



Overview of UK Sugar Sector

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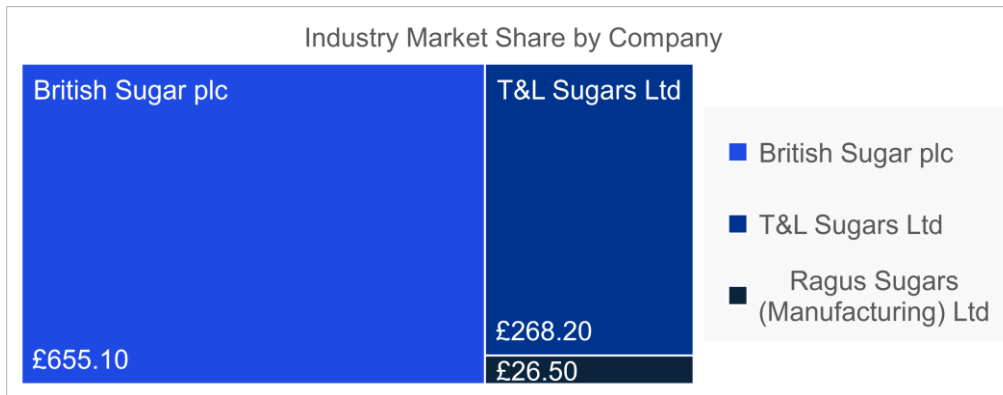
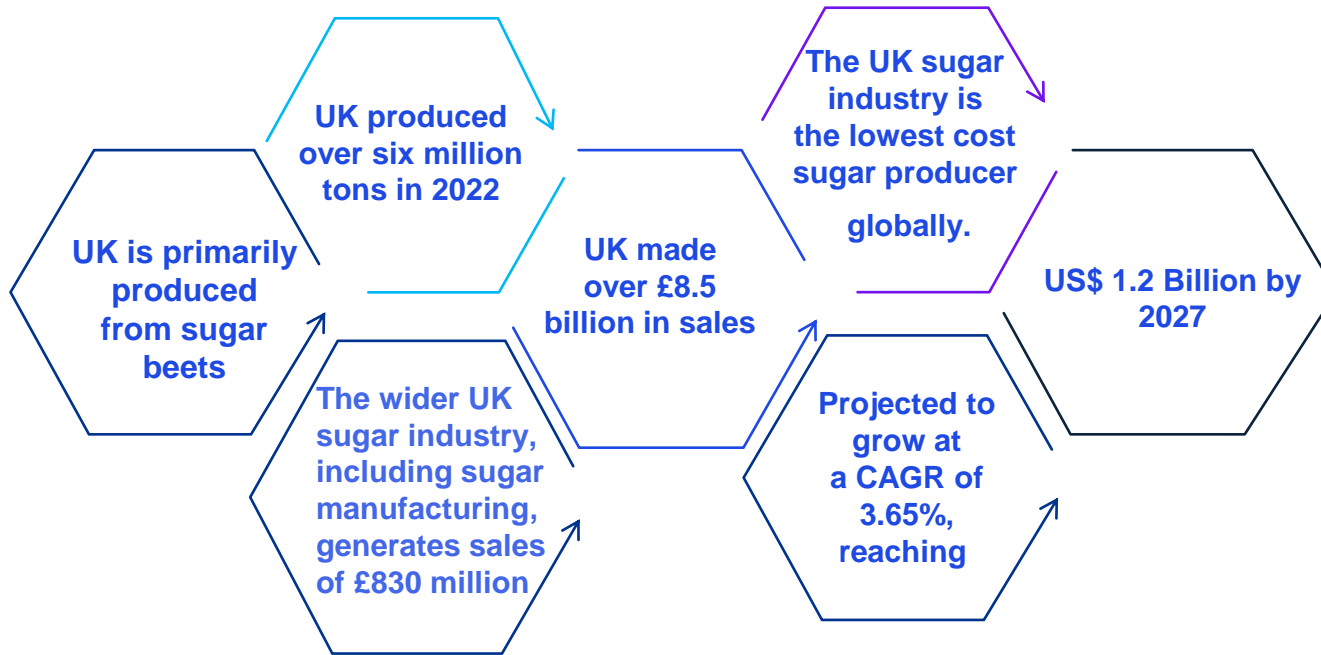
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UK Sugar Sector at a glance



Sustainability Targets and UK Policy

The sustainability narrative in the UK sugar sector is shaped by ambitious targets set at governmental and corporate levels.

Global climate agreements further challenge the industry to adopt sustainable practices.

Corporate Initiatives

British Sugar: Initiatives focus on carbon reduction, water conservation, and waste minimization, setting industry benchmarks for environmental sustainability.

Tate and Lyle Sugars: Comprehensive approach includes carbon emission reduction strategies, renewable energy investments, and sustainable sourcing of raw sugar.

Government Support

Initiatives: UK government supports decarbonization through the Industrial Energy Transformation Fund (IETF) and Net Zero Innovation Portfolio Programme.

Grant Funding: £185 million available under the third phase of IETF until March 2028, supporting feasibility studies and technology deployment.

