Sustainability in Enterprise (SiE) Project

ERDF Summative Assessment

April 2023

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Project Contact Information

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1. Introduction

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In 2021 Nottingham Trent University (NTU) was awarded £1,995,950 of European Regional Development Fund (ERDF) funding towards total costs of £3,991,980, to deliver the Sustainability in Enterprise project (SiE). The project has supported small and medium-sized enterprises (SMEs) in Greater Nottingham on their journey to Net Zero. It has helped businesses to fully understand their carbon emissions and identify effective carbon reduction measures.

The SiE project included two elements of financial support for SMEs; grants which allowed SMEs to make capital investments to take action to reduce their carbon emissions, and also grants to SMEs to encourage them to co-fund a graduate role within their business who would support and promote sustainability practices within the business. Alongside the financial elements, free, practical support was also available from specialists in sustainable business operations, building management, product design and employee engagement. _See additional details in Section 1.6 for a more detailed project description._

This Summative Assessment follows ERDF guidance, setting out an overview of the SiE project including timescales, overarching objectives, funding, outputs delivered, and wider impacts achieved. The study also outlines the research processes and methodology undertaken to inform the assessment, explains why the approach was chosen, and analyses how appropriate this was.

1.1 ERDF Investment Priority

The project was funded under ERDF Priority Axis 4 - Investment Priority 4B: Promoting energy efficiency and renewable energy use in enterprises.

1.2 Geography

The project supported SMEs located within the Sustainable Urban Development Strategy (SUDS) area of Greater Nottingham. This area is a 'More Developed' ERDF category of region. This area covers Nottingham City, Broxtowe, and parts of Gedling, Ashfield and Rushcliffe.

1.3 Timeframes

The project commenced on the 1st April 2021. Activity is due to complete on 30th June 2023.

1.4 Delivery team

Whilst staffing has changed throughout the project, there have been circa twenty members of staff funded through ERDF and working on the project at any one time, equating to circa seventeen full time equivalent employees. In addition, there have been circa eight members of staff whose time has been matched into the project on a part time basis, equating to three full time equivalent members of staff.

1.5 Partnership working

The SiE project has been delivered across multiple departments at NTU. It was also delivered in alignment with other ERDF projects in the local area.

1.5.1 Cross university partnership working

a) **Delivery -** The project was delivered across a number of different schools and departments within the University including: Nottingham Business School, The School of Art and Design, The School of Architecture, Design and the Built Environment, and professional services departments including the Sustainability Team in the Estates Department, The Employability Department, and The Knowledge Exchange Department. More details with regards to the internal partnership working, including comments about the success of this approach and any lessons learnt for future schemes, are included in later sections.

b) **Summative assessment and research -** This Summative Assessment has been developed in partnership with academic researchers working in Nottingham Business School (NBS) and the School of Architecture, Design, and the Built Environment (ADBE). These teams kindly supported with the creation of business surveys, and also supported in the impact data analysis.

In addition to supporting with the work undertaken as part of the Summative Assessment, NBS and ADBE secured Higher Education Innovation Funding (HEIF) from NTU to measure the impact of student consultancy and student knowledge exchange that was undertaken through the project. This research is being delivered separately to the Summative Assessment.

1.5.2 Tripartite agreement - external partnership working

The SiE project was delivered as part of a tri-partite agreement with two other ERDF funded low carbon initiatives in the area. This was a stipulation of the Managing Agent. These two projects were delivered by Nottingham City Council and University of Nottingham (see later sections for more details).

During the project, the tripartite group was renamed the '*D2N2 Low Carbon Business Support Network*' and membership was widened out to include The University of Derby (UoD) and the East Midlands Chamber (EMC). This was because both UoD and EMC ran grant funded projects (ERDF and Community Renewal Funding (CRF) respectively) that offered low carbon support to business within the D2N2 area. The plans for continuing this partnership post-project completion are still in discussion. All members are currently delivering low carbon activity on fixed term contracts, so this limits potential future opportunities. *Please see later recommendations around a D2N2 group for net zero and low carbon business support that can continue this collaboration/specialist leadership.*

1.5.3 Wider partnerships

Wider partnerships were also developed as part of the project. For example, NBS worked with the British Business Bank (BBB) on their national #GreenToGrow campaign which supported businesses in moving to Net Zero. The SiE project was the key driver in terms of BBB to making contact with the NTU team.

1.6 Project overview

The SiE project delivered specialist support from multiple strands of activity. These are shown below:

1.6.1   Capital Carbon Grants – delivered by the Sustainability Team in the Estates Department and ADBE

Businesses could receive capital grant support to implement capital carbon reduction measures such as solar panels and insultation, with up to forty percent of the overall eligible investment funded.

1.6.2   Graduate Talent Grants and Workshops – delivered by NTU Employability Department

- **Graduate Talent Recruitment Grants –** The talent grants offered businesses twenty percent of the costs towards hiring a graduate for the first twelve months of their employment, provided that the role included an element of responsibility around the business' sustainability.

- **Sustainability Community Lab (SCL) –** The SiE project provided businesses with access to an early career development programme aimed at equipping graduates currently employed with them the necessary tools and skills to effectively promote sustainable practices within their work environment. The SCL consisted of a series of workshops which featured transformative learning activities and peer networking to foster knowledge exchange between businesses. The SCL was designed to support the graduates funded through Talent Grants (see above), although non funded graduates could, and did, attend.

1.6.3   Carbon Management Workshop Programme – delivered by Nottingham Business School (NBS)

Businesses could take part in professional development workshops delivered through Nottingham Business School, helping them build in-house capacity to measure and reduce their carbon footprint, establish carbon reduction targets, and develop a low carbon/ sustainability implementation plan.

1.6.4   Sustainability and Carbon Consultancy – delivered by the NTU Sustainability Team in the Estates Department

Professional sustainability advisors provided businesses with a bespoke environmental and carbon audit, including a site visit, diagnostic report and an action plan with recommendations, carbon savings, and cost and payback periods.

1.6.5   Product Design Consultancy – delivered by the Design Matter Team in the School of Art and Design
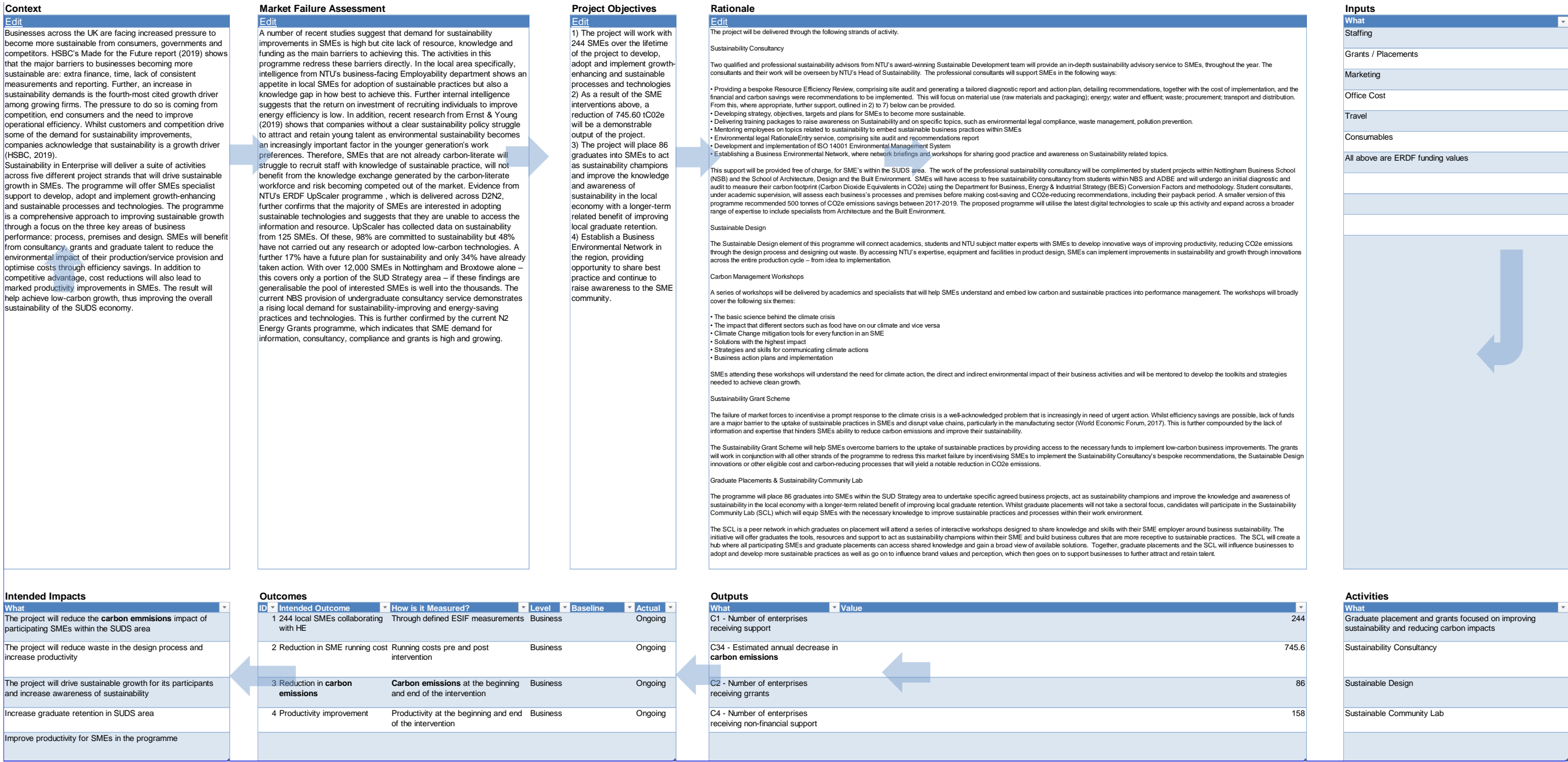
Product design consultants delivered a bespoke support package to businesses including product design research and development to redesign a product, reducing the associated carbon emissions. Impact was measured using Life Cycle Analysis on each product before and after design work was completed.

1.6.6   Student Carbon Consultancy – delivered by Nottingham Business School (NBS) and the School of Architecture, Design, and the Built Environment (ADBE)

Businesses could access a carbon management audit from student teams in NBS and ADBE. SMEs received a diagnostic report and action plan with recommendations to reduce carbon emissions. Students were supervised and supported by suitably qualified academics.

1.7 Logic model

The logic model sets out the objectives, rationale, inputs, outputs, and outcomes that were anticipated to be delivered by the project. The impact section of this Summative Assessment considers whether the project has delivered what it set out to achieve.

Context

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Businesses across the UK are facing increased pressure to become more sustainable from consumers, governments and competitors. HSBC's Made for the Future report (2019) shows that the major barriers to businesses becoming more sustainable are: extra finance, time, lack of consistent measurements and reporting. Further, an increase in sustainability demands is the fourth-most cited growth driver among growing firms. The pressure to do so is coming from competition, end consumers and the need to improve operational efficiency. Whilst customers and competition drive some of the demand for sustainability improvements, companies acknowledge that sustainability is a growth driver (HSBC, 2019).

Sustainability in Enterprise will deliver a suite of activities across five different project strands that will drive sustainable growth in SMEs. The programme will offer SMEs specialist support to develop, adopt and implement growth-enhancing and sustainable processes and technologies. The programme is a comprehensive approach to improving sustainable growth through a focus on the three key areas of business performance: process, premises and design. SMEs will benefit from consultancy, grants and graduate talent to reduce the environmental impact of their production/service provision and optimise costs through efficiency savings. In addition to competitive advantage, cost reductions will also lead to marked productivity improvements in SMEs. The result will help achieve low-carbon growth, thus improving the overall sustainability of the SUDS economy.

Market Failure Assessment

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A number of recent studies suggest that demand for sustainability improvements in SMEs is high but cite lack of resource, knowledge and funding as the main barriers to achieving this. The activities in this programme redress these barriers directly. In the local area specifically, intelligence from NTU's business-facing Employability department shows an appetite in local SMEs for adoption of sustainable practices but also a knowledge gap in how best to achieve this. Further internal intelligence suggests that the return on investment of recruiting individuals to improve energy efficiency is low. In addition, recent research from Ernst & Young (2019) shows that companies without a clear sustainability policy struggle to attract and retain young talent as environmental sustainability becomes an increasingly important factor in the younger generation's work preferences. Therefore, SMEs that are not already carbon-literate will struggle to recruit staff with knowledge of sustainable practice, will not benefit from the knowledge exchange generated by the carbon-literate workforce and risk becoming competed out of the market. Evidence from NTU's ERDF UpScaler programme , which is delivered across D2N2, further confirms that the majority of SMEs are interested in adopting sustainable technologies and suggests that they are unable to access the information and resource. UpScaler has collected data on sustainability from 125 SMEs. Of these, 98% are committed to sustainability but 48% have not carried out any research or adopted low-carbon technologies. A further 17% have a future plan for sustainability and only 34% have already taken action. With over 12,000 SMEs in Nottingham and Broxtowe alone – this covers only a portion of the SUD Strategy area – if these findings are generalisable the pool of interested SMEs is well into the thousands. The current NBS provision of undergraduate consultancy service demonstrates a rising local demand for sustainability-improving and energy-saving practices and technologies. This is further confirmed by the current N2 Energy Grants programme, which indicates that SME demand for information, consultancy, compliance and grants is high and growing.

Project Objectives

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1) The project will work with 244 SMEs over the lifetime of the project to develop, adopt and implement growth-enhancing and sustainable processes and technologies
2) As a result of the SME interventions above, a reduction of 745.60 tCO2e will be a demonstrable output of the project.
3) The project will place 86 graduates into SMEs to act as sustainability champions and improve the knowledge and awareness of sustainability in the local economy with a longer-term related benefit of improving local graduate retention.
4) Establish a Business Environmental Network in the region, providing opportunity to share best practice and continue to raise awareness to the SME community.

Rationale

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The project will be delivered through the following strands of activity.

Sustainability Consultancy

Two qualified and professional sustainability advisors from NTU's award-winning Sustainable Development team will provide an in-depth sustainability advisory service to SMEs, throughout the year. The consultants and their work will be overseen by NTU's Head of Sustainability. The professional consultants will support SMEs in the following ways:

• Providing a bespoke Resource Efficiency Review, comprising site audit and generating a tailored diagnostic report and action plan, detailing recommendations, together with the cost of implementation, and the financial and carbon savings were recommendations to be implemented. This will focus on material use (raw materials and packaging); energy; water and effluent; waste; procurement; transport and distribution. From this, where appropriate, further support, outlined in 2) to 7) below can be provided.
• Developing strategy, objectives, targets and plans for SMEs to become more sustainable.
• Delivering training packages to raise awareness on Sustainability and on specific topics, such as environmental legal compliance, waste management, pollution prevention.
• Mentoring employees on topics related to sustainability to embed sustainable business practices within SMEs
• Environmental legal RationaleEntry service, comprising site audit and recommendations report
• Development and implementation of ISO 14001 Environmental Management System
• Establishing a Business Environmental Network, where network briefings and workshops for sharing good practice and awareness on Sustainability related topics.

