Routes to decarbonisation and onsite energy production for industry in Suffolk

The final report on the Suffolk High Energy Users Network research project for the Suffolk Chamber of Commerce

June 2026

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With thanks to our funders, collaborators, advisors and all the participants.

Executive Summary

This report presents findings from qualitative research conducted with members of the High Energy Users' Network (HEN) and other businesses across Suffolk. The study explores how organisations are reducing their emissions in practice, including opportunities for on-site low-carbon energy generation, and the barriers that constrain further progress. The findings are based on workshops, focus groups and discussions with businesses, and were subsequently tested and developed through an advisory panel involving representatives from the energy industry, national and local government, and academia.

Four key themes emerged from the research. Firstly, although there is a strong commitment to decarbonisation, decisions are ultimately governed by financial viability, with short payback expectations and economic uncertainty limiting investment. Secondly, organisations prioritise energy efficiency and operational improvements, focusing on measures within their immediate control before pursuing more capital-intensive solutions. Thirdly, the adoption of low-carbon technologies is selective and uneven, driven by cost, operational needs and site or infrastructure constraints rather than technical feasibility alone. Lastly, further progress is increasingly subject to factors outside companies' control, including infrastructure capacity, policy clarity, funding, leadership, and the ability to coordinate action across organisations.

A central finding is that the nature of the decarbonisation challenge is shifting. While early progress has been driven by individual businesses, the main constraints are now often beyond their direct control. Limitations in electricity infrastructure, including grid capacity, connection timelines, and the reliability of the system, are emerging as critical barriers. Electrification is widely viewed as the most practical route to decarbonisation, but it introduces increased dependence on energy infrastructure and shows a growing gap between regional growth in low-carbon electricity generation and the ability of Suffolk's dispersed industrial sites to access it.

These findings are particularly significant in the context of Suffolk's wider role in the UK energy system. The county is a focal point for renewable energy generation, particularly offshore wind, and is identified as a centre for clean energy growth within local economic strategy. This strategic position amplifies the importance of local constraints, as limitations in infrastructure and coordination directly affect the extent to which businesses can access and benefit from low-carbon energy produced within the region.

The findings also indicate that improvements in energy efficiency have already been widely implemented. While these measures remain important, their impact is diminishing, particularly where energy use is central to core operations. As a result, further reductions often require more significant changes to energy systems, which are more costly, complex, and dependent on external conditions.

This study highlights the limits of business-led approaches in isolation. In many cases, emissions are part of wider systems, including supply chains and shared infrastructure, making them difficult to address within organisational boundaries alone. This is increasingly evident in relation to Scope 3 emissions, where larger companies are seeking to reduce indirect emissions across their value chains. These emissions often account for a substantial proportion of total carbon footprints, leading companies to gather emissions data from suppliers and, in some cases, require reductions as part of commercial relationships. This introduces new pressures on smaller businesses and shows how closely linked decarbonisation is across supply chains.

Evidence from engagement with small and medium-sized enterprise (SME), including work undertaken by Groundwork as part of the HEN project, suggests that these pressures are already being felt. SMEs are increasingly required to respond to reporting requests and expectations from customers while often lacking the capacity, resources or clarity needed to do so. For high energy users, decarbonisation now depends as much on relationships with others as it does on technology.

In a dispersed industrial context such as Suffolk, the cluster-based approaches used in energy-intensive industrial zones are less applicable. However, there is potential for more localised, place-based solutions to emerge, including smaller-scale shared infrastructure and local energy systems. Realising these opportunities will depend on effective coordination, aligned investment, and better connection of local supply and demand.

These challenges point to a growing role for intermediary organisations, including the Chamber of Commerce, local authorities, universities, and regional bodies. Their role is not to deliver projects directly, but to coordinate activity, focus effort, support collaboration and provide trusted, practical guidance. This includes facilitating collaboration between businesses, supporting SMEs in responding to supply chain pressures, and helping translate complex technical and policy information into clear next steps.

Insights from the advisory panel reinforce these conclusions, highlighting that the constraint on progress is no longer primarily organisational or technological, but systemic. Businesses have largely reached the limits of what they can achieve independently and are now constrained by infrastructure, risk, complexity, and the absence of coordinated system-level solutions.

This includes investment in infrastructure, clearer and more stable policy frameworks, accessible funding mechanisms, support for supply chain engagement, and the development of skills and capacity. It also requires a more focused approach, with a small number of shared priorities and clear governance arrangements to coordinate action and support delivery across organisations.

Contents

1. Introduction

This report presents the findings of research commissioned by the Suffolk Chamber of Commerce and undertaken by the University of Suffolk over a nine-month period (September 2025 – May 2026).

Building on the work of the High Energy Users' Network (HEN), the study explores opportunities and constraints in decarbonisation, including energy reduction, the adoption of renewable technologies, and on-site generation. The research is set within the wider context of the UK's transition to net zero carbon emissions by 2050, and growing expectations for businesses to understand, manage and reduce their environmental impact.

