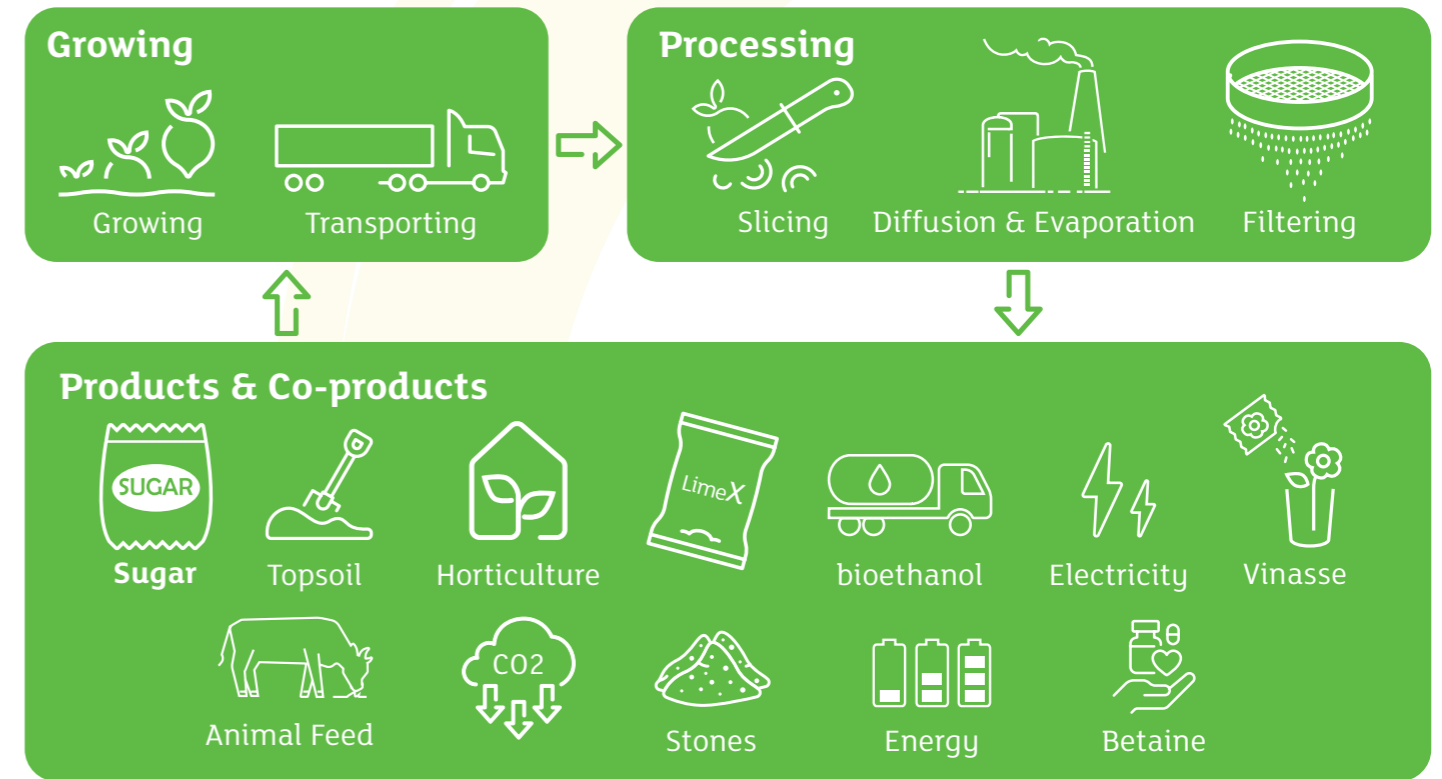


British Sugar is the largest supplier of liming products to UK agriculture.

As a co-product of the sugar production process, we make 300,000 tonnes of the LimeX liming brand, which provides a sustainable and Soil Association-approved option to restore soil pH and nutrients. It also significantly reduces the amount of limestone and chalk that would otherwise be quarried and crushed.



Process Map



We're always looking at ways to operate more sustainably. We have reduced the amount of water we use by 17% over the last five years, which is enough water to cover the annual usage of 4,000 homes.

We've achieved this saving across our four factories and our Peterborough headquarters through a series of process adaptations, deploying new technologies, and architectural design.

For example, at our Cantley factory, we use a reverse osmosis plant, so we need less water from outside sources. We reuse waste condensate water from the cooling processes and draw on a borehole to reduce our reliance on mains water by 45%. We have also invested in brand new wastewater treatment plants at our Newark and Cantley sites, to further reduce the amount of nitrogen in the wastewater resulting from beet processing at the factories.