This support will be provided free of charge, for SME's within the SUDS area. The work of the professional sustainability consultancy will be complimented by student projects within Nottingham Business School (NSB) and the School of Architecture, Design and the Built Environment. SMEs will have access to free sustainability consultancy from students within NBS and ADBE and will undergo an initial diagnostic and audit to measure their carbon footprint (Carbon Dioxide Equivalents in CO2e) using the Department for Business, Energy & Industrial Strategy (BEIS) Conversion Factors and methodology. Student consultants, under academic supervision, will assess each business's processes and premises before making cost-saving and CO2e-reducing recommendations, including their payback period. A smaller version of this programme recommended 500 tonnes of CO2e emissions savings between 2017-2019. The proposed programme will utilise the latest digital technologies to scale up this activity and expand across a broader range of expertise to include specialists from Architecture and the Built Environment.

Sustainable Design

The Sustainable Design element of this programme will connect academics, students and NTU subject matter experts with SMEs to develop innovative ways of improving productivity, reducing CO2e emissions through the design process and designing out waste. By accessing NTU's expertise, equipment and facilities in product design, SMEs can implement improvements in sustainability and growth through innovations across the entire production cycle – from idea to implementation.

Carbon Management Workshops

A series of workshops will be delivered by academics and specialists that will help SMEs understand and embed low carbon and sustainable practices into performance management. The workshops will broadly cover the following six themes:

• The basic science behind the climate crisis
• The impact that different sectors such as food have on our climate and vice versa
• Climate Change mitigation tools for every function in an SME
• Solutions with the highest impact
• Strategies and skills for communicating climate actions
• Business action plans and implementation

SMEs attending these workshops will understand the need for climate action, the direct and indirect environmental impact of their business activities and will be mentored to develop the toolkits and strategies needed to achieve clean growth.

Sustainability Grant Scheme

The failure of market forces to incentivise a prompt response to the climate crisis is a well-acknowledged problem that is increasingly in need of urgent action. Whilst efficiency savings are possible, lack of funds are a major barrier to the uptake of sustainable practices in SMEs and disrupt value chains, particularly in the manufacturing sector (World Economic Forum, 2017). This is further compounded by the lack of information and expertise that hinders SMEs ability to reduce carbon emissions and improve their sustainability.

The Sustainability Grant Scheme will help SMEs overcome barriers to the uptake of sustainable practices by providing access to the necessary funds to implement low-carbon business improvements. The grants will work in conjunction with all other strands of the programme to redress this market failure by incentivising SMEs to implement the Sustainability Consultancy's bespoke recommendations, the Sustainable Design innovations or other eligible cost and carbon-reducing processes that will yield a notable reduction in CO2e emissions.

Graduate Placements & Sustainability Community Lab

The programme will place 86 graduates into SMEs within the SUD Strategy area to undertake specific agreed business projects, act as sustainability champions and improve the knowledge and awareness of sustainability in the local economy with a longer-term related benefit of improving local graduate retention. Whilst graduate placements will not take a sectoral focus, candidates will participate in the Sustainability Community Lab (SCL) which will equip SMEs with the necessary knowledge to improve sustainable practices and processes within their work environment.

The SCL is a peer network in which graduates on placement will attend a series of interactive workshops designed to share knowledge and skills with their SME employer around business sustainability. The initiative will offer graduates the tools, resources and support to act as sustainability champions within their SME and build business cultures that are more receptive to sustainable practices. The SCL will create a hub where all participating SMEs and graduate placements can access shared knowledge and gain a broad view of available solutions. Together, graduate placements and the SCL will influence businesses to adopt and develop more sustainable practices as well as go on to influence brand values and perception, which then goes on to support businesses to further attract and retain talent.

Inputs

What
Staffing
Grants / Placements
Marketing
Office Cost
Travel
Consumables
All above are ERDF funding values

Intended Impacts

What
The project will reduce the **carbon emmisions** impact of participating SMEs within the SUDS area
The project will reduce waste in the design process and increase productivity
The project will drive sustainable growth for its participants and increase awareness of sustainability
Increase graduate retention in SUDS area
Improve productivity for SMEs in the programme

Outcomes

ID	Intended Outcome	How is it Measured?	Level	Baseline	Actual
1	244 local SMEs collaborating with HE	Through defined ESIF measurements	Business		Ongoing
2	Reduction in SME running cost	Running costs pre and post intervention	Business		Ongoing
3	Reduction in **carbon emissions**	**Carbon emissions** at the beginning and end of the intervention	Business		Ongoing
4	Productivity improvement	Productivity at the beginning and end of the intervention	Business		Ongoing

Outputs

What	Value
C1 - Number of enterprises receiving support	244
C34 - Estimated annual decrease in **carbon emissions**	745.6
C2 - Number of enterprises receiving grrants	86
C4 - Number of enterprises receiving non-financial support	158

Activities

What
Graduate placement and grants focused on improving sustainability and reducing carbon impacts
Sustainability Consultancy
Sustainable Design
Sustainable Community Lab

1.8 Evaluation methodology and approach

The table below sets out the methodology used to undertake the SiE Summative Assessment. It sets out why the approach was used, and any key successes or lessons learnt for the delivery of future projects. Copies of all questionnaires and consultation questions used during the evaluation have been appended.

SiE project - evaluation methodology and data collection			
Area of work		Approach	Why this approach was used	Lessons learnt
Policy context assessment and market failure analysis		The evaluation team analysed the policy context and market failure that was in place when the project was established, and the ongoing relevance and strategic alignment of the project into the future.	This helped the team to gain a better understanding of the environment that the project has been delivered in, how this has changed/ is changing for the future, and how any future low carbon projects need to adapt to continue to be relevant.	As this was a project with a relatively short delivery period it would be easy to assume there would be little change in the relevance of the project. However, research shows that low carbon and sustainability issues have become a much higher priority for businesses and policy makers during the delivery of the project.
Beneficiary consultation and data capture – see appendices for additional info on how the data has been analysed	Entry and exit surveys for businesses receiving support	All businesses were asked to complete an enrolment and exit survey using DocuSign software. Surveys were developed by SiE academics and sustainability experts and captured data on motivations for taking part and the impacts that engagement with the project has had.	Data has been used to compare the changes/ impacts that have taken place for businesses between enrolment and their exit. This given a good picture of the progress that has been made and the impact that has been achieved by the SiE project.	The project achieved nearly 100% returns on the exit survey data. This is excellent for an exit survey - where response rates would typically be more around the 30-50% mark. The staff team put this success down to the use of DocuSign software. The use of this software should be considered for all other projects being delivered by the University.
	Interviews with beneficiaries	Semi-structured interviews were held with beneficiaries to discuss their experience with the project in more detail. These were undertaken in conjunction with the academic team from NBS/ ADBE who are using the findings to help them develop future business support programmes and inform research.	Speaking face-to-face with businesses allowed the team to delve more deeply into the impacts of the project and understand the strategic added value of the scheme and the counterfactual position.	The team had a 75% response rate from the businesses contacted for interview. This is very high for a project of this nature, where SME businesses are generally too busy with other priorities to make time for this type of research. It suggests that the project was well thought of amongst the business beneficiaries.
	Detailed case studies	Detailed case studies were undertaken with business beneficiaries. External consultancy support was also used to develop videos/ short films.	The short films helped to bring the impacts of the project to life and are being used to showcase the project and the impact of the funding at promotional events. They will be used internally and externally.	The short films and written case studies provided useful marketing/ promotional material which will be used by each department and on the NTU website.
Staff and stakeholder consultation	Consultation with the Project Manager and leads across the University departments	A face-to-face discussion was held with the SiE Project Manager to capture feedback on the project. Virtual/ face-to-face consultation was held with the five project-theme leads.	This helped the evaluation team to get a better understanding of the project delivery, impact, good practice and lessons learnt for the future.	N/A
	Project staff consultation	An online survey was sent to all staff working on the different strands of the project, including finance and marketing.	The questionnaire was anonymous, allowing the staff team to feedback on the successes/ lessons learnt.	The anonymity allowed staff to feedback frankly and honestly. The staff survey was sent out with six months to go on the project as there can often be a high turnover of staff in the final months of a project.
	Consultation with University stakeholders/ policy makers	The team spoke to strategic staff within the University who had an overview of the SiE project in terms of its fit within the University and the aspirations of the University in terms of low carbon and sustainability going forward.	This helped to get a better understanding of the university's longer-term aims in terms of future direction and strategy within the low carbon/ sustainability theme.	N/A
Outputs and spend analysis		Analysis of outputs and spend data has been undertaken at project level for the Summative Assessment.	The spend and outputs analysis will continue after the submission of the Summative Assessment to inform future project development.	Analysis post project will ensure that future policy and project decisions are made on the latest data available.
Impact	Outcomes/ impact	The team identified the anticipated impacts from the logic model and used the data captured during the business consultation phase to map progress in achieving these.	The impact analysis will continue after the submission of the Summative Assessment to ensure that future policy and project decisions are made on the latest/ final data. This will be supported by NBS/ ADBE.	Input from ADBE and NBS in terms of the data analysis has helped to ensure a comprehensive assessment of project impact and will support the dissemination of the findings to other HE institutes.
	Counterfactual and gross/ net impact assessment	The counterfactual analysis focusses on the carbon emission reduction support as this was the key driver for the project.	Whereas many business support schemes look to create jobs/ GVA, the key output of the SiE project was carbon reduction.	As outlined in the PIV, nationally available Government datasets have been used as the basis for the counterfactual analysis.
	Value for money	The team assessed the value for money of the scheme by comparing the project to baseline data set out in the ERDF Operational Programme for PA4.	Comparing the project value for money to the anticipated value for money as set out in the Operational Programme helps us understand how the project has performed.	We have not compared the project to other low carbon ERDF funded projects as the methodology for measuring carbon reduction varies widely across projects.

2. Project Context and Relevance

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This section provides additional detail on the rationale for the project, including information on the economic, policy and environmental context in which the project was designed. This section also identifies the nature of the market failure that the project was developed to address and considers how the delivery environment has changed throughout the project, including whether there is still a need for this type of support going forward.

2.1 Economic and policy context and market failure

The table below summarises the impacts, objectives and outcomes that were forecasted to be achieved by the SiE project (as identified in the logic model) and how these were to be delivered. The table identifies why each theme of work was relevant when the project was established and assesses whether these areas are still relevant both today and into the future. In later sections we consider the progress of the SiE project towards delivering/ achieving these impacts.

Economic and policy context and market failure – at project inception and into the future				
Theme	**Impacts, objectives from Logic Model**	**How this was delivered** *Includes direct and indirect support*	**Why was this needed - market failure/ policy position/ data analysis at the application stage**	**Ongoing relevance today and into the future – latest policy, strategy and data**	**Policy context summary**
Carbon Reduction	**Objective –** A reduction of 745.60 tC02$_e$ as a result of the SME interventions.	- Environmental Carbon Consultancy - Product Design Consultancy - Carbon Grants - Student Carbon Consultancy - Graduate Talent Grants Sustainability Community Lab - Carbon Management Workshops	- Nottingham Trent University (NTU), the University of Nottingham (UoN), Nottingham City Council (NCC), and other local authorities within Nottingham were (and still are) working in tandem towards Nottingham's 2028 carbon neutral pledge, with the aim to become the UK's first carbon neutral city. This project was designed to support this target.	- Research from the British Business Bank (BBB) (2021) stresses the importance of small businesses in reaching net zero – estimating that whilst smaller businesses might have a relatively small carbon footprint, collectively they account for around half of industrial emissions in the UK. - Reports from the Energy Savings Trust (Sept 2021) and the FSB (Nov 2021) both continue to evidence the ongoing need for carbon reduction support for SMEs. - Emerging research from Sheffield Hallam University and CRESC (Centre for Regional Economic and Social Research) emphasises the need for localised business support as well as sector specific support for low carbon/ sustainability. This report has yet to be published in full, but future NTU low carbon business support projects will need to consider the findings to inform project development. - Data from the SiE business exit surveys (see later sections) suggests that business support provision for low carbon could be even more effective if tailored to the individual businesses, potentially by size, sector etc.	Targeting/ supporting SMEs remains key to reducing UK carbon emissions in coming years. Options to tailor support based on size, sector etc could be considered for future support programmes.
Developing, Adopting and Implementing Low Carbon	**Outcome –** Increased awareness of carbon issues within SMEs to shift organisational outlook.	- Graduate Talent Grants - Sustainable Community Lab - Carbon Management Workshops - Environmental Carbon Consultancy - Product Design Consultancy - Student Carbon Consultancy	- At the time the project was initiated, research showed that many businesses were aware of carbon issues. However, given that low carbon and sustainability was such a fast paced and changing area, it was agreed that there was an ongoing need to continue to raise awareness amongst SMEs throughout the project period.	- The latest findings from the British Business Bank (BBB) (2021) show that nearly 60% of firms report reasonable awareness of key net zero concepts, but around half are not yet ready to prioritise decarbonisation. **Based on 75,640 businesses in D2N2 (Nomis, UK Business Counts 2022) this equates to over 37,000 businesses in the D2N2 area who are yet to prioritise decarbonisation.** However – as detailed in later sections, research for the SiE project suggests not all of these businesses will be ready to, or want to, or have capacity to address these issues.	Whilst there is awareness of low carbon, there is still much more to do to make carbon reduction a priority amongst businesses.
	Outcome – Supporting SMEs to develop their strategies, targets and plans to become more sustainable.	- Graduate Talent Grants - Sustainable Community Lab - Carbon Management Workshops - Environmental Carbon Consultancy - Product Design Consultancy - Student Carbon Consultancy	- When the project was being developed, intelligence from NTU showed an appetite amongst local SMEs for the adoption of sustainable practices but also a knowledge gap in how best to achieve this. Intelligence showed that businesses needed support to develop their strategies and plans around low carbon and sustainability.	- 2021 findings from the FBS show that 56% of businesses believe that the planet is facing a climate crisis, but only 35% of small businesses have a plan in place to combat climate change. **This equates to almost 50,000 businesses in the area who are yet to put a plan in place to combat climate change.** However – as detailed in later sections, research for the SiE project suggests not all of these businesses will be ready to, or want to, or have capacity to address these issues.	More still needs to be done to support businesses to get low carbon and sustainability plans, strategies and targets in place.