Suffolk is characterised by a dispersed pattern of industrial activity, rather than the large clusters of high-energy industries that have been the focus of much research and policy on decarbonisation. This creates both challenges and opportunities. While large-scale infrastructure solutions such as carbon capture or hydrogen networks may be less accessible, there remains potential for more localised, site-specific approaches to energy generation, efficiency and collaboration. As a result, decisions on decarbonisation are often made at the level of individual sites rather than through coordinated, large-scale systems.

Suffolk plays a significant role within the UK's transition to low-carbon energy. The county is a key location for renewable energy generation and associated infrastructure, particularly in relation to offshore wind, and is identified as a centre for clean energy growth within regional economic strategy. This creates a distinct operating context in which energy is not only consumed but also produced at scale. Understanding how organisations engage with decarbonisation therefore requires consideration of both site-level decision-making and the wider energy system in which these sites are embedded.

The study engaged directly with HEN members and other Suffolk businesses to understand how decarbonisation is being approached in practice. It explores current strategies for managing energy use and carbon emissions, how feasible on-site low-carbon energy generation is, and the barriers that limit further progress. The emphasis is on the practical experience of those responsible for implementing change, rather than on assessing technologies in isolation.

The study used a qualitative, collaborative approach, bringing together participants through workshops, focus groups and discussions focused on specific industrial locations. This enabled the study to capture both individual organisational views and opportunities to share learning and develop place-based solutions.

2. Background

In 2021, the UK government published its Net Zero Strategy, setting out how it will meet its legal commitment to achieve net zero carbon emissions across all sectors of the economy by 2050[1]. The industrial sector remains a significant contributor to energy demand and greenhouse gas emissions, accounting for approximately 11% of UK territorial greenhouse gas emissions in 2025 as well as being a major energy consumer[2]. Limiting global warming to 1.5°C and avoiding dangerous climate impacts therefore requires rapid and sustained industrial decarbonisation, alongside wider system-level changes across all sectors[3].

To ensure that those responsible for the highest emissions are taking action, the government's Streamlined Energy and Carbon Reporting (SECR) scheme requires 'large' companies to produce annual Energy and Carbon Reports[4]. Reporting is based on from operations), Scope 2 (emissions from the energy purchased), and Scope 3 (value chain emissions – those outside direct operations and energy use)[5]. Smaller businesses are also increasingly producing carbon reduction plans due to their role in supply chains and to enable them to compete in public procurement exercises[6].

The UK industrial landscape is highly diverse, and the opportunities and methods for decarbonisation vary significantly across sectors and sites. Research has identified a wide range of combinations of industrial processes and technologies, meaning no single solution works for all businesses[7]. Several decarbonisation pathways have been identified, including electrification, heat recovery, solar thermal, and fuel switching[8]. Electrification is widely recognised as a key route to decarbonisation[9].

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[1] HM Government (2021) *Net Zero Strategy: Build Back Greener*. London: HM Government.

[2] Department for Energy Security and Net Zero (DESNZ) (2025) *UK Greenhouse Gas Emissions: Provisional Figures*. London: DESNZ.

[3] IPCC (2022) *Climate Change 2022: Mitigation of Climate Change (AR6 WGIII)*. Cambridge University Press.

[4] HM Government (2019) *Environmental Reporting Guidelines: Including Streamlined Energy and Carbon Reporting (SECR)*. Available at: https://www.gov.uk/government/publications/environmental-reporting-guidelines-including-streamlined-energy-and-carbon-reporting-guidance

[5] Department for Energy Security and Net Zero (DESNZ) (2023) *Scope 3 Emissions: Reporting Guidance*. London: DESNZ.

[6] Groundwork (2023) *Carbon Reduction Plans: Guidance for Suppliers*. Birmingham: Groundwork UK.

[7] Fleiter, T. et al. (2018) *Industrial decarbonisation pathways*. Karlsruhe: Fraunhofer ISI.

[8] Hafner, S. et al. (2022) "Governing industry decarbonisation: Policy implications from a firm perspective", *Journal of Cleaner Production*, 375, 133884.

[9] Raillard, Q. et al. (2025) "Decarbonisation of industry and the energy system: exploring mutual impacts and investment planning", *Journal of Cleaner Production*, 508, 145511.

Alongside reducing emissions, there is growing recognition of the wider co-benefits associated with decarbonisation. Research highlights benefits including improved environmental quality, productivity gains, and enhanced energy security[10].

However, significant barriers have been identified to the adoption of low-carbon technologies, including high upfront costs, limited availability of technologies, organisational constraints, and risks to the continuity of production processes[11]. Barriers to adopting on-site renewable energy generation include the uncertainty of financial returns, internal investment constraints, and challenges of integrating innovative technology into their operations[12].