Despite this success, we're not complacent, and we know there is still more to do to reduce our water usage further.

British Sugar factory, Cantley



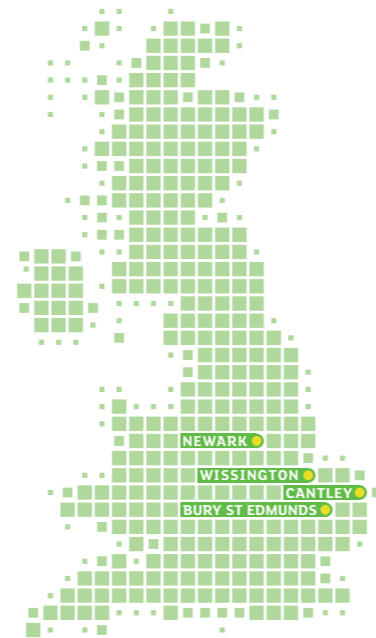
Supporting our Communities and Supply Chain

We're proud to be a major local employer, supporting around 7,000 jobs in the UK economy, including 1,200 directly at our four sites and head office

Through our apprenticeship and graduate programmes, we want to support local communities near our sites in the East of England and the East Midlands. We've employed 50 apprentices and 80 graduates in the last decade, and we're proud to say that 80% of our apprentices are still working for British Sugar ten years on.

In conjunction with NFU Sugar, we also run the Sugar Industry Programme – a scheme to provide young sugar beet growers and industry professionals with a 360-degree view of the industry, from factory operations to seed production, as well as opportunities for training and development.

Through our charity schemes, we donate up to £45,000 each year to help causes local to our sites, or through match funding money raised by our employees. Whether providing kit for junior football teams or sponsoring marathons, we are proud to support the communities in which we work and the charitable causes important to our colleagues.



Case study: Jobs and Apprenticeships

Mickey Ghebremeskel joined British Sugar in 2020 as an apprentice in our Commercial department, alongside his studies in Business at Peterborough College. Working in the Customer Services team, he gained firsthand experience of keeping our customers supplied and meeting their bespoke needs. After completing his apprenticeship, Mickey took up a role in our Farm Support team, where he now supports sugar beet growers and industry partners with everything from contract queries to seed orders.

Mickey said, "My apprenticeship provided me with invaluable experience across British Sugar, with the business supporting me in building professional skills and laying down strong relationships with customers and colleagues alike. Moving to the Agriculture department has given me a new insight into a different end of our supply chain, and I look forward to continuing to build my career with British Sugar for the longer term."

Case study: Delivering on our promises to our customers

We're always looking at new ways to improve efficiencies with our partners. Abbey Logistics has been an important transport partner to British Sugar since 2016, running more than 350 bulk tanker deliveries per week from our factories to our industrial customers.

Working together to improve efficiencies, Abbey completed 99% on-time deliveries in 2022/23, while maintaining an ever-important focus on cost efficiencies.

Since 2016, Abbey has added 22 latest generation trucks to its core British Sugar fleet, which produce up to 20% less nitrogen oxide. These new trucks also use the latest satellite navigation technology to avoid congested areas, meaning our sugar arrives with minimum disruption and impact on the environment. Abbey has subsequently agreed a rolling programme of tanker replacements, to ensure they have the latest safety, environmental and cost-effective technology.

Abbey completed 99% on-time deliveries in 2022/23, while maintaining a focus on cost efficiencies.



A Sustainable, Future-proof Business

At British Sugar, we want to be at the forefront of helping the UK Government meet its net zero targets. Alongside our growers and suppliers, we are constantly looking for solutions which will help tackle climate change and better protect our environment.

This is a challenge that we can only meet together as an industry, which is why we partner with the NFU and directly with our growers to support continual improvement in farming practices. We also jointly fund the BBRO. This not-for-profit organisation commissions and communicates research on how to improve the competitiveness and profitability of the sector while operating sustainably.

British Sugar is uniquely placed to act as a test site for rural decarbonisation projects. As a business operating dispersed sites, our sector needs additional support to transition to net zero in the coming decades, particularly in phasing out unabated gas by 2035. We are keen to continue to work with government to decarbonise rural manufacturing as quickly as possible.

We've invested around £300 million in the last five years to make our factories ever more efficient and support our circular economy approach. We're constantly looking to improve and invest in making the most efficient use of raw materials and power to reduce waste and emissions.

For example, at our Newark factory, we're installing new heaters that will reduce fuel consumption by more than 19,000 MWh per year; that's the equivalent of the power used by nearly 5,000 households. The new heaters will reduce the cost of sugar production, and also reduce carbon emissions by more than 3,500 tCO₂/year; that's the equivalent of taking more than 2,400 cars off the road!