	Outcome – Supporting businesses to measure their carbon emissions.	- Carbon Management Workshops - Environmental Carbon Consultancy - Product Design Consultancy - Student Carbon Consultancy	- When the project was being developed findings from HSBC showed that a major barrier to businesses becoming more sustainable was a lack of ability to consistently measure carbon emissions. - Similarly, a report from the British Chambers of Commerce showed that just one in ten SMEs were measuring the carbon footprint of their operation.	- 2021 findings from the FSB show that 69% of small businesses don't know how to measure their carbon emissions. **Based on 74,000 micro and small businesses in D2N2 (Nomis, UK Business Counts 2022) this equates to over 50,000 businesses in the area who don't know how to measure their carbon emissions.** However – as detailed in later sections research for the SiE project suggests not all of these businesses will be ready to, or want to, or have capacity to, address their carbon emissions. - In addition, the latest findings from BBB (2021) show that few smaller businesses have measured their carbon footprint so far. The BBB note that the smallest business may perceive this as too time consuming and complex – this is reflected in the findings of the SiE exit survey – see later sections for details.	Support is still needed to help businesses to measure their carbon emissions, particularly smaller businesses.
	Outcome – Increasing investment in low carbon initiatives with SME businesses.	- Carbon Grants - Graduate Talent Grants - Carbon Management Workshops - Environmental Carbon Consultancy - Product Design Consultancy	- When the project was being developed, research from HSBC showed that a major barrier to businesses becoming more sustainable was the extra finance required.	- 2021 research from the FSB notes that 54% of businesses say grants or low interest loans would encourage them to become more energy efficient - with 22% of businesses who have not introduced energy efficient solutions citing the lack of capital as a reason. - Findings from the FSB (2021) also note that more needs to be done to support businesses in rented premises - 20% of businesses surveyed by the FSB said that they were not introducing energy efficient measures because '*the landlord does not allow the installation of energy efficient solutions'.* - See later sections for how the SiE research supports these national findings.	There is still a demand for financial support to encourage capital investment in low carbon. Businesses in rented premises potentially need a different package of support to those who own their premises.
Productivity/ Running Costs	**Outcomes –** Productivity improvements. **Outcomes –** Reduction in SME running costs.	- Carbon Grants - Graduate Talent Recruitment Grants - Sustainable Community Lab - Carbon Management Workshops - Environmental Carbon Consultancy - Product Design Consultancy - Student Carbon Consultancy	- At the time the project was developed, an ongoing priority for the region, as identified by the D2N2 LEP was increasing productivity amongst D2N2 SMEs.	- 2021 research from the Federation of Small Businesses (FSB) suggests that 67% of businesses have taken steps to address energy usage. This still leaves a third of businesses yet to act. **Based on 75,640 businesses in D2N2 (Nomis, UK Business Counts 2022) this equates to over 25,000 businesses in the area who are yet to take steps to address energy usage.** - Recent research from the FSB (2021) notes that 50% of small businesses have taken steps to eliminate waste wherever possible. **Based on 74,000 micro and small businesses in D2N2 (Nomis, UK Business Counts 2022) this equates to over 35,000 businesses in the area who have not taken steps to eliminate waste.** - However – as detailed in later sections research for the SiE project suggests not all of these businesses will be ready to, or want to, or have capacity to address these issues.	There is still much more work needed to support businesses with reducing running costs and increasing productivity.

Product Design	**Impact -** The project will reduce waste in the design process.	- Carbon Grants - Carbon Management Workshops - Product Design Consultancy	- When the project was initiated, research for the Economist showed that over 70% of a product's life-cycle costs and environmental footprint is determined during its design.	- As climate change and resource depletion continue to be pressing global concerns, the demand for sustainable product design is only increasing.	Businesses need ongoing support with product design.
Graduate Placement and Retention	**Objective -** The project will place 86 graduates into SMEs to act as sustainability champions and improve the knowledge and awareness of sustainability in the local economy. **Impact -** Increase graduate retention in SUDS area.	- Graduate Talent Grants - Sustainable Community Lab	- When the project was being developed, research from HSBC showed that a major barrier to businesses becoming more sustainable was lack of time. The project was designed to place graduates into SMEs to help to address this issue. - When the project was being developed, research from Ernst & Young (2019) showed that companies without a clear sustainability policy struggled to attract/ retain young talent as environmental sustainability becomes an increasingly important factor in the younger generation's work preferences.	- Time is still an ongoing issue for businesses when it comes to tackling sustainability. Recent research from the Energy Saving Trust shows that allocating time and resources to decarbonisation is still a widely reported issue amongst SMEs. - The findings from the SiE exit survey – see later sections, clearly demonstrate how support from the SCL has supported businesses with the issues around finding the time to implement low carbon initiatives.	Future programmes need to continue to focus on how they can support businesses with the time / resources required to implement low carbon initiatives.
Supporting the Wider Economy	**Objective** - Establish a Business Environmental Network in the region, providing opportunity to share best practice and continue to raise awareness to the SME community.	- Sustainable Community Lab - Carbon Management Workshops - Environmental and Carbon Consultancy	- When the project was being set up there was a lack of networking support on offer for businesses.	- Findings from the Energy Savings Trust (2021) note that business can often be concerned that joining a network would require too much time. - The development of a project-wide network was put on hold due to a number of emerging networks in the region - there were significant risks of duplication of resources and dilution of the offer. However, networks have been developed through the SCL and informally through the Carbon Management Workshops.	Any networks developed by the university in future need to consider the existing environment and how value can be added without risking duplication.
Knowledge Exchange	**Outcome -** 244 local SMEs collaborating with Higher Education.	- Graduate Talent Grants - Sustainable Community Lab - Carbon Management Workshops - Enviro Carbon Consultancy - Product Design Consultancy - Student Carbon Consultancy	- An ongoing priority for the University is knowledge exchange between the academic teams and local businesses.	- A 2023 study by the UN/ Monash University highlights the unique position that Universities have for leading on, and being a catalyst for, low carbon transformation. The report notes: '*higher education institutions have the unique opportunity to not only build strategies to reduce operational emissions, but to also champion climate research, knowledge and action in the wider community.*' - This unique position of the University is demonstrated by the following quote from one of the businesses supported through SiE: '*Low carbon support is a busy landscape, there are lots of people trying to support businesses with low carbon …. how do you know how to pick a good one? I've stuck with the universities as I'm confident of getting high quality outcomes. I've avoided the private sector offers as there are unknowns in terms of quality – you don't know what you are going to get.* '	Knowledge exchange remains a key priority for NTU. The University has a unique role in the local economy for being a catalyst for low carbon. It can capitalise on this when developing future projects.

Sources: FSB Report. *Accelerating Progress: Empowering small businesses on the journey to net zero November 2021. FSB is a non-profit making, non-party political business organisation that represents 160,000 members in every community across UK*

British Business Bank: *Findings are from the 'Smaller businesses and the transition to net zero report' (Business survey undertaken in 2021)*

Energy Savings Trust: How can policy better support SMEs in the pathway to Net Zero? *Primary Data is from a nationally representative survey consisting of 1,200 business owners and senior manager undertaking in August and September 2021*

2.2 Changing environmental and delivery context during project

The delivery of the SiE project has been influenced by a number of external factors that were outside of the control of the project – some having positive impacts, and some negative impacts on project delivery. In summary SiE has been delivered in a period of; global pandemic, supply chain issues, economic uncertainty, political volatility, heightened awareness of sustainability issues - including COP26 raising awareness of the low carbon agenda, energy price rises, a cost-of-living crisis, ongoing unpredictability in the jobs market, rising inflation, and the threat of a recession.

The implications of some of these factors in terms of the delivery of the project are shown below.

2.2.1 Jobs volatility/ higher numbers of graduate dropouts

A key element of the SiE project is placing graduates into roles within businesses. The employability team told us that the jobs market has changed significantly during the project, with huge amounts of volatility. Project staff noted the following in terms of the jobs market:

- The pandemic 'great resignation' saw many people looking for a career change, creating a huge demand for staff and pushing up graduate salaries. Graduates were able to become much more fastidious in terms of their job choices. As a result, businesses struggled to recruit to the graduate roles which were being part-funded by the SiE project. The project team told us of situations where graduates were getting poached by other firms offering higher wages, or where businesses were getting no suitable graduate candidates during the recruitment phase – one team member noted: *'Whilst the businesses involved in the SiE project wanted to recruit, they often couldn't recruit'.*

- The post pandemic move to virtual working meant that local businesses have been competing with employers in the South, often able to pay higher salaries. Brexit has also created a higher demand for staff as the numbers of EU workers in the UK fell.

- The team told us that they generally expect around a 10% graduate drop-out for this type of project, but this has been much higher for the SiE project – As one team member commented: '*We almost have to expect graduates not to stay in the role'*. The team they noted that there was a period over the summer of 2022 where graduates were dropping out '*as fast as they could be signed up.'*

- In more recent months the team have noticed that businesses are now nervous to recruit, particularly due to rising energy costs, inflation predictions and the threat of recession. Again, this is having an impact on the delivery of the graduate placement elements of the scheme, reducing demand from businesses.

These findings with regards to the jobs market align with national data which shows:
- Research from the ONS shows that job vacancies soared to a high of almost 1.2m in September 21 as employers hunted for staff to meet shortages brought on by Brexit/ the Pandemic.
- Research from Kings College London shows that between 2019 and 2022 there was a net loss of workers equivalent to 1% of the UK workforce (330,000) resulting from Brexit / the Pandemic.
- Research from the ONS shows that between October to December 2019 and January to March 2022, homeworking in the UK more than doubled from 4.7 million to 9.9 million people.

2.2.2 Supply chain issues

A key element of the SiE project was the capital grants programme, where businesses were awarded funding to make capital investments in low carbon initiatives. As a result of supply chain issues from the Covid-19 pandemic, many businesses struggled to obtain supplier quotes which delayed applications, and delivery lead times were often lengthy which delayed defrayal. This resulted in a significant amount of the financial spend being pushed into the latter stages of the project.

The team told us of cases where it had taken up to a year from point of order to delivery to source capital items. In addition, there had also been a lack of suppliers prepared to quote for smaller jobs due to the current high demand for solar photovoltaics and energy efficiency related expertise.

To mitigate against the risk of the capital grants not being spent, rather than awarding grants only to businesses who had already received project consultancy support (as was the initial plan), the team awarded grants to businesses who had received no other support from the project. In addition, the team also increased the size of the grant which could be awarded – grants of over £20,000 were awarded in cases where the carbon reduction calculations showed good value for money.

It should be noted, that whilst significant challenges were faced, due to the hard work of the SiE team, the capital grants target was exceeded.

2.2.3 Interventions taking longer to complete

Business support activities and interventions have taken longer to deliver for the SiE project than has been experienced in previous NTU business support programmes. The team have found that there have been higher levels of sickness, and the requirement to self-isolate, amongst both NTU staff and business beneficiary staff, particularly with Covid-19 related health problems.

As a result, many business support appointments had to be cancelled/ postponed and re-scheduled for a later date.

2.2.4 Internal staffing issues

The overall SiE project has also faced internal staffing issues. With increased awareness of sustainability amongst businesses/ organisations, employees with a sustainability/ low carbon skills set are now in high demand from employers. Salaries of sustainability professionals are rising, and sustainability staff are getting poached – for example, at one point during the SiE project the staff team were getting multiple approaches on a weekly basis about moving to other job roles in other businesses. This increased the turnover of staff for the SiE project.

To mitigate against these issues, and support staff retention, the University regraded the Sustainability Consultant posts.

2.2.5   Increased prioritisation of energy efficiency & carbon management

Energy efficiency and carbon management has become much higher on businesses' agendas over the past two years, particularly with higher energy prices, and the added awareness resulting from COP26. The team told us that they feel that this has helped in terms of getting traction and interest for the project.

It was noted that the need to become more energy efficient is primarily driven by cost, whilst the desire to become more sustainable is more broadly driven by multiple factors including tendering, market positioning and future proofing.

2.2.6 Business network

The project initially set out to establish a Business Environmental Network, providing the opportunity to share best practice and raise awareness. However, following careful consideration from the project steering group it was agreed that this would not be progressed. The rationale for this decision was that The University of Derby and Nottingham City Council had both developed low carbon/ sustainability networks, and Nottingham University, via their energy research accelerator had set up a Green Energy Network across the whole of the region.

It was therefore agreed that to avoid duplication NTU resources would be used to signpost businesses to these existing networks rather than setting up a new network themselves. This said, businesses and graduates have been provided opportunities to network via the Carbon Management Workshops, the Sustainability Community Lab and the NBS Low Carbon Conference.

2.2.7 The 2022 heatwave and cold weather

It was noted that there had been an increase in interest in the project during the heatwave of summer 2022 and the later cold spell. The temperature extremes made businesses realise that climate change really is going to have an impact on them in future. The freezing temperatures increased concerns over the energy price rises, and acted as a catalyst for businesses to start looking at where energy saving could be made. Global issues also changed business thinking, hitting home the consequences of global warming. With bushfires in Europe, Australia and the US regularly in the news, in recent years these have been happening more regularly in the UK.

2.2.8 Local competition

The team noted that there were two other grants programmes delivering in the Greater Nottingham SUDs area which have potentially reduced the market/ displaced demand for the SiE grants – these were initiated after the SiE project commenced. The Community Renewal Fund Accelerator project from the East Midlands Chamber offered 80% funded grants to businesses in Nottingham City, and a grant from Nottingham City Council as part of their Shared Prosperity Funding offered 100% funded grants. Whilst all projects that promote the shift to low carbon are welcomed by NTU, these grants were in direct competition with those offered through the SiE project and impacted its ability to award funding.

Future grants/ business support programmes need to be coordinated – a potential approach to this is discussed in later sections.

Summary: Project Context and Relevance

What was the project seeking to do?
The project set out to:
- Increase awareness of carbon issues within SMEs and shift organisational outlook.
- Help SMEs to develop their strategies, targets and plans to become more sustainable.
- Support businesses to measure their carbon emissions.
- Increase investment in low carbon initiatives with SME businesses.
- Achieve a carbon reduction of 745.60 tC02e as result of the SME interventions.
- Reduce waste and reduce carbon in the product design process.
- Place graduates into SMEs to act as sustainability champions.

This was delivered through: Carbon Grants, Graduate Placements and Training, Graduate Talent Grants, A Sustainable Community Lab, Carbon Management Workshops, Environmental & Carbon Consultancy, Product Design Consultancy and Student Carbon Consultancy.

What was the economic and policy context at the time that the project was designed?
When the project was being developed Nottingham Trent University, the University of Nottingham, Nottingham City Council, and other local authorities within Nottingham were working collaboratively towards Nottingham's 2028 carbon neutral pledge, with the aim to become the UK's first carbon neutral city.