Much of the existing research on industrial decarbonisation has focused on large, energy-intensive industrial clusters, with UK policy prioritising carbon capture, hydrogen, and shared infrastructure in these regions. However, evidence suggests that this approach does not apply easily to dispersed industrial contexts such as Suffolk[13]. Studies of dispersed regions highlight similar challenges, including limited access to infrastructure, lower levels of engagement, weaker governance structures, and difficulties in coordinating activity across sites, particularly where businesses do not see themselves as part of a defined cluster.

Data availability is an additional constraint. Both businesses and public sector stakeholders report challenges in collecting consistent, high-quality data, particularly from smaller firms where internal resources and capacity are limited. Similar issues are identified in wider research on SMEs and energy management, where commercial sensitivities and risk aversion can further limit data sharing and collaboration between companies[14]. These factors lead to a fragmented picture of energy use and emissions, making coordinated action more difficult to achieve.

At the same time, dispersed industrial sites represent a significant opportunity. Evidence suggests that a small proportion of high-emitting sites account for a large share of emissions,

[10] Abbas, A. et al. (2025) “Beyond carbon emissions reductions: Examining the co-benefits of industrial decarbonisation in the United Kingdom”, *Renewable and Sustainable Energy Transition*, 100132.

[11] Hafner, S. et al. (2022) “Governing industry decarbonisation: Policy implications from a firm perspective”, *Journal of Cleaner Production*, 375, 133884.

12 Goetsch, H.E. et al. (2024) Making it happen: On-site renewable energy and storage challenges and solutions for commercial buildings (NREL/CP-5500-90263). National Renewable Energy Laboratory (NREL).

[13] Rattle, I. et al. (2024) “Decarbonisation strategies in industry: Going beyond clusters”, *Sustainability Science*, 19(1), 105–123.

[14] Goetsch, H.E. et al. (2024) Making it happen: On-site renewable energy and storage challenges and solutions for commercial buildings (NREL/CP-5500-90263). National Renewable Energy Laboratory (NREL).

meaning targeted interventions may offer particularly effective opportunities[15]. Lessons from recent projects also highlight the importance of early engagement, robust governance structures, and scalable, place-based solutions[16]. More broadly, this reflects a transition challenge in which progress depends on coordination between multiple actors rather than individual firms alone[17]. Current expectations are that decarbonisation in dispersed regions such as Suffolk will be driven by a combination of energy efficiency, electrification and on-site energy generation, alongside growing potential for place-based collaboration.

Suffolk plays a crucial role in the UK energy system and has become a focal point for major renewable energy development, particularly offshore wind, alongside other nationally significant energy infrastructure. The local economic strategy identifies clean energy as a high-growth sector, underpinning ambitions for substantial long-term economic expansion, with energy generation and associated supply chains forming a core component[18].

This reflects a broader structural role in which Suffolk contributes not only to energy demand but also to the generation and transmission of low-carbon electricity at a national scale. As a result, the region sits at the intersection of local industrial activity and national energy priorities. Evidence from regional offshore wind development further highlights the scale of this contribution, with significant generating capacity already operational and substantial additional capacity in development across the East of England[19]. While this creates opportunities for growth, investment, and local supply, it also highlights the importance of enabling infrastructure. The extent to which businesses can access and utilise locally generated renewable energy remains dependent on grid capacity, system connectivity, and coordination between multiple actors. This combination of factors provides the context for understanding how decarbonisation is being approached in practice, at a site level, within the dispersed industrial setting of Suffolk.

[15] Greater South East Net Zero Hub (GSENZH) (2024) Developing a framework for decarbonisation of local industrial clusters: Work package 1 summary report.

[16] Rattle, I. et al. (2024) “Decarbonisation strategies in industry: Going beyond clusters”, Sustainability Science, 19(1), 105–123.

[17] Fleiter, T. et al. (2018) Industrial decarbonisation pathways. Karlsruhe: Fraunhofer ISI.

18 Suffolk Business Board (2024) Suffolk Economic Strategy (EPIC Suffolk). Suffolk: Suffolk County Council

[19] EastWind Offshore Cluster (2025) *Regional Energy Impact Report and offshore wind sector overview*. Available at: https://ewoc.co.uk/

3. Research Approach

This study explores how businesses across Suffolk, including members of the High Energy Users' Network (HEN), are addressing decarbonisation. It also considers the potential for on-site low-carbon energy generation within industrial settings.

Participants were selected based on their engagement with HEN or their location within higher-emitting industrial areas. This ensured that the study captured practical perspectives from businesses already managing energy use and carbon reduction, as well as those where reductions were important for the County's wider approach to net zero.

Information was gathered through a series of online discussions, workshops and focus groups with participating businesses from September 2025 to May 2026. These sessions were structured around a consistent set of discussion topics, including current energy and carbon strategies, experience of on-site energy generation, opportunities for collaboration, and the support required to progress towards net zero. This approach enabled participants to share real-world experience and helped identify shared challenges and opportunities across different organisations.

The interviews and focus groups were recorded and transcribed. Insights from these sessions were analysed by identifying recurring themes across the discussions, including economic pressures, barriers to adoption, and opportunities for collaboration. These provide a clear and practical understanding of how businesses in Suffolk approach decarbonisation in practice.