At British Sugar, we make sure nothing goes to waste and are constantly innovating our manufacturing processes to both create jobs, reduce waste and create useful co-products.

Partnering with Jazz Pharmaceuticals, at our Wissington site in Norfolk we grow a non-psychoactive variety of the cannabis plant family, which is used in a medicine for treating life-threatening forms of childhood-onset epilepsy.

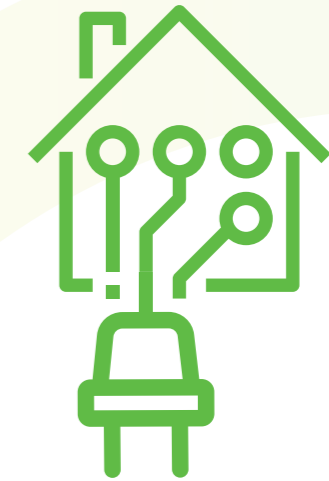
The crop is grown in our high-tech glasshouses using some of the excess 12 MW low-grade heat and waste CO₂ generated onsite, which the plant takes in during photosynthesis. The glasshouses are heated to an appropriate temperature by an onsite network of 240 miles (386 Kms) of piping carrying hot water from the factory's Combined Heat and Power (CHP) plant all year round. We also harvest rainwater from the glasshouse roof to water the plants, some 110 million litres each year, meaning the site is 98% self-sufficient for water most years.



Riverside Glasshouse



More than 22%
reduction in carbon emissions since 2018
(Scope 1 & 2 emissions)



Our Combined Heat and Power plants export enough electricity to power 180,000 homes



We produce up to 75 million litres of renewable fuel each year - in the UK's first bioethanol plant



Only 200g waste created per tonne of sugar we produce

Case study: Creating Green Electricity with Biogas

The sugar production process offers plenty of opportunities to create co-products. At British Sugar, nothing is wasted; we put all the outputs from the sugar-making process into products in their own right. We're proud that, for every tonne of sugar we produce, only 200 grams of waste is left – virtually zero waste.

For example, in 2016, we installed an anaerobic digester at our Bury St Edmunds factory, which enabled us to produce renewable energy from the sugar beet pulp leftover after the sugar has been extracted.

In anaerobic digestion, microorganisms break down organic matter in an oxygen-free environment to generate both biogas – a source of renewable energy - and digestate, used as a soil conditioner and fertiliser.

The biogas generated feeds a Combined Heat and Power plant, generating up to 5 MW of green electricity. This energy is fed into the grid and can power approximately 8,000 homes for a year.

Where not stated, figures are British Sugar's own.



British Sugar factory, Bury St Edmunds



“We’re really pleased to have achieved our aim of generating up to 5 MW of renewable energy through the Anaerobic Digestion plant, in a carbon neutral way. This is another great example of how determined we are to do more with less and be a leader in responsibly consuming, reusing and recycling natural resources.”

Andy Simms, Site General Manager at Bury St Edmunds

Case study: Reducing our emissions

At our Wissington site, we have recently completed the installation of a new £17 million evaporator project, which will reduce the factory’s emissions by 30,000 tonnes of carbon a year – the equivalent of 3,700 UK households’ energy use every year. This evaporator was commissioned and operating for the start of the 2023 campaign and has already reduced the site’s steam demand by 25%.

Planning is underway for a similar, £20 million project at Bury St Edmunds, which will cut the site’s carbon emissions by around 20,000 tonnes – equivalent to the annual carbon footprint of around 4,000 people.



Evaporator at British Sugar, Wissington

CONCLUSION

We see a world of exciting opportunities for British Sugar, not only for our core product – sugar – but also with the exciting work we’re doing to meet society’s broader sustainability challenges. Seizing these new opportunities will allow our industry to become even more efficient, innovative and competitive, unleashing our potential so that consumers in the UK and elsewhere can enjoy our products for another 100 years and beyond.

Our four state-of-the-art factories combine leading-edge technology with modern best practices, making British Sugar highly efficient, reliable, and competitive. We’re proud of our work supporting people in our local communities and the wider UK.

We’re innovating to create more resilient sugar beet crops while making the most of every opportunity to generate valuable co-products as part of our sustainable, circular economy approach.

We’re also working to meet the remaining sustainability challenges in our production and supply chain so that we can contribute to the UK’s 2050 net zero targets. But we know we have much work still to do; that’s what drives us every day.



We’re proud of our work supporting people in our local communities and the wider UK

CONTACT US

For more information on British Sugar, please visit:
<https://www.britishsugar.co.uk/>

If you would like to learn more about anything in this report, please contact
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