What were the specific market failures that the project was seeking to address? Was there a strong rationale for the project?
When the project was being developed there was a very strong rationale for the project:
- Intelligence from NTU showed an appetite amongst local SMEs for the adoption of sustainable practices but also a knowledge gap in how best to achieve this.
- Findings from HSBC and other research organisations were showing that major barriers to businesses becoming more sustainable was a lack of ability to consistently measure carbon emissions, time to implement initiatives and the extra finance required to invest in low carbon initiatives.

How did the context change as the project was delivered and did this exert any particular pressures on project delivery?
The project has been delivered in a period of global pandemic, supply chain issues, economic uncertainly, political volatility, heightened awareness of sustainability issues, COP26 raising awareness of the low carbon agenda, energy price rises, a cost-of-living crisis, a war in Europe, and volatility in the jobs market.

Factors that have exerted significant pressure on the project include:
- **Jobs volatility -** Jobs volatility means that whilst many businesses have wanted to use the Talent Grants to recruit, there have simply not been enough graduates to employ.
- **Supplier issues -** Businesses have struggled to get suppliers to quote for the capital works needed due to the high demand during this period for energy efficiency related contractors, and supply chain issues. This has resulted in some businesses not submitting grant applications. Significant pressure on supply chains have meant that even though capital grants have been awarded they were challenging to defray as products are delayed/ arriving too late. However, due to the hard work of the team the carbon grants target has been exceeded.
- **Temperature Extremes -** It was noted that there had been an increase in interest in the project during the heatwave of summer 2022 and the later cold spell. The temperature extremes made businesses realise that climate change really is going to have an impact on them in future. The freezing temperatures increased concerns over the energy price rises, and acted as a catalyst for businesses to start looking at where energy saving could be made.

Bearing in mind any changes in context or weaknesses in the project design / logic model, can the project reasonably be expected to perform well against its targets?
The project has been operating in a volatile economic environment and has faced significant external influences. This said, the SIE project it is still on track to perform well against its targets, with the carbon reduction targets significantly exceeded – see later sections for more details on the outputs achieved.

3. Project Progress

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This section of the Summative Assessment analyses the businesses taking part in the project including who they are, their sectors and their size. This section also considers the project's delivery performance against its contracted expenditure, activity, and output targets.

As this summative assessment has been conducted prior to the completion of the project the expected lifetime outturn for the project (spend and outputs) have been estimated. The assumptions which underpin this analysis have been explained.

3.1 Motivations for taking part in the SiE project

The table below shows the motivations the businesses had for taking part in the SiE project at enrolment. The most popular choice of answer was moral obligations, followed by reputation and market position.

Complying with government laws and legislation was near the bottom of the list. This may change in future as further legislation is introduced in future years. It is likely to become particularly important for businesses exporting to Europe, due to the proposed introduction of European legislation.

Enterprise's primary motivations for taking environmental action?	
Motivation	**% businesses citing each motivation**
Moral obligations	90%
Reputation and market position	71%
Cost savings	58%
Meet the needs of clients or suppliers	49%
Comply with government laws and regulations	45%
Staff recruitment and retention	32%
Source: Enrolment forms. Feb 2023 who agreed their data can be used for research (100 businesses)	

3.2 The businesses taking part in the SiE project

Below we have set out a summary of the businesses who have taken part in the SiE project.

3.2.1 Sectors businesses are operating In

The table below gives a summary of the sectors that the businesses supported through the SiE project are operating in. We can see that the SiE project has attracted a wide cross section of businesses, from arts and entertainment to construction and manufacturing. The table also shows the actual percentage split of businesses operating in the different sectors for Nottingham City.

Sectors businesses supported are operating in compared to the Nottingham City baseline		
Sector	% businesses supported – SiE project	% businesses by sector in Nottingham City (2022)
Other service	22%	n/a
Arts, entertainment & recreation	13%	6%
Professional, scientific & technical	12%	14%
Construction	10%	10%
Manufacturing	10%	6%
Wholesale & retail, repair of automotives	8%	17%
Information & communication	7%	6%
Accommodation & food service	4%	8%
Human health & social work	4%	6%
Real estate	3%	5%
Admin & support	2%	8%
Education	2%	2%
Transportation & storage	2%	5%
Electricity, gas, steam & aircon	1%	1%
Financial & insurance	1%	6%
Source: enrolment forms. Data used for all SiE enrolments, 23rd Feb 2023, ONS, UK Business Counts, 2022		

Whilst the option to choose 'other' on the SiE business surveys makes it difficult to make a direct comparison, we can see that the uptake of support across sectors had been broadly representative of the local picture. However, key points to note include:

- Figures for wholesale/ retail businesses are below the Nottingham average. Discussions with the staff team noted that they have seen retailers struggling to be able to allocate time to engage in the SiE project and to '*get out of the shop'*. It was noted those many of the retail businesses who were enrolled, didn't progress/ complete their intervention with the SiE project.

- Similar pressures were felt in the accommodation and food service sector - there were huge pressures during the period of SiE delivery in the hospitality industry, particularly with the lockdowns and rising energy costs. It was challenging for businesses to prioritise low carbon during this time.

3.2.2 Size of business

The table below gives a summary of the size of businesses supported by the SiE project based on number of employees. It compares this to the average size of business in Nottingham City.

Size of business supported compared to the Nottingham City baseline		
Size	**% of businesses supported – SiE project**	**% businesses by employment size in Nottingham City (2022)**
Micro (0~9)	49%	86%
Small (10~49)	38%	11%
Medium (50~249)	13%	2%
Source: Enrolment forms. Data used for all SiE enrolments, Feb 2023. NCC data NOMIS, 2022		

The strong performance in supporting medium sized businesses could be due to higher levels of awareness of low carbon issues in this area. Anecdotal evidence from the SiE exit surveys and business consultations suggests that smaller businesses struggle to make time to prioritise low carbon.

3.2.3 Premises ownership

The table below gives a summary of premises ownership for the businesses supported through the SiE project. The high percentage of rented/ leased premises is very relevant, as later in the report we note how being located in rented premises can be barrier to introducing environmental measures. Note, this data is not available at the Nottingham City level, so no comparison can be made.

Premises/ ownership of businesses supported	
Premises ownership	**% of businesses supported – SiE project**
Rented / leased	71%
Owned	21%
Other	6%
WFH	2%
Source: Enrolment forms. Data used for all SiE enrolments, Feb 2023	

3.2.4 Disability

The table shows the percentage of the business owners who took part in SiE who reported that they had a disability. This data is not available for Nottingham City so no direct comparison can be made, however, 2021 Census data does show that 11% of the self-employed population in Nottingham City have a disability, which gives a useful comparison.

Disability of owner for businesses supported	
Disability	**% Business owners with a disability**
No	90%
Yes	1.6%
Not Disclosed	8.3%
Source: Enrolment forms. Data used for all SiE enrolments, April 2023, Nomis, Census 2021	

3.2.5 Geography

The table below shows the geographical distribution of the businesses who were supported by the SiE project. It should be noted that the SiE team were limited to working with businesses located in the SUDs area – this is specified in the table below.

Geography of business supported					
	Number of businesses enrolled on SIE	Percentage of total businesses enrolled on SiE	Actual businesses in each local authority	Percentage of businesses in each area	Notes
Nottingham City	197	78%	9,630	39%	All of the Nottingham City area is included in SUDs area
Rushcliffe	26	10.5%	5,360	21%	Only parts of the Rushcliffe area were included
Broxtowe	17	7%	3,325	13%	All of the Broxtowe area included in SUDs area
Gedling	11	4.5%	3,590	14%	Only parts of the Gedling area were included
Ashfield	1	0.5%	3,100	12%	Only parts of the Ashfield area were included
Total	252	100%	25,005	100%	-
Source: Enrolment forms. Data used for all SiE enrolments, April 2023, on a total of 252 enrolments Nomis, UK business counts, enterprises 2022					

Whilst a full analysis cannot be undertaken as not all areas of each district were eligible for support, the data does suggest that Nottingham City is over-represented in terms of the businesses supported. The team noted that the support was not tailored to the city in any way, and much of the support on offer was delivered on businesses premises. Future programmes need to consider how to ensure a more proportional distribution.

3.2.6 Ethnicity

The table below shows the ethnicity of the owners of the businesses who were supported by the SiE project. This data (business ownership by ethnicity) is not available at the Nottingham City level, but we can compare it to the overall population data for ethnicity as included in the 2022 Census.

Ethnicity of owner for businesses supported		
Ethnicity	% Businesses owners	Nottingham City – Census data for overall population
White	75%	71.5%
Not disclosed	11.5%	n/a
Asian	5.5%	13.1% Asian/ Asian British
Mixed	5.2%	6.6%
Other	2%	1.5%
Black	0.4%	7.3% Black/African/Caribbean/Black British
Source: Enrolment forms. Data used for all SiE enrolments, April 2023, Census 2021		

Whilst not a direct comparison, the figures do suggest that some ethnic groups were under-represented, although the option to not disclose on the SiE survey does skew the data. Future programmes need to consider how to ensure a more proportional distribution.

3.3 Project spend and outputs

The tables below and over the page set out the overall project progress towards achieving the spend and outputs as set out in the ERDF contract.

3.3.1 Spend performance

As can be seen in the table, as at date April 2023, 66% of the spend target has been achieved. Discussions with the project team estimate that by the end of the project 97% of the contracted spend will have been achieved – see below for details on how this will be delivered.

The SiE project - spend performance						
Indicator	Targets		Performance at Time of Evaluation		Projected Performance at Project Closure	
	Original	Adjusted	Number	% of Target	Number	% of Target
Revenue Expenditure (£)	£3,991,979.41	£3,991,979.41	£2,638,585	66	£3,887,068	97%

As noted in the previous section, key factors which influenced the project spend/ match include:

- **Jobs volatility/ high numbers of graduate drop-outs** - The volatility in the jobs market has meant that it has been harder to fill the part funded graduate roles, reducing spend on Talent Grants.

- **Supply chain issues / inability to secure quotes** - Supply chain issues have meant that grant defrayal during the project has taken longer to achieve. In some instances, businesses have been unable to even secure quotes for the works needed, let alone secure a supplier. This has pushed spend into the later stages of the project.

- **Knowledge gap delaying grant applications** - The team have found that businesses have a knowledge gap that needs to be addressed and absorbed before they are ready to invest; it takes time to get a footprint, absorb the information at a senior level, and make the choices about where to invest. From initial contact with the SiE project for consultancy through to grant application has been taking as much as one year. Again, this has pushed the grant spend to the end of the project.

The end of project spend forecasts have been estimated based on the following:

- 30 low carbon grants have been awarded and will be claimed by the close of the project.
- 91 talent grants have been awarded and will be claimed by the close of the project.

3.3.2 Outputs performance

As can be seen in the table, as at April 2023, 75% of the C1 output target has been achieved and the C34 output has been significantly overachieved. Discussions with the project team suggest that by the end of the project 89% of the C1 target will have been achieved.

The SiE project - outputs performance						
Indicator	Targets		Performance to Date		Projected Performance at Project Closure	
	Original	Adjusted	No	% of Target	No	% of Target
C1: Number of enterprises receiving support	244	244	184	75%	218	89%
C34: Estimated annual decrease in carbon emissions, tCO_2e	745.6	745.6	898	120%	993.12	133%

Key points to note with regards to outputs:

- The majority of the carbon reduction outputs that were able to be captured/ reported came from the environmental consultancy and carbon audit elements of the project. Whilst the other areas of the project also generated carbon reductions, these were not measurable as the project did not provide the baseline or calculations for them.
- Based on the above, the team see the carbon reduction outputs reported as conservative in terms of the overall carbon reduction impact of the whole project.
- Measuring and reporting carbon reductions can be time consuming and this needs to be factored into future programmes in terms of staff resources.
- In terms of the quality of the outputs delivered, it is worth noting that on average, businesses supported with the non-grant related C1 outputs received on average almost 30 hours of support. Significantly more than the 12-hour minimum.

Key factors which have influenced the delivery of project outputs:

- **Time pressures** – Businesses are facing significant time pressures - they often have to respond to higher priority business needs. Time pressure particularly affected the capacity for businesses to attend the CMP and SCL. Time pressures also created challenges when businesses were required to collate data for the consultancy support/ carbon calculations. As a result of the time pressures there has been a reduced participation in the more time intensive elements.
- **Jobs volatility/ high numbers of drop-outs** – The volatility in the jobs market has meant that it has been harder to fill the part funded graduate roles. There has been a lack of staff across the whole jobs market.
- **Competition** – Competition from alternative grants programmes has added additional competition.

End of project forecasts and assumptions:

The end of project forecasts are based on the following:

- Of the 260 clients enrolled on the programme, a further 34 will reach the threshold for a C1 output claim in the final quarter. These clients are being supported through two Carbon Management programmes, one Sustainability Community lab, a few remaining consultancies, the 12-week talent grants and through carbon grants.
- Carbon savings are based on the outputs from the Carbon Grants. 19 grants were awarded in the most recent quarter and the associated carbon savings will be reported in the final quarter.

3.4 Key facts and figures – delivery

Below we have set out key facts and figures with regards to the support that has been delivered.

By the close of the project:

- 56 full environmental and carbon audits will have been undertaken by Sustainability Consultants in NTU's own Sustainability Team, providing businesses with comprehensive carbon footprints and practical carbon reduction recommendations. On average, businesses supported through the Sustainability Consultancy strand of the project were given recommendations to reduce their overall CO_2e by 53%, and on average, to date businesses have reduced their emissions by 14%, often in less than one year.   Many are on track to implement more of their carbon reduction recommendations in future years.

- 14 product design consultancies, delivered by NTU's Design Matter team, will have provided lifecycle analysis of a product or packaging, and provided practical design concepts, material, and data for prototype production.

- NTU's Sustainability Consultant Architect will have provided 7 retrofit consultancies for businesses moving or renovating their premises.

- 20 businesses have been supported by 220 supervised student consultants from the School of Architecture, Design and the Built Environment. Working in teams, businesses were provided with retrofit and product design insights/recommendations to help them become more sustainable.

- 43 businesses were supported by 51 student consultancy teams from Nottingham Business School (NBS). 280 final year undergraduate students participated in this delivery strand. Businesses received carbon management insights and recommendations to help them become more sustainable.

- Overall, 500 NTU students will have gained practical carbon management skills which they will take into their future employment.

- 10 Carbon Management Programme cohorts will have been delivered by Nottingham Business School, helping 62 SMEs build in-house capacity to measure and reduce their carbon footprint.

- £245,718 will have been awarded for 30 low carbon capital investments through the SiE Carbon Grants Programme. Combined with the additional £348,064 match from the businesses themselves, this represents an overall investment of £593,572 in low carbon initiatives.

- 84 graduates will have been employed in local SMEs as sustainability champions for at least a twelve-month period. These new roles are estimated to generate circa £1million in extra GVA for the SUDs area per annum.