The initial findings were presented to and refined through an advisory panel involving representatives from the energy industry, national and local government, and academia. This provided an opportunity to validate the emerging themes, assess their wider applicability, and identify implications for coordination, infrastructure and policy.

Insights from engagement with SMEs, including activity delivered through Groundwork as part of the HEN project, were used to better understand how decarbonisation pressures, particularly those relating to supply chains and emissions reporting, are experienced by smaller organisations.

Given the exploratory nature of the work, the focus is on identifying patterns and shared experience rather than producing statistically representative findings.

All contributions were treated confidentially, and the study was conducted in line with the University of Suffolk's ethical guidelines.

4. Findings

This section presents findings from qualitative research conducted with members of the High Energy Users' Network (HEN) and other Suffolk-based businesses engaged in decarbonisation. Analysis of workshop and focus group discussions identified four key themes shaping organisational responses to energy use and decarbonisation. These are: **the costs and benefits** of action, reflecting the central role of financial considerations in decision-making; **'good housekeeping'**, where energy efficiency and operational improvements are prioritised; **decarbonisation where feasible**, highlighting both the opportunities and constraints associated with adopting low-carbon technologies and on-site energy generation; and the need for **support and leadership**, emphasising the importance of policy clarity, infrastructure and coordinated action.

These themes were reinforced through an advisory panel, which confirmed their relevance across a wider set of organisations and highlighted that many businesses have already implemented efficiency measures and are now constrained by factors beyond their direct control.

These themes provide a structured understanding of the key drivers, barriers and opportunities influencing industrial decarbonisation within a dispersed regional context such as Suffolk. They also reflect a broader shift in the nature of the challenge, from one primarily focused on individual organisational action to one increasingly driven by system-level factors, including infrastructure, coordination and interdependencies between organisations.

Table 1: Summary of themes and sub-themes

Theme	Summary	Sub-themes
1. The costs and benefits of 'doing the right things'	Businesses are strongly motivated to decarbonise, but decisions are ultimately driven by financial viability, risk, and the wider economic climate.	• Values versus viability • Demand-side pressures • The economic climate • Influence and capacity
2. It starts with 'good housekeeping	Companies prioritise energy efficiency and operational improvements within their control, focusing on reducing consumption before investing in more complex solutions.	• Knowing the site and infrastructure • Generating data to target energy reduction • Investing in fuel efficiency • Negotiating with suppliers
3. Decarbonisation where feasible	Adoption of low-carbon technologies is selective and constrained by cost, infrastructure, and operational factors, with electrification and on-site generation most explored.	• Electrification • Self-generation – Solar – Combined Heat and Power (CHP) – Anaerobic Digestion • Heat Pumps • Hydrogen • Nuclear • Local Heat Networks
4. Looking for support and leadership	Further progress depends on external factors, including infrastructure, policy clarity, funding, and the ability to coordinate action across multiple organisations.	• Policy and regulatory environment • Grid infrastructure and system capacity • Access to trusted advice and support • Funding and financial incentives • Facilitating collaboration • Market development and technology availability • Skills, capacity, and capability

4.1 The costs and benefits of ‘doing the right things’

This theme explores how businesses balance moral intent, legal obligations, commercial pressures, and risk when making decisions about decarbonisation and energy reduction.

Headline insight: While the intent to decarbonise is widespread, action is ultimately constrained by financial viability, short payback expectations, and increasing economic uncertainty.

Values versus viability

Many participants described decarbonisation as the ‘right thing to do’ on a personal, social, and professional level, and felt this was broadly reflected within the companies they worked for, albeit alongside other commercial pressures.

However, while this moral imperative provides motivation, it sits alongside the need to operate as a business, comply with legal obligations, meet carbon reduction targets, and build resilience to economic shocks. For most participants, decarbonisation is closely linked to reducing energy use while maintaining financial viability. As a result, actions in this area are subject to rigorous cost–benefit analysis.

Demand-side pressures

Businesses described increasing demand-side pressure from the companies they supply, as these customers seek to decarbonise their own supply chains. This has led to growing requirements for carbon footprint data, in addition to the reporting businesses already produce to meet their own legal obligations, both in the UK and abroad.

This pressure is increasingly formalised through Scope 3 reporting requirements, with larger organisations seeking to collect emissions data from suppliers and, in some cases, embed carbon reduction expectations within procurement and contractual relationships. As a result, decarbonisation is no longer confined to individual organisations but is increasingly driven by expectations across value chains.

While pressures from commercial customers may strengthen the case for action, companies still face the challenge of identifying solutions that meet their specific operational needs and for which a viable business case can be made. Participants stressed that being the most decarbonised business was rarely sufficient to provide competitive advantage. Cost remains the decisive factor in most markets, with some concern that European competitors benefit from higher levels of government investment and support.