Financial Incentives

Tax Incentives: Grants, subsidies, tax savings, and regulatory incentives encourage investment in green technologies.

Dual Approach: Businesses should leverage both direct funding opportunities and tax incentives for optimal energy transition.



Sustainability Technologies & Measures Adopted

01

Circular Economy Principles

Implementing zero-waste processes where by-products, such as beet pulp, are used in animal feed or for bioenergy.

02

Fuel Switching & Renewable Energy (RE) Integration

Shifting from fossil fuels to biomass for energy needs in production processes.

03

Innovative Effluent Treatment

Advanced wastewater treatment technologies to reduce environmental impact.

04

Energy Management Solutions

Adoption of smart energy systems for efficient energy use.

05

Carbon Capture and Utilisation

Exploring carbon capture technologies to reduce emissions.

06

Process Automation

Leveraging automation for more efficient and less resource-intensive operations.

07

Stream Economy

Optimising resource use across different production streams to minimise waste and maximise efficiency.

Carbon Capture and Utilisation (CCU)

Carbon Clean Solutions Limited: This company provides low-cost carbon capture technology to reduce carbon emissions. They focus on innovative solutions for capturing CO₂ and converting it into useful products.

Tata Chemicals Europe (TCE): TCE is building the UK's first industrial-scale CCU plant at its site in Northwich, Cheshire. This project aims to capture and utilise CO₂ emissions from sugar production.

Vitol and Phillips 66: These industry partners are involved in the Humber Zero Project, which focuses on the capture, compression, and conditioning of CO₂. They contribute to the circular economy by utilising captured CO₂.

Effluent Treatment Innovations

Pradeep Kumar Poddar & Omprakash Sahu: Researchers have explored the treatment and management of wastewater in the sugar industry. Effluent treatment systems are crucial for minimising environmental impact.

ANDRITZ: ANDRITZ provides solutions for the sugar industry, including wastewater treatment. Their expertise covers filtration, sedimentation, and load equalisation.

Energy Efficiency Measures

ABB: ABB offers process automation and control solutions for the food and beverage industry, including sugar manufacturing. Their System 800xA distributed control system optimises energy usage, reduces variations, and enhances efficiency in sugar plants.

British Sugar: British Sugar has invested in making its manufacturing plants more efficient. They produce not only sugar but also co-products like bioethanol and electricity. Their circular economy practices positively impact other industries.

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Additional Technologies

Combined Heat and Power (CHP) Plants:

- British Sugar has invested in CHP plants, which generate electricity and useful heat simultaneously, leading to significant energy savings

Advanced Evaporator Technology:

- This technology enhances the efficiency of the sugar refining process, reducing energy consumption per tonne of sugar produced

Anaerobic Digestion:

- By converting waste materials into biogas, the sugar sector can generate renewable energy and reduce reliance on fossil fuels

HVAC process optimisation

- A multifaceted approach that aims to enhance the energy efficiency and performance of heating, ventilation, and air conditioning (HVAC) systems



Case study

➤ Energy Efficiency Initiative

- Implementation of Spirax Sarco EasiHeat™ Heat Transfer Solution
- Objectives: Enhance Energy Efficiency, Reduce Operational Costs

➤ Background of Technology

- High-Efficiency Steam to Water Heat Transfer
- Application Range: 70 kW to 3 MW
- Compact Design for Operational Cost Savings.

➤ Project Implementation at Tate & Lyle

- EasiHeat System Integrated with New Boiler Installation
- Solved Peak Demand Issues for Liquid Sugar Production
- Enabled Instantaneous Hot Water Provision & Overnight Boiler Shutdown

➤ Innovative Features of EasiHeat System

- Space-Efficient Compact Design
- Real-Time Energy Monitoring with Cloud-Based Reporting
- Safety Features with Dual Control for Temperature & Pressure
- Advanced Diagnostics for System Integrity and Performance

➤ Project Outcomes and Impacts

- Achieved Significant Reduction in Energy Costs
- Enhanced Process Reliability and Production Efficiency
- Benchmark Set for Sustainable Production in Sugar Industry



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UK Sugar Sector's Sustainability Achievements

- Emphasis on Carbon Capture and Utilisation (CCU)
- Adoption of Heat Recovery Systems
- Advancements in Process Automation

Embrace Carbon Capture and Utilisation (CCU)

- Importance of CCU for Emission Reduction
- Potential for Sustainable Product Development from Captured CO₂

Adopt Heat Recovery Systems

- Energy Cost Savings Through Heat Recovery Technologies
- Importance of Efficient Utilisation of Waste Heat in Processing

Policy Incentives for Sustainable Practices

- Need for Government Subsidies and Incentives for Green Technologies
- Role of Policy in Accelerating Adoption of Renewable Energy

Foster Collaborative R&D

- Establishing Partnerships Between Industry and Academia
- Encouraging Innovation for Sector-Specific Challenges

Leverage Digitalisation and Automation

- Digitalisation as a Tool for Enhancing Production Efficiency
- Automation for Consistency, Quality Control, and Reduced Resource Use

Learning from UK Public-Private Initiatives

- Adapting UK's Best Practices to Indian Context
- Engaging with Global Sustainability Networks for Knowledge Exchange

Thank you