- 8 cohorts will have taken part in the Sustainability Community Lab, delivered by the NTU Employability Department. These have provided 64 early career professionals the tools, knowledge, and peer support to improve sustainable practices within their enterprise

Summary: Project Progress

Who has the project supported?

To date the project has supported 184 businesses (estimated to be 218 by the close of the project) in the Nottingham SUDs area to date, of which:

- 12% were in the Scientific, Professional and Technical sectors, 13% were in the Arts, Entertainments and Recreational sector, 10% were in the Construction sector and 10% were in the Manufacturing sector.
- 49% of the businesses supported were micro businesses, 38% were small businesses and 13% were medium sized businesses.
- 71% of the business supported were in rented / leased premises and 21% owned their premises.

Has the project delivered what it expected to in terms of spend and outputs?

By the close of the project, SiE will have supported 89% of the businesses it was hoping to support and overachieved the anticipated carbon reduction targets by circa 250 tonnes of $CO2_e$. Actual carbon savings are expected to be much higher as some areas of the project were generating savings that were not, or could not, be measured. In terms of spend, the project is forecasting spending 97% of the contracted budget by the close of project.

What are the factors which explain this performance?

- **Time pressures -** Businesses are facing significant time pressures - they often have to respond to higher priority business needs – time pressure particularly affected the capacity for businesses to attend the CMP and SCL, and also created challenges when businesses were required to collate data for the consultancy support/ carbon calculations. As a result, the time pressures have led to lack of participation in the more time intensive elements.
- **Jobs volatility/ high numbers of drop-outs -** The volatility in the jobs market has meant that it has been harder to fill the part funded graduate roles. There has been a general lack of staff in the job market.
- **Supplier issues -** Supply chain issues, often resulting from both Brexit and the Pandemic, have meant that grant spend has been delayed, pushing claimable spend back into the latter stages of the project.
- **Local competition -** More competitive grants programmes have been delivered in the local area which has made it more challenging to deliver the grants element. These were initiated after the SiE project had been contracted.

Lessons Learnt?

- The project has taken a holistic approach to delivering outputs, often providing businesses with multiple interventions, not just the bare minimum needed to secure an output. This has resulted in much higher impacts for the project and high-quality outputs.
- Using grant spend (capital/ graduate salaries) as match funding within project budgets has proved a successful approach for NTU in recent years. However, with an uncertain economy, there are likely to be even higher drop-out rates for businesses and graduates over the coming years, particularly when businesses are required to find a significant proportion of match funding them themselves. Whilst this approach remains sensible caution needs to be applied in future. If the economy remains turbulent, then when developing future project budgets the team should consider factoring in higher drop-out rates, and reduced take-up of grants.
- Longer project delivery periods could mitigate against some of the problems causes by supply chain issues.

When the project draws to a close, is it expected to have achieved what it set out to?

The project has achieved out what it set out to. Whilst there has been a small shortfall in the numbers of businesses supported compared to the contracted figure, this is due to external factors beyond the control of the team. The carbon reduction targets - the key driver for this project - have been significantly overachieved and we can assume that the actual carbon reduction achieved is even higher when we take into account actions taken that we have no way of accurately measuring the impact for. The project has had much more far-reaching impact than just achieving its contracted outputs – this is considered in later sections.

4. Project Delivery and Management
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This section of the Summative Assessment provides a more qualitative analysis of the implementation of the project. It draws on information captured through the consultation process with the delivery leads, operational staff, stakeholders, and businesses supported, to provide an analysis of the delivery performance, governance, and management of the project. It concludes by highlighting suggestions and recommendations for future projects.

4.1 Barriers

This section considers the barriers that businesses face when improving their environmental performance and how the project has helped businesses overcome these. It considers both the staff and business perspective.

4.1.1   Barriers to improving environmental performance – the business perspective

Pre and post support from the SiE project businesses were asked about the main barriers that stopped them from improving their environmental performance. The results show that the SiE project has had a very significant impact reducing barriers, particularly in terms of knowledge and expertise.

The data makes a compelling case for supporting projects like SiE in the future – it demonstrates that projects like SiE can achieve so much more than just delivering their contracted outputs.

Main barriers to improving environmental performance		
	Pre-SiE support	Post-SiE support
Lack of knowledge and expertise	79%	2%
Lack of time and resources	58%	15%
Lack of capital funding	46%	48%
Lack of data collection, monitoring, or management systems	44%	8%
Lack of policy or strategy	42%	2%
Not a priority	7%	2%
Staff resistance to behavioural change	6%	7%
Factors out of our control (e.g., rented premises / accessing suppliers)	Not asked	40%
Source: Enrolment/ Exit forms. Data for exited participants, Feb 2023, who agreed data can be used for research		

Post SiE support, there are two main barriers faced by businesses who want to improve their environmental performance – lack of capital funding and factors outside of their control. Analysis of the latter suggests that this is predominantly the challenges of being in rented premises and the challenges of accessing suppliers.

Comments from businesses in terms of barriers to improving their environmental performance included:

- *The main barrier is our outdated building which is rented rather than owned by the company. As such we have very little control over the energy efficiency of the building.'*

- *'The carbon calculations have been done to provide a benchmark which has been extremely helpful for a project that is rather complicated…. - it will be tricky to take this forward due to the responsibilities for carbon management falling between both landlord and tenants, but I now have more knowledge on how best to proceed'.*

- *The most significant barrier is time. We work long hours carrying out the basic operational duties of our business…and never have any 'free time'. Although carbon management / improvements in our environmental performance are vital to our future they don't fall into the category of being critical to our operational duties…. We need to have a bit of a paradigm shift and work out ways where this doesn't have to be an add on top what we do but is just an intrinsic part of it'.*

- *'Old buildings, with Listed Building restrictions. As a volunteer Trust we have neither the skills nor the finance to take work forward.'*

- *'We weren't able to progress the grant, as we have had a very quiet year in the business and finding 40% would have been a challenge.'*

- *'I feel that we still have a lot of work to do to fully understand our carbon footprint and to commit to significant and meaningful targets. I feel like we still need support in this to give us the confidence before we can commit to any targets'*

4.1.2   Barriers to engagement – the staff perspective

The staff team were asked also about any barriers that stopped, or put businesses off, from engaging with the SiE project.

Comments included:

- Across the different project stands staff highlighted that there has been a significant lack of time within the businesses themselves to address their sustainability issues. As one staff member commented, the barriers for businesses have included: '*Time, costs and lack of an idea in where to start to make their business more sustainable'.*

- It was noted that for businesses, sustainability *'is rarely a priority and can be dropped when something major comes up'.* The team told us that SMEs have often needed prompting to continue their engagement with the project as they can easily get distracted by other priorities.

- The team told us that the limited geographical area had been a barrier to maximising participation. They told us of instances where businesses have had to be turned away from SiE when they were just a few hundred meters from the eligible boundary. It was felt that there was opportunity to widen out the delivery area in any future projects. This would also support in terms of economies of scale.

4.2 Management, governance and delivery

This section sets out the key findings with regards to the management, governance, and delivery of the project.

4.2.1 Management, governance and delivery – the business perspective

Businesses were asked a range of questions with regards to the management, governance, delivery and offer of the SiE project. The results clearly show that the project has been well received:

a) **Organisation and management -** The business exit survey asked businesses whether they thought the SiE project had been well organised and managed. 97% of businesses who completed the exit survey felt the project had been organised and managed.

b) **Responsive to the needs of the organisation -** The business exit survey asked whether the SiE project had been responsive to the needs of their organisation. 92% of businesses who completed the exit survey felt the project had been responsive to the needs of their organisation.

c) **Recommending the support -** The business exit survey asked businesses whether they would recommend the NTU Sustainability in Enterprise project support to other enterprises. 95% of business agreed (65% strongly agree, 30% agree) that they would recommend the NTU SiE project support to other enterprises.

d) **Meeting Expectations -** The business exit survey asked businesses whether the support on offer through SiE had met expectations. 92% of business felt the support met their expectations (50% strongly agree, 42% agree).

e) **Additional Comments -** Comments from businesses with regards to the quality of the offer include:

- *'It's been a very well-run programme'*
- *'It was so well managed and run, we are really thankful for this investment in us'*
- *'Thank you for organising this and I cannot recommend this training enough'*
- *'Excellent management, great communication and works to date'*
- *'Massive thank you to all those involved in the NTU & SiE teams'*
- *'Hope for more collaboration in the future'*
- *'Hugely beneficial in boosting the resources and capacity of a micro-SME and we would have been lost without it'*
- *'Very impressed with the overall experience. It has been so valuable having someone external support the business in this way, as previously stated this would have taken up a large amount of time for a staff member'*
- *'Brilliant!!!!*

4.2.2 Management, governance and delivery - the staff perspective

In line with the business comments, the staff consultations highlighted that the project is considered to have been well managed. The online staff survey circulated as part of the Summative Assessment asked operational project staff '*In your opinion, has the overall SiE project been well managed by NTU?'* 12 members of the team responded, with all 12 (100%) telling us that the project has been well managed. In addition, positive comments have been received from staff about the overall project management including:

- *'The best programme I've worked on in terms of organisation and management'*
- *'Went above and beyond, and tried to have a wider impact beyond the project, developing partnerships and engaging stakeholders'*
- *'We were trusted to manage each strand of the project and were not micro-managed. This allowed us to develop each strand of the project in the best possible way'*

4.3 Interdisciplinary working

A key driver for the success of the SiE project has been the holistic approach to providing support – businesses were able to access support from multiple strands of activity across different schools and departments, as well as being signposted to other NTU support, and support from wider partners.

The table below shows the numbers of single and multiple interventions made by the SiE project:

Numbers of Interventions made by the SiE project		
1 Intervention	2 Interventions	3+ interventions
142	37	39

The opportunity to provide multiple interventions, and a more holistic approach to business support is unique selling point for Universities – University projects can include a wide mix of support, pulling in expertise across many schools and departments, that other delivery organisations would simply not be able to deliver.

Analysis of the business exit for the SiE project data shows better outcomes for businesses receiving multiple interventions when compared to those with just one intervention. This lesson needs to be factored into future projects being developed by NTU.

Whilst the benefits are obvious, interdisciplinary working is notoriously challenging within the University setting (*see later sections for more details and staff comments on this approach*) however, senior stakeholders and policy makers at NTU were particularly impressed with the success of this delivery approach for the SiE project, noting:

- '*The project has successfully pulled multiple strands of university activity together and this is a great strength of the project.'*

- *'The whole project is greater than the sum of its parts'*

Businesses also appreciated the approach, with one commenting:

- *'The wider package of support that we secured* (SCL, NBS and Carbon Grant) *was fundamental in allowing us to transition from talk to action – the first step* (NBS) *opened our eyes, but the SCL/ grants programme allowed us to put these things into action. You need to hit businesses on a number of fronts to have more efficacy.'*

4.3.3 Interdisciplinary working – staff comments

The SiE staff team were asked whether the interdisciplinary working, signposting, and collaboration across the different strands of the project had been successful.

a) Strategic level V operational level – making new links

Interestingly, the feedback in terms of cross university partnership working varied between the project leads/ more senior staff members and the more operational team members.

- At the more strategic/ senior staffing level, whilst there were examples of new collaborations resulting from the project, staff tended to feel that they already had a close relationship with other teams/ departments across NTU, they had collaborated before, and it was these relationships that had helped to make the project a success.
- At the more operational level, the opportunity for cross departmental working seems to have had greater added value, with opportunities for new collaborations being really appreciated.

Staff comments included:

- '*I think it builds on an ideal culture and support network within the university. To help other colleagues even if they are not necessarily within the department'.*
- *'I think it has brought many teams and colleagues closer together and I believe those working relationships will continue even after the project is finished'.*
- *'This is a very positive approach as it could help to break down a slightly 'siloed' culture at the university'.*
- *'Personally, it has been a great avenue to make connections with colleagues across other departments of the University that I otherwise may not have encountered'.*
- *Working collaboratively with other colleagues from departments across the University has given me the opportunity to ask questions and learn more about Sustainability in different areas.'*

b) Lessons learnt and suggestions for the future

Whilst the interdisciplinary working was considered successful, the staff consultation identified the following lessons learnt and suggestions for the future with regards to internal collaborations:

- **Competition -** It was noted that in some cases, particularly early on, it felt as through the strands were in competition with each other, with their own targets to achieve. It was acknowledged that the project management team responded to this by restructuring targets so as not penalise duplicate support - this was well received/ appreciated by the staff team.

- **Silo's -** It was suggested that the project did feel a little siloed across the themes at times, but this wasn't necessarily due to the culture in the project, more the different offers available to businesses.

- **Offer -** It was noted that in some instances the offering across the different strands were too similar and, if presented with all options, clients tended to favour some strands over others (e.g., professional consultancy vs student consultancy).

4.4 Wider partnership working and collaboration

As well as the internal collaborations, the project also worked closely with external partners. The aim of this was to provide better outcomes to business and provide more coherent business messaging between institutions. Whilst the evaluation did not capture data from businesses as to the success of this, feedback was collected from the project team. This included:

4.4.1 Successes

- The team told us that there have been direct referrals made wherever appropriate between the organisations making up the tri-partite agreement (see detail in previous section) and this group has worked successfully together.

- The partnership working went beyond just making referrals, for example, through the SiE project, NBS worked with the East Midland Chamber and the University of Derby to train their Growth Hub advisors. Future opportunities for the co-development of business resources, guides and diagnostic support were identified for potential future collaborations.

4.4.2 Challenges

- The team noted that subsequent to the inception of the SIE project, there had been instances of new, grant funded business support projects being introduced into the region. While the team are supportive of any initiatives that can support businesses in their low carbon journeys, it was noted that some of these schemes offered more attractive grant support packages when compared to the SiE project, and potentially duplicated the support on offer from existing projects and programmes - thereby complicating the business support landscape.

4.4.3 Recommendations for future delivery

- It was suggested that to build on the above successes, and to overcome any duplication and ensure an aligned business support offer in the area going forward, there could be a Net Zero Regional Governance Group. This group could focus on coordinating net zero support for businesses with membership including delivery providers and local government.

This group could:

- Share insights and data, both to members and interested parties.
- Collaborate / partnership working on future low carbon initiatives.
- Signpost businesses to the support available and align and simplify net zero support.
- Champion low carbon business support/ share best practice in low carbon business support.
- Advise, provide consultancy and ensure best practice projects in terms of businesses can introduce low carbon into their business.

Aligned to the above, the sustainability expertise across NTU (and potentially other partners) could come together to form a net zero diagnostic for D2N2, providing a service to other business support projects.

It was noted that whilst there are currently a number of sustainability strategy groups regionally, none have this specific focus.

4.5 Horizontal principals

The ERDF programme recognises democracy, equality, sustainability, and good governance as cross cutting themes. Staff and business comments with regards to the horizontal principles of the SiE project are set out below.