Most participants felt little pressure from end consumers. Some attributed this to a lack of public understanding about the ingredients or impacts of less sustainable products, alongside mixed messaging from politicians and sections of the media. There was also scepticism about the willingness of consumers to pay a premium for sustainability, particularly in sectors characterised by intense competition and high price sensitivity.

The economic climate

Participants described how making the business case for investment had become increasingly difficult in the current economic climate. The rising cost of wages, business rates, energy prices, and non-commodity charges on bills are compounded by global instability arising from conflict and trade tariffs. These factors were seen to have reduced risk appetite and constrained the availability of capital for investment.

Return on investment expectations varied, but many reported that it was increasingly difficult to make successful business cases to their boards for investment in renewable energy and decarbonisation projects. Payback periods longer than three years, and sometimes less, were usually viewed as unacceptable, making longer-term investment particularly challenging.

A recurring theme was that many companies felt they had already addressed the ‘low-hanging fruit’ in energy reduction and were now inclined to wait for clearer incentives or signals before investing further.

Influence and capacity

Several participants held dedicated sustainability or energy roles within their company and reflected on how their ability to effect change required more than an understanding of technical changes and compliance obligations. With energy costs influenced by global events and guidance coming from many sources, one participant noted that there were ‘lots of moving parts’ to be aware of.

While many enter these roles with a strong personal commitment to reducing environmental harm, they recognised that having an impact increasingly depends on their ability to justify action in financial terms, rather than relying on moral arguments alone.

While the intent to decarbonise is widespread, the scope for action is often narrower than high-level ambition suggests. Faced with tight margins and increased risks, many companies prioritise measures that reduce energy use, defer larger capital investments, or limit action to areas within their immediate control. The starting point for companies is what several referred to as ‘good housekeeping’.

4.2 It starts with ‘good housekeeping’

In response to moral, commercial and compliance pressures, participants described an incremental and sequential approach to decarbonisation, focusing first on measures within their direct control. This primarily involved improving energy efficiency and day to day operations, with one participant noting that “the cleanest energy is the energy never used”.

Headline insight: Businesses prioritise reducing energy use through operational efficiency, focusing initially on measures within their immediate control before considering more capital-intensive solutions.

Knowing the site and infrastructure

Participants consistently identified ‘good housekeeping’ as the starting point for reducing energy use. This requires a detailed understanding of site layout, infrastructure and operational patterns. In many cases, sites have developed incrementally, resulting in layouts that are not optimised for energy efficiency or for integrating renewable technologies.

Several participants described fragmented or underused sites, with parts of operations not always in active use. Retrofitting presents significant challenges, with constraints such as asbestos limiting opportunities for insulation improvements and ageing buildings restricting the installation of technologies such as solar panels.

In response, some organisations have rationalised their estates by consolidating buildings, removing legacy equipment and reducing energy use in inactive areas. Others operate across multiple sites that combine production and customer-facing functions, requiring a mix of industrial and smaller-scale approaches. In larger or global organisations, participants highlighted more limited local control over infrastructure and investment decisions.

Generating data to target energy reduction

Improving efficiency depends on understanding energy use. Many participants have introduced monitoring systems, including sub-metering and sensors, to identify inefficiencies. Approaches range from advanced digital systems to internally developed tools, with some organisations relying on relatively simple analysis to identify patterns.

Behavioural change was also seen as essential. Actions such as switching off equipment when not in use were supported by awareness campaigns, with one participant reporting a measurable reduction in energy consumption over a one-year period.

In sectors where diesel is the primary energy requirement, there is a strong incentive to improve efficiency. Participants described measures including vehicle optimisation, load management and route planning. Sector-specific practices were also evident, such as precision agriculture techniques to reduce inputs and improve efficiency.

Investing in fuel efficiency

Alongside behavioural and operational changes, participants have invested in technologies to improve efficiency. LED lighting was widely adopted, although in some cases, the additional cost of installing lighting in hazardous environments made the investment unviable.

Other measures included demand-responsive systems, voltage optimisation and real-time monitoring to identify inefficiencies and adjust operations. Some organisations have upgraded building management systems or trialled new approaches in energy-intensive processes. Combined heat and power systems were also identified as part of broader efficiency strategies.

Despite these investments, several participants felt that efficiency gains have not translated into proportional cost reductions due to rising energy prices, with some describing their position as “running to stay still”.

Negotiating with suppliers

Participants also described negotiating energy contracts to manage costs and consumption. While some reported modest improvements, others noted that lower electricity prices could reduce the attractiveness of alternative solutions. Long-term agreements were also seen as a potential constraint.

Limits of good housekeeping

This pattern extends to larger and more complex operational environments, where many efficiency measures have already been implemented. In these contexts, energy demand is often integral to core processes, limiting the scope for further reductions without affecting productivity. Incremental efficiency improvements, while important, are therefore unlikely to deliver substantial change in isolation.

While these approaches demonstrate the importance of managing energy use efficiently, they largely focus on optimising existing systems. The next stage involves assessing whether those systems can be transformed. The following section considers how businesses are approaching decarbonisation where it is considered feasible.

4.3 Decarbonisation where feasible

This section explores how companies are approaching decarbonisation where it is considered technically and commercially viable.

Headline insight: Progress in adopting low-carbon technologies is selective and uneven, shaped by cost, infrastructure constraints and operational requirements rather than technical feasibility alone.

Electrification

Electrification was widely identified as the most feasible and pragmatic route to decarbonisation, with several participants reporting a shift to renewable electricity sources across buildings, operations, and fleets.

Constraints within the electricity system were consistently highlighted. Limited grid capacity delays connections, restricts expansion and reduces the ability to utilise locally generated energy. Participants expressed concern that renewable electricity produced in the region cannot always be consumed or exported efficiently.

Self-generation and alternative technologies

Efforts to reduce energy costs, decarbonise operations and limit reliance on the grid have led some companies to generate their own energy or consider doing so.

Solar panels were the most common approach, but returns on installation are lower than previously, and site-specific factors limit feasibility in many cases. CHP systems improve efficiency but can rely on fossil fuels. Anaerobic digestion offers benefits but is difficult to scale. Heat pumps depend heavily on electricity availability, and hydrogen is viewed as a longer-term option.

Across these technologies, feasibility is judged in terms of cost, infrastructure and operational constraints, as well as technical potential.

Solar

The most common approach has been the adoption of solar panels, sometimes through large rooftop arrays or, in one case, via a private wire connection to a solar farm. While some companies have invested their own capital, others have used ‘solar panel roof lease’ schemes, where a third party installs panels in exchange for a long-term lease. One participant said they were currently exploring options for additional panels, while another was assessing a local council’s ‘Solar for Business’ scheme.

Solar panels are not an attractive investment option for all. Returns on installation are lower than they were before 2019, with incentive payments now only received for electricity exported to the grid rather than all electricity generated. This has reduced the feasibility of investing in new systems.

For other companies, solar is constrained by site-specific factors, including roof condition, the need to operate day and night, seasonal demand that peaks in winter, and a preference for charging vehicles overnight rather than during daylight hours. While batteries could address some of these issues, participants felt that the market for such technology was not sufficiently advanced to make it an affordable investment.

Participants also emphasised the importance of understanding the full lifecycle business case. Additional costs include insurance, maintenance and access, such as hiring equipment to clean or service panels.

No participants had yet considered sharing solar-generated energy with other businesses, partly because their own demand remains high. Historically, this has required physical connections, but recent regulatory changes make virtual sharing possible through supplier billing adjustments, which may increase its attractiveness.

Combined Heat and Power (CHP)

Several participants reported investment in combined heat and power units to improve energy efficiency while maintaining a reliable on-site supply. These systems generate electricity on site, typically using gas or biogas, while capturing waste heat produced during the process.

For some companies, CHP formed a central component of their energy strategy, providing a stable and often more cost-effective alternative to grid electricity. In some cases, it also enabled other efficiency measures, such as heat recovery or supporting heat pump installation.

However, reliance on gas-fired CHP can complicate longer-term decarbonisation. Grid constraints may limit the ability to export surplus electricity, reducing system efficiency and value. As a result, CHP is often viewed as a pragmatic efficiency measure rather than a long-term decarbonisation solution.

Anaerobic Digestion

Anaerobic digestion is used primarily in agricultural and food production contexts to manage energy use and waste. Organic by-products generate biogas for on-site energy, often alongside CHP systems, while digestate can be returned to land as fertiliser.

However, wider deployment is constrained by limited feedstock at individual sites, the need to aggregate waste streams, and infrastructure and coordination challenges. In some cases, grid and policy constraints result in energy being exported rather than used on site, limiting its impact on business decarbonisation.

Heat Pumps

Heat pumps were identified as a potential route for reducing fossil fuel use, particularly for process heat. Some participants referred to large-scale systems using waste heat streams to improve efficiency.

Viability depends heavily on electricity availability and cost. While technically feasible, reliance on grid electricity can weaken the business case. Additional infrastructure requirements also present challenges, particularly for older or more complex sites.

Hydrogen

Hydrogen is no longer viewed as a near-term solution for most companies. While some had explored its use, momentum has declined due to stalled regional supply projects. It remains relevant for specific applications, such as high-temperature processes and long-distance transport, but depends on coordinated development of supply, demand and infrastructure.

Limits of organisational control

Participants emphasised that, in many cases, further decarbonisation is technically possible but not currently achievable due to limitations in infrastructure, cost and system coordination. This has led many to look beyond their own operations for the support and direction needed to move forward.

At the same time, opportunities for major efficiency improvements appear to have largely been exhausted. Where energy use is integral to continuous production processes, further reductions without affecting output are limited, reinforcing the need for system-level solutions. The next section considers how businesses are seeking support and leadership to enable continued progress.

4.4 Looking for support and leadership

This section explores the role of external support, leadership and coordination in enabling progress.