4.5.1 Horizontal principles - the business perspective

- **Good governance -** Feedback from businesses shows how the project has had a positive impact on good governance. Business quotes include:

  - *'It has encouraged us to increase focus on sustainability as an integral part of our daily activities.'*
  - *'We have focussed all staff members on considering both carbon and cost in the day-to-day operation of the business'*
  - *'Better understanding of what we can do, and enhanced staff awareness and buy in to the overall objectives'*
  - *Provided us with the momentum to set carbon neutral strategy and targets. Created buy in from top management, as well as staff'.*

- **Changing perceptions -** Involvement in the project has changed employee perception in many businesses, with comments from businesses with regards to the benefits of the project including:

  - **'***Staff morale & engagement improved.'*
  - *'Staff engagement, wellbeing and motivational improvements as many staff are really.'*
  - *'This process has really benefitted employee engagement and well-being.'*

4.5.2 Horizontal principles - staff comments

- **SME Climate Hub -** Staff noted that they have formally aligned the project with the SME Climate Hub. A slide on this is included in all SiE presentations, on the first day of the CMP and SCL and on the beneficiary exit form and the team encourage businesses to take their pledge to net zero by 2050. The SiE team have also included the CN28 logo on their email and raised the profile of the initiative in presentations.

- **Paper free -** The SiE project made a commitment to be paper free, with all reports and documents for beneficiaries provided digitally. NTU has procured DocuSign and therefore all project documents that require signature have been completed digitally.

- **Recruitment -** The project followed equality, diversity and inclusion principles in recruitment.

- **Staff transferable skills: low carbon -** Comments from the staff team show how they developed their low carbon knowledge which will be transferable as they move onto future projects:

  - *'My knowledge around low carbon design has increased massively'*
  - *'I have learnt more about sustainability in general and different ways in which you can calculate your impact and make yourself more sustainable.'*
  - *'I have found working on the SiE project very fulfilling. I have had the opportunity to make connections with people working in many different sectors and through the project have expanded on my knowledge of carbon accounting and energy management.*

4.6 Ideas/ suggestions for future delivery

Staff and businesses were asked about ideas/ suggestions for future projects. The table summarises the comments received at the overall project level, and also pulls together any comments/ suggestions noted in the earlier sections of the report. The suggestions have been grouped into policy/ strategic level suggestions and more operational suggestions.

Suggestions for future projects – the delivery perspective	
Staff / stakeholder suggestions	**Business suggestions**
Policy/ Project Development Level	**Policy/ Project Development Level**

Staff / stakeholder suggestions

Policy/ Project Development Level

- **Regional Governance Group -** It was suggested that the existing tripartite agreement between low carbon delivery partners in the area could be widened into a Regional Governance Group covering low carbon issues Membership could be expanded to include low carbon delivery providers and local government. This group could: share insights and data, both to members and interested parties, collaborate / partnership working on future low carbon initiatives, signpost businesses to the support available and align and simplify net zero support, champion low carbon business support/ share best practice in low carbon business support and advise, provide consultancy and ensure best practice projects in terms of businesses can introduce low carbon into their business.
- **Business Support -** Aligned to the above, the sustainability expertise across NTU (and potentially other partners) could come together to form a net zero diagnostic for D2N2. Essentially, NTU could become a service to other business support projects.
- **Measuring Impact -** It was noted that the full impacts of the SiE project might not be felt for some considerable time. Revisiting businesses after a year to assess the long-term impacts would be useful, or else many of the impacts remain theoretical. Linked to the above it was suggested that there is a need to help /track the region's businesses as they move through their net zero journey/carbon maturity journey. This is something that the NTU research team could consider analysing going forward.
- **Multiple Support -** It was agreed that there are some great examples where businesses have received support from different multiple strands of the project and that outcomes are generally better for businesses receiving multiple interventions. It was suggested that this should be considered for future projects, including wider signposting to other university projects, and partner projects.
- **Longer Term Support -** A mechanism to allow for longer term interventions would allow more meaningful and long-term relationships – this should be considered as future business support programmes are developed.
- **Level of Support -**The team told us that whilst the issuing of the grants has been quick and efficient, applicants require a lot of handholding during the carbon grant application processes. This resource requirement needs to be factored into future project budgets.
- **Delivery Area -** The team felt that going forward there is scope to deliver the project over a wider catchment area, this would support economies of scale.
- **Delivery Timeframes** – Longer delivery timeframes would make grant defrayal easier and allow for longer term interventions with businesses.
- **Future Support** - Going forward, the delivery team feel that business will continue to need support with:
- Developing sustainability strategies and vision statement support
- Changing the culture towards sustainability
- Support with upcoming compliance/legislative change around energy and environmental management

Operational Level

- **DocuSign -** It was agreed that the DocuSign system for enrolment works smoothly and effectively and has been very successful, achieved a high completion rate for the exit surveys. It was suggested this should be rolled out across all of the University's projects.
- **Marketing -** It was noted that every strand of the project was working on different timescales/ on a different trajectory, and many were targeting different audiences – '*too broad an offer for one overarching marketing approach'*. It was suggested that each project strand needed a tailored approach to marketing – '*Need to split the offer up into the nitty gritty and really target each strand'*.

Business suggestions

Policy/ Project Development Level

- **Future Demand -** Many businesses are still at the early stages of their low carbon journey, and many still needed support to help in future. As one business noted: '*I feel that we still have a lot of work to do to fully understand our carbon footprint and to commit to significant and meaningful targets. I feel like we still need support in this to give us the confidence before we can commit to any targets'*
- **Multiple Strands of Support -**The opportunity to access multiple strands of support was appreciated: '*The wider package of support that we secured* (SCL, NBS and Carbon Grant) *was fundamental in allowing us to transition from talk to action – the first step* (NBS) *opened our eyes, but the SCL/ grants programme allowed us to put these things into action. You need to hit businesses on a number of fronts to have more efficacy.'*
- **Ongoing Support -** Comments were raised about having a longer-term programme.
  - '*Might be good to consider a follow up support package…but perhaps having an expert consultant to provide 1:1 advice and to revisit after 6/12 months'.*
  - '*Could be developed further to have a mid and long-term review process built-in, so that it keeps enterprises accountable to commitments that have been made'*
  - '*The SiE team were not confident that they would be able to regularly sustain contact with us throughout our journey into sustainability - regular challenges and outside input would definitely further improve our business sustainability'*
  - *The project needs a feedback loop – SiE has started us on our journey, but is there any longer term support available – what happens next year, can we check in for advice, we need little nudges to keep us on track, and if we promise to do something as a result of the project then it would be good to have someone 'marking our homework' and keeping a check on us in future years'*
  - '*I've now been trained on how to do it, but is there any support next year when I need to do my own calculations.'*
- **Time Commitment -** Time commitment was a recurring challenge for businesses. Future projects need to consider ways to minimize the time commitments/ maximise impacts for businesses.
- **Support Offered -** It was clear from the business consultations/ interviews how businesses are all at widely different places on their low carbon journeys. Any future projects need to ensure that they can offer to support to businesses at all stages. As one business commented: '*How do we support a mobile hairdresser as well as larger employers like Toyota?*
- **Knowledge Exchange -** It was noted that a key benefit of the project is that businesses were able to gain skills in how to measure/ implement low carbon themselves. If they had had external consultancy support they could have secured the carbon calculations but would have been unlikely to have been taught how to do this themselves.

Operational Level

- **Tailored Training Sessions -** It was suggested that workshops could be more tailored – for example one specifically for the third sector, one for consultancy type businesses, one for manufacturing businesses etc. This would mean that the businesses in the workshops were facing similar challenges. Although it was agreed that learning from other sectors had been valuable too.
- **Directory -** It was suggested that there could be a directory/ sign posting / link up/ more integration with other support providers to provide a joined-up service in terms of low carbon. It was noted that there are many organisations providing low carbon support and choosing the right provider can be difficult.
- **Homeworking -** With so many staff working at home post-Covid, it was suggested that businesses could be supported to support/ train their staff in terms of low carbon in the home/ home-office situation.

Summary: Project Delivery and Management

Was the project well managed? Were the right governance and management structures in place and did they operate in the way they were expected to?

It was agreed by staff that the correct governance and management structures were in place, and these operated well. Staff comments included:

- *'The best programme I've worked on in terms of organisation and management'.*
- The team *'went above and beyond and tried to have a wider impact beyond the project, developing partnerships and engaging stakeholders'.*
- *'We were trusted to manage each strand of the project and were not micro-managed. This allowed us to develop each strand of the project in the best possible way'.*

In addition, 97% of businesses who completed the SiE exit survey felt the project had been organised and managed. Business comments included:

- *'We are extremely grateful for the support and especially the dedication of the NTU team.'*
- *'Everything and everyone has been great!'*
- *'It has been hugely beneficial in boosting the resources and capacity of a micro-SME and we would have been lost without it.'*

Has the project delivered its intended activities to a high standard? Could the delivery of the project have been improved in any way?

It was agreed that the project had been delivered to a high standard. Two key suggestions were made with regards to future projects:

- Longer term/ ongoing support for businesses to take them through their low-carbon journeys.
- The development of a Regional Low Carbon Governance Group to shape and advise on low carbon initiatives in the region.

Did the project engage with and select the right beneficiaries?

The team noted that the project has engaged with many businesses through the project who had not worked with the University before. This is seen as a key success of the project. Analysis of beneficiary data does suggest that some business groups were slightly underrepresented, such as BAME businesses, and businesses from some of the district. This could be considered for future projects

How are project activities perceived by beneficiaries?

- 95% of businesses supported told us that they would recommend the project support to other enterprises.
- 92% of all businesses supported told us that the support on offer from the project met expectations.

Comments from businesses include:

- *'It has been hugely beneficial in boosting the resources and capacity of a micro-SME and we would have been lost without it'.*
- *'I was very impressed with the overall experience. It has been so valuable having someone external support the business in this way.'*

To what extent have the horizontal principles been integrated into and shaped delivery?

The support in general has been aimed at supporting businesses to increase their carbon maturity and the insights from the surveys help us understand to what extent we have done that. The holistic design of the programme has enabled a wider focus that just tco2e reduced and this will have a greater impact on the overall sustainability of the participants.

5. Project Outcomes and Impact
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This section sets out the progress that the project has made towards achieving the outcomes, objectives and impacts set out in the project logic model. It particularly draws on information captured through the evaluation questionnaire undertaken with the beneficiaries. This section also provides an analysis of the economic impacts that have been achieved by the project, and the long-term legacy of the project.

5.1 Business survey – methodology for analysis

The business data and impact analysis over the page is based on the following principles:

- Data has been analysed from the SMEs that took part and exited the SiE project between September 2021 to January 2023.
- Businesses were asked to complete an enrolment and exit interview, allowing comparisons to be made between their pre and post support positions.
- As at the end of January 2023, the number of participants who had responded to the pre-intervention survey was 215 and the number of participants who had responded to the post-intervention survey was 124. Only SMEs who had responded to both pre- and post-intervention surveys were included in the study. After the elimination of the participants who had responded to neither of the surveys and those who had not given consent to the use of their data for research, the final study sample was determined to be 101.
- Exit data will continue to be analysed after the Summative Assessment is submitted. This will ensure that any future projects are developed with the most up to date and full data sets.

5.2 Progress towards achieving impacts, outcomes & objectives

The table below sets out the quantitative and qualitative impact data that has been captured in the business entry and exit surveys. It has been used to summarise the overall progress the project has made towards delivering the impacts, objectives and outcomes as set out in the logic model/ contract.

Overall, the findings show that whilst the project has had a significant impact for the businesses it has supported, there is still much more to do. Businesses continue to need support and guidance to further their low carbon and net zero plans.

Progress towards achieving impacts, outcomes, and objectives			
Theme	**Target**	**Data analysis**	**Business quotes**
Carbon emissions	A reduction of 745.60 tC02e	- This target of 745.60 tC02e has been over-achieved, with data showing that the project has supported a reduction in circa 898 tCO₂e to date and is forecasting savings of circa 1,000 tCO₂e by the completion of the project. - Following the SiE support, businesses were asked in what areas they are now implementing or committed to implementing carbon reduction activity. We can see that whilst many businesses are implementing activity, there is still some way to go – future projects could help to address this. *Note: it is worth remembering that not all strands of the project were supporting businesses to achieve these objectives.* **In what areas you are now implementing, or committed to implement, carbon reduction activity?** | Buildings energy	70%
Waste	52%
Business travel	50%
Procurement and supply chain	50%
Staff commute	40%
Own transport fleet	27%
Water	23%	 *Pre-post comparison cannot be done for this question - data not collected for all businesses at enrolment.*	*'Given us a carbon emissions output which we can monitor annually and aim to reduce'* As a result of the project *''We have taken significant steps, achieving a 35% reduction in gross carbon emissions, and a 94% reduction in net carbon emissions'* *'We have started measuring our carbon footprint and will be putting measures in place to reduce this'* *'We have a long-term goal to carbon negative and a plan to achieve this'*
Knowledge exchange	244 HE/ SME collaborations	- By the close of the project, 8 cohorts will have taken part in the Sustainability Community Lab, delivered by the NTU Employability Department. These will have provided 64 early career professionals the tools, knowledge, and peer support to improve sustainable practices within their enterprise. - By the close of the programme, 10 Carbon Management Programme cohorts will have been delivered by Nottingham Business School, helping 62 SMEs build in-house capacity to measure and reduce their carbon footprint. - The latest data shows that the project will have supported 218 businesses by the close of the project. - The high quality of the support on offer from the SiE project should also be noted: On average, the businesses being supported through non-financial support have had on average (as at Feb 23) almost 30 hours of support – this is significantly about the 12 hour minimum needed.	*'Great support from the NTU team, really helped us to understand the path to sustainability'* *'Brilliant'* *'NTU provided a concise, slick and helpful service'*
	Increasing awareness of carbon issues within SMEs and shift in organisational outlook	- Pre and post SiE support, businesses were asked whether they agreed to the statements in the table below relating to their awareness of carbon issues. The results show a positive impact in terms of shifting organisational outlook and increased awareness of carbon issues. Again, it is worth remembering that not all strands of the project were supporting businesses to achieve these objectives. **Businesses agreeing with the following statements:** | Statement	Pre-support	Post-support
---	---	---
We are aware of the risks and opportunities associated with carbon	88%	98%
We are able to manage the conflicts between carbon management and core business activities/growth	23%	59%
Carbon management is central to our business activities and decision making	20%	56%
We have carbon reduction behavioural change and awareness raising programmes for staff	12%	59%
We communicate our carbon reduction targets, strategies and performance to all relevant stakeholders	12%	53% | - Pre and post support from the SiE project, businesses were asked which resources they regularly monitor. The results (see table) show an increase in monitoring across all resource areas - a very positive impact for the project. **Does your enterprise regularly monitor the following resource use?** | Resources	Pre-support	Post-support
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Electricity	52%	83%
None	40%	9%
Gas	37%	59%
Water	34%	46%
Waste	30%	60% | - Individuals who had taken part in the Carbon Management Workshops were asked whether taking part in the workshops had enabled them to bring sustainability related change to their business. 58% strongly agreed, and 35% agreed.	*'It has encouraged us to increase focus on sustainability as an integral part of our daily activities. Specifically, we will be changing our current light fittings for LED fittings which will result in a cost benefit'* *'We have focussed all staff members on considering both carbon and cost in the day-to-day operation of the business'* *'Better understanding of what we can do, and enhanced staff awareness and buy in to the overall objectives'* *' We are talking about sustainability again in the office, and thinking of ways we can do more and do better'* *'A plan has been put in pace to increase our knowledge and to understand how we implement the changes as a business and to create change'*

| | Supporting businesses to measure their carbon emissions | - Businesses were asked a range of questions with regards to their carbon emissions, both at enrolment and post project. The results show a very positive impact from the project, however, comments from businesses (see opposite) suggest many businesses are still at the start of their low carbon journey. | *'We are very grateful to have received the support… However, I feel that we still have a lot of work to do to fully understand our carbon footprint and to commit to significant and meaningful targets. I feel like we still need support in this to give us the confidence before we can commit to any targets'* |

Businesses agreeing with the following statements:

Statement	Pre-support	Post-support
Does your enterprise measure its carbon emissions/footprint?	18%	71%
We have the required knowledge and skills to calculate the carbon footprint of our business	12%	73%
We are effectively managing our carbon emissions and successfully implementing carbon reduction projects as planned	9%	62%
We are effectively tracking and reviewing progress towards our carbon management target	8%	58%

'It has been great to receive support calculating our carbon footprint and identifying areas for improvement to reduce this. We are looking forward to producing our first sustainability report using some of the ideas we explored. This was knowledge and support we wouldn't otherwise accessed'.