Headline insight: Further progress is now largely dependent on external factors, with infrastructure limitations, policy uncertainty and coordination challenges restricting the ability of organisations to act independently.

Access to infrastructure

Participants consistently identified access to infrastructure as a critical constraint. Limitations in electricity grid capacity were seen to restrict the ability to expand operations, install low-carbon technologies, or make full use of locally generated energy.

Uncertainty around connection timelines and future capacity also makes it difficult to plan investment. In some cases, participants described the need to delay or scale back projects due to a lack of clarity about when connections would be available.

Policy and funding environment

Participants highlighted the importance of clear and consistent policy signals in enabling investment. While there is general awareness of the direction of travel, uncertainty about future

regulation, support mechanisms and long-term incentives was seen to increase risk and reduce confidence in making investment decisions.

Access to funding was also identified as a key factor. Although some support schemes are available, they were often described as complex to navigate or limited in scope. For many businesses, particularly smaller firms, the availability of funding is closely linked to their ability to move beyond initial efficiency measures.

Coordination and collaboration

Participants highlighted the difficulty of coordinating activity across organisations, particularly in a dispersed industrial context. Many of the opportunities for further decarbonisation, including shared infrastructure or local energy systems, depend on alignment between multiple actors.

In practice, this is difficult to achieve without mechanisms to bring organisations together, build trust, and share information. Differences in priorities, levels of resource, and willingness to invest can all act as barriers to collaboration.

Supply chains and Scope 3 emissions

Participants highlighted how decarbonisation is increasingly shaped by relationships between organisations. In many operational settings, emissions are distributed across interconnected systems, with different organisations responsible for different elements of activity.

Larger organisations are seeking to reduce indirect emissions across their value chains (Scope 3 emissions), which can account for a significant share of total carbon footprints. This includes gathering emissions data from suppliers and, in some cases, requiring reductions as part of ongoing commercial relationships. This creates growing expectations for supplier engagement in decarbonisation. Smaller businesses are therefore not only managing their own energy use but are also required to respond to reporting requirements and reduction targets imposed through supply chains.

Evidence from SME engagement, suggests that these pressures are already being experienced in practice. SMEs are beginning to respond to requests for emissions data and evidence of action, often without dedicated capacity or specialist expertise. This reinforces the need for coordination and support, particularly for smaller firms, as decarbonisation increasingly extends beyond individual organisations and into wider supply chains.

Access to advice and support

Participants described the challenge of navigating a complex and sometimes fragmented landscape of guidance, policy and technical options. While support is available, it is not always clear how to access it, or which sources are most relevant.

Trusted, practical advice was seen as particularly valuable, especially where it is tailored to specific sectors or operational contexts. This includes support in understanding technology options, assessing feasibility, and developing viable business cases.

For smaller organisations, these needs are often more acute, as internal capacity and expertise are limited.

Limits of organisational control

Across discussions, there was a consistent recognition that many of the remaining challenges sit beyond the control of individual organisations. While businesses have taken steps to reduce energy use and improve efficiency, further progress often depends on infrastructure availability, market conditions, and coordination with others.

This reflects a view among some participants that businesses are already “getting on with it”, but are now reaching the limits of what can be achieved through individual action alone. As a result, decarbonisation increasingly depends on alignment across systems, supply chains and supporting institutions.

Summary

Overall, our findings suggest that while there is strong intent and growing activity across companies, further progress is increasingly constrained by factors beyond the organisation itself. These include infrastructure availability, market development, policy stability, administrative burden, access to finance, and the ability to coordinate action across multiple stakeholders.

These factors highlight the limits of company-led approaches in isolation and underline the importance of system-level support and leadership in enabling the transition to low-carbon energy systems.

5. Outcomes and learning points

This study highlights both the progress already made and the challenges that remain in transitioning to low-carbon energy systems. While there is strong intent and significant activity, with many businesses having already acted independently, further progress depends on how effectively this activity aligns with wider system-level support.

Insights from the advisory panel reinforced these findings, confirming that many organisations have already implemented the most accessible efficiency measures and are now operating in a 'post-low-hanging fruit' context. In this stage, further progress is increasingly constrained by infrastructure, investment risk and system-level coordination rather than by the availability of technologies.

5.1 A pragmatic but constrained pathway to decarbonisation

Decarbonisation is being approached incrementally, beginning with energy efficiency and followed by targeted adoption of technologies. However, this approach is reaching its limits in many contexts, particularly where energy use is integral to continuous operations.

While incremental improvements remain important, they are unlikely to deliver the scale of change required to meet longer-term decarbonisation targets without more fundamental shifts in infrastructure, systems and patterns of energy use.

5.2 From individual action to system coordination

While much progress has been driven by individual organisations, there are clearly limits to what can be achieved in isolation. Many of the next steps depend on infrastructure, market development and coordination across multiple actors.