Supporting SMEs to develop their strategies, targets and plans to become more sustainable

- Pre and post support from the SiE project, the businesses were asked whether they have, or are progressing towards, setting carbon reduction targets. Pre-support 25% of businesses said yes, post support 70% said yes. This shows a significant impact from the project in terms of supporting businesses to set carbon reduction targets.

- Pre and post support from the SiE project, the business were asked whether carbon management was effectively integrated into their procurement processes. Pre-support 9% of businesses said yes, post support 37% said yes.

- Pre and post support from the SiE project, businesses were asked what policies they have in place. The results (see table below) show that whilst the project has had a significant impact on the policies that businesses have in place, there is still more to be done.

What policies the business has in place – pre-support and post support

Policies in Place	Pre-Support	Post-Support
Sustainability / environmental	57%	72%
None	32%	8%
Travel	23%	41%
Sustainable procurement	12%	26%
Low carbon / energy	10%	34%
CMAP/ strategy	10%	57%
Biodiversity	3%	18%

Post SiE support, businesses were asked whether they had made a net zero pledge via the SME Climate Pledge. The results can be seen in the table below. Discussions with the staff team suggest that potentially businesses aren't yet ready to make a public pledge or don't see the need to do it. Analysis of the businesses that are making pledges, shows that they tend to be working in the low carbon sector.

Have you made a net zero pledge via the SME Climate Hub pledge?

Yes	5%
No	74%
Don't know	21%

'We now have a policy in place for our sustainability…. we are more aware of our waste and reducing our carbon footprints'.

'Provided us with the momentum to set carbon neutral strategy and targets. Created buy in from top management, as well as staff'.

'This support has been really useful in spurring conversation about how we can make the ethos that is already at the heart of our business more obviously visible with a written policy. It has also made us think again about how we manage our waste, our energy use and been an inspiration to us to move even further with our plans'

'Enabled us to understand where we stood regarding our sustainability and gave us a basis for creating an action plan for improvements'

Increasing investment in low carbon initiatives

- By the close of the project, £245,718 will have been awarded for 30 low carbon capital investments through the SiE Carbon Grants Programme. Combined with the additional £348,064 match from the businesses themselves, this represents an overall investment of £593,572 in low carbon initiatives.

- 91 Talent Grants have been awarded, supporting businesses in the SUDs area with their recruitment of graduates.

- 48% of businesses surveyed (post SiE support) told us that lack of capital funding is still a barrier to improving their environmental performance. The exit survey shows that this is the biggest barrier faced for businesses (post SiE support) in terms of improving their environmental performance.

'Some of the recommendations require initial financial investment and we only have limited budget to be able to support this'

'We weren't able to progress the grant, as we have had a very quiet year in the business and finding 40% would have been a challenge.'

Productivity | Productivity improvements & reduction in running costs

- At the exit survey, 43% of businesses agreed with the statement '*Our productivity has improved as a result of SiE support*' (15% strongly, 28% agree). Analysis of the quotes and feedback from the businesses who have been supported suggest that they didn't necessarily sign up to the SiE project to achieve productivity improvements.

- Figures from the Sustainability Consultancy element of the project suggest that to date, circa £165,000 per annum of associated cost savings have been made by businesses supported by this theme.

'Improved our competitiveness in the market by allowing us to respond to the market opportunity associated with more responsible and sustainable business'

Waste reduction | Reduce waste

- Businesses were asked whether their enterprise regularly monitored their waste. Pre-support 30% of businesses said yes, post support 60% said yes – a significant increase post support.

- Businesses were asked whether they have a waste policy in place. Pre-project 21% said yes, post project 47% of businesses said yes – a significant increase post project.

'Made us think again about how we manage our waste, our energy use and been an inspiration to us to move even further with our plans'

Graduate placements and SCL – graduate impact	86 graduates placed into SMEs, as sustainability champions	- 84 graduates will have been employed in local SMEs as sustainability champions. These new roles are estimated to generate circa £1million in extra GVA for the SUDS area per annum. - 8 cohorts will have taken part in the Sustainability Community Lab, delivered by the NTU Employability Department. These have provided 64 early career professionals the tools, knowledge, and peer support to improve sustainable practices within their enterprise - The graduates who took part in the SCL were asked about the impact of the project on their confidence around sustainability and communicating ideas. Their answers can be seen in the tables below and show a significant impact of the SCL on the graduates who took part.	*'Our graduate thoroughly enjoyed attending the workshops, increased their knowledge of sustainability concepts and now wishes to help drive forward our own sustainability action plan'.* *'Emily found working with peers extremely useful as they were able to share and demonstrate their understanding of sustainability in the workplace. Emily has been able to share her learnings with the team and better understand the ways in which the company can save both on carbon and costs'.* *'Bradley has clearly been motivated by the Sustainability Community Labs programme and has shown real determination to make things happen at AJA'.* *'The candidate has thoroughly enjoyed the SCL and felt it has benefited her personally and professionally.'*

Graduate feedback on the SCL - I am now more confident in assessing our organisation's sustainability, identifying areas for improvement and capacity for change	
Strongly agree	35%
Agree	63%
Neither / nor	2%
Disagree	-
Strongly disagree	-
Based on data from 46 employed graduates	

Graduate feedback on the SCL - I am now more confident in communicating ideas to drive sustainability action in business	
Strongly agree	41%
Agree	54%
Neither / nor	2%
Disagree	2%
Strongly disagree	-
Based on data from 46 employed graduates	

Graduate placements and SCL – business impact	Business impact	- The businesses whose graduates who took part in the SCL were asked about the main benefits of the graduate participation on their business. Their answers can be seen in the tables below and show significant benefits.	*'The SCL has re-energised enthusiasm for sustainability and energy saving with our chosen attendee. We intend to harness this and share in the knowledge across the company'.* *'Strongly recommend participation in this programme. Not only did it increase our graduate employee's knowledge base, through dissemination amongst the whole company and a commitment to regular ideas sharing, the Company Sustainability Policy has been significantly enhanced and adopted by all. 'Prevent waste first, if not recycle!'*

Overall, what have been the main benefits for your business in participating in the SCL programme?	
Develop sustainable skills / better understanding	53%
Actions to reduce carbon / action plan	45%
Creating sustainability awareness in company	29%
Creating a policy / strategy	21%
Employee training / staff development	18%
Networking	11%
Setting targets / monitoring progress	8%
Assessment of where we are	3%
Funding grant helpful	3%

Graduate retention	Improving local graduate retention	- 8 of the businesses who employed a graduate through the project were asked if they would be retaining the graduate now that funding has ended. 6 businesses said they would be retaining the graduate, 2 said that they wouldn't retain the graduate, but one of these was planning on recruiting a different graduate to the position.	*'We have been able to employ a new graduate specifically to work on Sustainability for us and the support from SiE has cemented that as a recognised role.'* *'We have employed a fantastic graduate who is an asset to our team.'* *'Really happy with her – doing well and had a pay rise this year.'*

5.3 The legacy of the project / unexpected impacts

Unlike many discrete, grant funded projects, which often disappear after funding has ceased, the SiE project really does seem to have some potential excellent legacies and unexpected impacts. The table below sets out the findings from the staff and business consultation in terms of the legacy/ unexpected impacts of SiE.

The legacy and unexpected impacts of the SiE project	
Overall Project	• The staff team found that even if businesses didn't implement the recommended actions, just being involved in the SiE project had got businesses thinking about low carbon and sustainability issues. NTU staff told us that they feel that the SiE project has been able to embed carbon reduction thought processes and behaviours in local SMEs – *'it's left a legacy of interest in low carbon, and a keenness to improve in the SMEs that have engaged'.* • The SiE project has provided internal teams with the evidence and impact data on which future consultancy models could be built. • An unexpected impact of the project has been the development of an emerging network of local arts and culture organisations. As a result of the SiE project, this group have come together to share knowledge and experience of how they are the tackling low carbon and sustainability issues facing their organisations. This group will continue post project.
Sustainability Community Lab	• The employability team are hoping to continue the SCL and develop it further. • The team told us that they firmly believe that the SCL has really empowered the graduates – they told us of graduates who have changed their future career path - moving towards low carbon careers, as a result of being inspired by the course.
Product Design	• The team are hoping to use the lessons learn to develop their commercial package.
Professional Consultancy Support	• The team are hoping to use the lessons learnt from SiE to work with NTU's supply chain, helping supply chain businesses to reduce their carbon emissions, and therefore supporting NTUs journey to zero carbon. • Being involved in the project has expanded the reach of the Estates department – *'I don't know of any other universities have done this within this within sustainability departments.*
Student Consultancy Support	• There is a desire to share the successes with other NTU departments – replicating what has been learnt in NBS and ADBE other schools. Knowledge sharing is already being done via internal and external conferences. • NBS will continue with the module using the best practice learnt from the project. • ADBE are now recruiting to a permanent sustainability consultant role. This was introduced initially in the SiE project and will be continued.
Carbon Man' Workshops	• Commercialisation of the Carbon Management Workshop Programme is being considered and the Institute of Environmental Management and Assessment (IEMA) accreditation is being explored.

5.4   The counterfactual and added value

The approach to assessing the counterfactual includes an assessment of both qualitative and quantitative data.

5.4.1 The counterfactual and added value – qualitative assessment

Discussions/ interviews were held with businesses as part of the consultation process. As part of this process the evaluation team asked businesses where they might be in terms of their low carbon journey had they not received support from the SiE project and what the added value had been.

Comments included:

- *'Having the grant spend made the decision to introduce solar panels much easier. Given the rising energy costs over recent months we might have done this eventually, but it has brought this investment forward significantly'.*

- *'We could see around us firms who were moving forward quite vocally in terms of low carbon who were probably less sustainable than we are. We were probably getting a bit left behind. The SiE programme was pushing at an open door with us. We didn't have any plan in place - the SiE project has given us structure in terms of what to do and how to phase things, we've created a new action plan'.*

- *'We may have gone to a consultancy to get a cost for the works, and then this would have had to be discussed at the board level and there is no guarantee that any funding would have been available for this. Also, I don't think doing this externally/ using consultants would have actually trained me in how to do it – someone would have gone away, done the calculation, and given us the figures. We would need them to come back every year'.*

- *'Unlikely to have paid for the support given our current financial situation. With the economy, and all budgets so stressed, projects like this are so important to SMEs – it comes at the very end of your list in terms of spending/ investment. We have so many other spending priorities.'*

- *'Low carbon support is a busy landscape, there are lots of people trying to support businesses with low carbon… The Chamber, Universities, private sector etc …. how do you know how to pick a good one? I've stuck with the universities as I'm confident of getting high quality outcomes. I've avoided the private sector offers as there are unknowns in terms of quality – you don't know what you are going to get. And the change has to come from within, you have to have the passion to drive it – paying an external consultant to do things for you doesn't change mindsets.'*

- *'We are very much at the start of our low carbon journey; we wouldn't be where we are if Ben hadn't gone on the course. It has been a catalyst for future sustainability. I can see the change in the organisation'.*

5.4.2 The counterfactual - quantitative

Whilst using primary data from a control group would be the most accurate approach in measuring the counterfactual position for the SiE project, this is prohibitive in terms of costs and resources for a project of this size. As outlined in the Evaluation Plan, we have therefore decided to use the annually produced BEIS 'UK Local Authority and Regional Carbon Dioxide Emissions' national statistics as a counterfactual measure for the project. The report measures CO_2 emissions data by year and can be filtered by local authority area. It provides a counterfactual measure of annual percentage change in CO_2 emissions in the area. *Note: data is not available at the SUDS level, so the Nottingham City area has been used as the baseline.*

The table below uses this data and shows how carbon dioxide emissions have been reducing in Nottingham City over recent years. With the exception of 2020 (Covid-19 and a reduction in industry/ travel etc), emissions have been reducing anywhere between 2.5% and 4.7% per annum.

Carbon dioxide (CO_2) emissions estimates 2005-2020 (kt CO_2e) - Nottingham City			
Calendar year	**Grand total**	**Decrease kt CO_2e**	**Percentage decrease in CO_2 emissions from previous year**
2015	1,340.00	-	
2016	1,277.80	-62.20	-4.6%
2017	1,218.30	-59.50	-4.7%
2018	1,188.10	-30.20	-2.5%
2019	1,149.30	-38.80	-3.3%
2020	1,041.00	-108.30	-9.4% *(assumed covid related)*
Source: UK-local-authority-ghg-emissions-2020.xlsx (live.com)			

In addition to the above, the most recent UK wide data from the ONS shows that emissions of carbon dioxide (CO2), for 2022 were 2.4% lower than in 2021.