This shift is also evident in the growing importance of Scope 3 emissions, where decarbonisation is increasingly driven through supply chains rather than within organisations alone. Larger firms are extending expectations to suppliers by requesting emissions data and, in some cases, requiring reductions as part of commercial relationships. As a result, emissions reduction is distributed across networks of organisations rather than contained within firm boundaries.

This reinforces that the core challenge is no longer primarily technological, but systemic, requiring alignment and coordination between organisations, infrastructure, markets and policy.

5.3 From dispersed sites to place-based solutions

The dispersed nature of Suffolk's industrial base presents a structural challenge for decarbonisation. Traditional cluster-based approaches are less directly applicable in this context. Our findings suggest that there is potential for more localised, place-based approaches to emerge, including smaller 'micro-clusters' and shared systems at the scale of industrial estates or local areas. These approaches offer opportunities to better align local energy supply and demand, but depend on coordination, shared investment and appropriate enabling conditions.

5.4 The role of intermediaries: coordination, targeting and delivery

Our findings point to a growing role for intermediary organisations, including the Suffolk Chamber of Commerce, local authorities, regional bodies such as the Net Zero Hub, universities, and sector organisations.

Rather than acting as direct delivery agents, these organisations are best understood as playing a set of complementary roles:

- **Coordination of activity** – bringing together businesses, energy providers and public bodies to align demand and identify opportunities
- **Targeting of action** – identifying priority sites, sectors or locations where interventions are most viable and impactful
- **Translation and communication** – interpreting policy, funding opportunities and technical information in ways that are accessible and relevant to businesses
- **Facilitation of collaboration** – supporting the development of shared projects, reducing perceived risks and enabling progress beyond exploratory discussions
- **Reducing investment uncertainty** – improving visibility of infrastructure plans, timelines and constraints, and supporting the development of investable, scalable projects, including through engagement with infrastructure providers and funders
- **Supporting supply chain decarbonisation** – helping SMEs understand and respond to Scope 3 requirements, including emissions reporting and engagement with customers
- **Supporting governance and delivery** – helping to define priorities, maintain focus, and coordinate action across organisations over time

Evidence from SME engagement, including work undertaken through Groundwork as part of the HEN project, highlights the importance of this role. Smaller businesses are increasingly being drawn into decarbonisation through supply chain pressures but often lack the internal capacity, resources or clarity needed to respond effectively.

Without this form of coordination, governance and ongoing support, there is a risk that activity remains fragmented, with individual organisations acting in isolation and opportunities for shared solutions unrealised.

5.5 Prioritisation and focus

A consistent message from the advisory panel was the need to move from broad ambition to a small number of clearly defined priorities. Participants highlighted that, without a more focused approach, there is a risk of fragmented activity and limited progress.

There was also recognition that defining priorities alone is not sufficient. Appropriate governance and leadership arrangements are needed to coordinate action, maintain focus, and drive delivery across organisations.

Establishing a small number of shared priorities, such as addressing grid capacity constraints, reducing investment barriers, and enabling local energy solutions, would support more coordinated and effective action and provide a clearer basis for engagement with national policy and funding mechanisms.

5.6 Enabling conditions for further progress

The research highlights a set of interrelated conditions that will influence the pace and direction of future decarbonisation:

- Infrastructure access, particularly electricity grid capacity, connection times and system reliability
- Policy clarity and stability, enabling longer-term investment decisions
- Funding and risk reduction, bridging the gap between technical feasibility and commercial viability
- Skills and workforce capacity, including both specialist expertise and longer-term pipelines of talent

- Administrative burden, particularly the complexity of carbon reporting and compliance requirements

- Supply chain engagement, reflecting increasing expectations placed on SMEs to measure and reduce emissions

These conditions reflect a shift from a primarily technical challenge to one that is increasingly organisational, relational and systemic in nature.

5.7 Implications for Suffolk

The availability of low-carbon energy at a national or regional level is not sufficient to enable transition. Without the infrastructure and coordination required to connect supply and demand at the local level, organisations may remain constrained in their ability to act. At the same time, Suffolk has an opportunity to take a more proactive role in shaping this transition by convening stakeholders, aligning activity and supporting the development of place-based solutions that reflect the characteristics of its dispersed industrial base.

Our findings indicate that key constraints are no longer primarily technological, but relate to infrastructure, coordination, investment risk and the ability to align and coordinate multiple actors across systems and supply chains. Addressing these challenges will require not only focused priorities, but also clear governance and leadership to support delivery over time.

5.8 Next steps

This research provides a foundation for further work to explore specific opportunities for on-site energy generation and collaboration across Suffolk. This may include:

- Identifying priority locations where shared solutions are feasible

- Developing pilot projects to test place-based and collaborative approaches

- Strengthening coordination between businesses, intermediaries, infrastructure providers and policymakers

- Supporting SMEs in responding to supply chain pressures, including building capacity for emissions reporting and identifying practical reduction measures

- Building on existing initiatives, including Groundwork-led SME engagement

- Expanding knowledge sharing and peer learning through the HEN network