This data can be compared to the actual reductions achieved by some of the businesses who took part in the SiE project to assess the added value from the support offered. The table below shows the average CO_2e reductions achieved by businesses supported by the Sustainability Consultancy element of the SiE Project. *(note: relevant data is only held for this strand)*

Sustainability consultancy support to date – average CO_2e reduction	
Average % total emissions businesses given recommendation for	Average % reduction claimed to date
53%	14%

On average, businesses supported through the Sustainability Consultancy strand were given recommendations to reduce their overall CO_2e by 53%, and on average, to date businesses have reduced their emissions by 14%, often in less than one year.

If businesses were reducing their emissions in line with the latest UK figures of 2.4% per year, it would take them circa six years to achieve these levels (14%) of CO_2e reduction.

5.4 Quantifying the gross and net carbon reduction impacts

The table below analyses the impact of the counterfactual, displacement, and multipliers on the carbon reduction impacts of the SiE project.

Carbon Reduction – Factors			
Impact	Description	Measure	From baseline of 1,000 tonnes CO_2e
Deadweight/ Counterfactual	This reflects the counterfactual position – what would have happened without the project, would these carbon reduction impacts have been achieved anyway?	Using local authority data from the previous section we have estimated a 3.5% decrease in overall business CO_2e per year for the duration of the SiE project. This is the mid-point of the range of CO_2e reductions.	Assume 3.5% of CO_2e would have occurred without the project.
Displacement	The impacts reduced elsewhere as a result of this activity – e.g. are we taking business away from other low carbon initiatives in the area. Could businesses have received the support elsewhere?	There are three carbon reduction projects in Nottinghamshire (UON, NCC and NTU) NCC only provides grants and a streamlined energy audit. UON provides bespoke support focused on innovation around energy. They were only able to provide one strand of delivery per client. Where we were able to pass clients onto each other to provide greater value we did. We are all on track to meet target and so are not deemed to have displacing support.	A low displacement of 5% has been applied.
Multipliers	The wider – knock on effects within the economy in terms of low carbon.	The project is likely to have supply chain/ multiplier impacts outside of the SUDS area, particularly with the product design strand of the scheme. Products with lower carbon emissions will be shipped across the UK and potentially overseas. In addition, word of mouth from businesses who have taken part in the project will encourage more uptake. The project has also supported in the development of peer networks (Artnest) and local sustainability champions – two businesses supported by SiE: Leftlion and Spenbeck are now active speakers on sustainability locally.	Unknown
Based on the above figures, we can estimate that circa 92% of the reported CO_2e impacts achieved through the Sustainability Consultancy element of the SiE project would not have happened in the current year without the support from the project. An additional benefit will be achieved through multiplier effects, although this is unknown. No leakage has been applied as all savings are in the SUDs area.			

Outputs and Impacts Summary

What progress has the project made towards achieving the outcome and impacts set out in its logic model?
The project has made significant progress towards achieving the outcomes and impacts:

- The target of 745.60 tC02e saved has been over-achieved, with data showing that the project has supported a reduction in circa 898 tCO_2e to date and is forecasting savings of circa 1,000 tCO_2e by the completion of the project.
- 53% of businesses supported by SiE now have carbon reduction behavioural change and awareness raising programmes for staff compared to 12% who had these in place pre-support.
- 56% of businesses supported by SiE said that carbon management is central to their business activities and decision making compared to 20% who said this pre-project.
- 71% of businesses supported by SiE said that they measure their carbon emissions/footprint, or are in progress with this, compared to 18% who were doing this pre-project.
- 73% of businesses supported by SiE think that they now have the required knowledge and skills to calculate the carbon footprint of their business compared to 12% pre-support.

To what extent are the changes in relevant impact and outcome indicators attributable to project activities?

- On average, businesses supported through the Sustainability Consultancy strand of the project were given recommendations to reduce their overall CO_2e by 53%, and on average, to date businesses have reduced their emissions by 14%, often in less than one year. If businesses were reducing their emissions in line with the latest UK figures of 2.4% per year, it would take them circa six years to achieve these levels of actual CO_2e reduction.

What are the gross and net additional economic, social and environmental benefits of the project (where relevant and applicable to project activities)? Can these benefits be quantified and attributed to the project in a statistically robust way?

- An impact analysis has been undertaken for the CO_2e impacts achieved through the Sustainability Consultancy element of the SiE project. This considered the counterfactual, deadweight and multipliers. We can estimate that circa 92% of the reported CO_2e impacts achieved per year through the Sustainability Consultancy element of the SiE project would not have happened without the support from the project. There will also be additional supply chain multiplier effects but these are unknown/ cannot be quantified.

What are the main sources of Strategic Added Value that the project has created?

- 43% of businesses said that their productivity has improved as a result of SiE support.
- Figures from the Sustainability Consultancy element of the project suggest that to date, circa £165,000 of associated cost savings have been made by businesses supported by this theme.

In addition, quotes from businesses with regards to added value include:

- *'Improved our competitiveness in the market'*
- *'The SCL has re-energised enthusiasm for sustainability and energy saving with our chosen attendee. We intend to harness this and share in the knowledge across the company'*
- *'Strongly recommend participation in this programme. Not only did it increase our graduate employee's knowledge base, through dissemination amongst the whole company and a commitment to regular ideas sharing, the Company Sustainability Policy has been significantly enhanced and adopted by all. 'Prevent waste first, if not recycle!'*

6. Case Studies

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A selection of case studies for the Sustainability in Enterprise project have been summarised below. More details can be found on the SiE website - Sustainability in Enterprise | Nottingham Trent University

Leonard Design Architects

Leonard Design is an award-winning architecture practice with a specialist focus on commercial design and consultancy.

Through NTU's Sustainability in Enterprise project, the practice worked closely with a team of student consultants supported by academics with expertise in sustainability and carbon management, to calculate their carbon impact and put an action plan in place to reduce emissions. The student consultants' recommendations included replacing CFL bulbs with LED bulbs to reduce lighting energy, investing in EMCO Remote Shutdown software to automatically turn off network PCs when not in use, and an e-learning course to help Leonard Design measure, reduce and offset their carbon footprint.

Leonard Design Architects reported: *"We've taken all the student's key recommendations on board. We've already switched to greener light bulbs and have costed up replacing all our bulbs with LEDs. We're currently trialling the remote shutdown software in our Nottingham and London offices and are planning to roll it out across the team. The e-learning course will give us the tools we need to work out our own carbon footprint, and help us build on the consultancy support we've been given."*

The students' proposed recommendations could help Leonard Design save 8.8 tCO2e of carbon emissions a year, reducing their carbon footprint by almost 50%.

White Rose

White Rose is pioneering sustainable fashion company in the UK, with every item sold helping to raise money for the Aegis Trust, a charity working to prevent genocide and mass atrocities around the world.

The charity retailer has been working closely with NTU's qualified and experienced Sustainability Consultants to calculate their carbon impact and put an action plan in place to reduce emissions. Through the consultancy, White Rose now has a clear picture of its baseline carbon emissions, together with recommendations for reducing its carbon footprint by up to 80.49%.

The recommendations that White Rose has already committed to will see the business cut its carbon footprint by 69%. By implementing key recommendations such as switching to certified green energy tariffs, installing LED lighting, running an energy-based employee engagement campaign, and

implementing manual heating controls. Their commitment equates to £9,947.89 in productivity savings, helping to support White Rose's post-pandemic recovery and future growth.

BACKLIT

Founded in 2008, BACKLIT is an internationally renowned, artist-led public gallery and studios, supporting arts and culture in Nottingham. Based in an historic building, the senior leadership team identified the need to increase the sustainability of the site.

As part of the SiE project, students were able to explore how BACKLIT could benefit from a broad range of energy saving solutions. From maximising natural light throughout the building and installing a Building Management System (BMS) to monitor electricity, gas and water consumption, to making building modifications and retrofitting insulation.

The student-led project identified bespoke recommendations that could help BACKLIT save energy and reduce their carbon footprint by 34% (3,310kg a year), saving around £1,860 a year.

The team at Backlit commented "*There's a real connection between the SiE project and Nottingham's goal to be carbon neutral by 2028. NTU's support for organisations is critical if the city is to reach that target and can influence the citywide strategy and investment needed to make it happen. I've recommended the project to other cultural organisations in Nottingham, several of which have already taken part.*"


Murphy and Son Ltd

Basford-based manufacturing business, Murphy & Son Ltd., provides technical support and supplies for brewers, wine-makers, and manufacturing chemists. The business has been working closely with NTU's qualified and experienced consultants to accurately calculate their carbon impact and put an action plan in place to reduce emissions.

"The Sustainability Consultants have been great, approachable and helpful, and the process was very easy and productive. They didn't just tell us, 'you need to do this, and you need to buy that', it's been a lot more thoughtful, educational and has given us the mindset to say 'right, what can we work out now?

The recommendations for Murphy and Son Ltd were divided into two - what they can do now, and what they can do in the future. Short-term goals included looking at energy and gas usage and the carbon footprint of their processes. In future they intend to reduce their usage by introducing sensors and thermostats to their premises and equipment. They also plan to start carbon offsetting their entire carbon footprint to achieve carbon neutrality.

The recommendations provided to Murphy & Son could result in them saving an estimated 216 tonnes of CO2e (carbon dioxide equivalent), or 65% of their overall footprint, from their operations and a financial saving of around £24,000 per year.
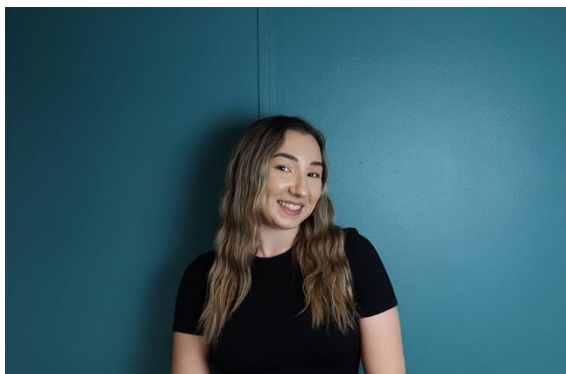
Gather Social

Gather Social is a Nottingham-based self-described 'disruptive social media marketing agency.' They were able to provide a graduate placement to Amy Young, an NTU alumni, as a result of funding through the SiE project.

A requirement of the funding was that Amy would support the low carbon and sustainability development within the business. Through SiE's fully funded early careers development programme, Amy, became a sustainability advocate within their organisation.

The Sustainability Community Lab workshops enabled Amy to learn new soft skills that she can transfer within Gather Social, helping her to discuss, negotiate, and implement topics of sustainability.

Amy says: *"I'm looking to become more aware of my carbon footprint and the business' impact on the environment. The sustainability workshops will give me the knowledge and the space to learn more about changing the planet for the better."*

Cockburn Lucas Independent Financial Consulting Ltd

The business provides fully independent financial planning advice to over 950 individuals, companies and Trusts, around the East Midlands and beyond.

Through NTU's Sustainability in Enterprise project, the company has been working closely with NTU's qualified and experienced Sustainability Consultants to calculate their carbon impact and turn their sustainability strategy into an action plan to reduce emissions.

A representative from Cockburn Lucas told us: "*The consultancy has recommended both the macro and micro changes we can make to reduce our carbon footprint, and shown us how it all adds up. It's there in black and white. Understanding our carbon footprint is fundamental as we work towards becoming carbon neutral. Alongside reducing our emissions, we're also investigating the possibility of using carbon offsetting in the short term, so knowing our current carbon impact means we can work out what we need to offset.*

The support we've had has been fantastic and so worthwhile. Above all, it's given us the tools, know-how and motivation to supercharge our approach and implement our sustainability strategy deep into our company culture. Now, we're keen to sign up to Carbon Neutral Nottingham 2028 and put ourselves forward for industry-based sustainability awards.

Alpkit

Alpkit are an award-winning outdoor and bike brand born out of a passion for the outdoors. Through the SiE project, Alpkit have worked with fifty-four BSc (Hons) Product Design students and seventeen international exchange students (enrolled onto the European Project Semester – EPS) from NTU's School of Architecture, Design and the Built Environment, to calculate the carbon footprint of their best-selling Soloist tent and make it more sustainable. Alongside this, they have also worked with NTU's commercial product design consultants to reduce the waste and carbon impact of their best-selling BruKit stove.

The team reported: *"If all the changes are made and approved they would cut the carbon impact of our Soloist tent by 31% and reduce our annual carbon emissions by 16849.8kg. On top of this, we're also looking to redesign our Soloist tent based on an idea presented by one of the student groups, which moved the door to the centre of the tent, decreasing the amount of materials needed overall.*

As part of the project, Alpkit has also worked with NTU's commercial product design and research group, Design Matter to carry out a life cycle analysis of their best-selling BruKit stove. The team told us: *"The Design Matter team carried out an LCA to identify the weight and carbon footprint of each component in the stove and suggested design changes to lower its carbon footprint and improve sustainability. As a result, we're replacing the stove's insulating neoprene sleeve with cork, a high quality insulator which is less toxic to produce. We're also making a few other design tweaks to the stove, including reducing the volume of plastic in the product and removing part of the assembly. Overall, these changes will lower the BruKit's carbon footprint by 19% and its weight by 200g.*

Treat Kitchen

The Treat Kitchen are a family-owned, creative food gifting company based in Nottingham, selling to major retailers across 21 countries worldwide. The company have been working closely with NTU's qualified and experienced Sustainability Consultants to calculate their carbon footprint and put an action plan in place to reduce emissions. As part of the project, The Treat Kitchen have also been working with NTU's commercial product design consultants, to see how they can reduce the carbon impact of their packaging.

The team told us: *"We analysed The Treat Kitchen's existing message bottle* (packaging) *to identify potential areas that could be improved from a sustainability perspective. We then explored alternative packaging solutions, looking into key factors such as material choice, material quantity, manufacture methods, supplier location, and end of life processes such as recycling. As options were found, they were compared with our initial analysis, and ranked based on their carbon impact.*

"The design suggestion we presented to The Treat Kitchen included a lighter glass bottle saving over 45% of the original bottle's weight, a bottle cap manufactured from biodegradable plant-based plastics, printing artwork direct to the bottle to remove the need for additional stickers, and swapping a heat shrunk plastic cap for an adhesive paper seal. In total, these design suggestions have a potential carbon saving of up to 50% for The Treat Kitchen, which is just fantastic!"

2bm

Nottingham-based 2bm has been at the forefront of award-winning design, build, refurbishment and upgrade of server rooms and data centres, delivering creative solutions to the most complex projects for over 20 years. 2bm has a raft of environmental accreditations, including ISO 14001: 2015 and the EcoVadis gold standard – the world's most trusted provider of business sustainability ratings.

2bm has taken part in NTU's Carbon Management Programme, they commented on how the company have benefited from the support: *'The programme was a great opportunity to find out what other SMEs in the area were doing to help the environment, and proved to be the perfect platform to talk with others about sustainability."*

They told us about the impacts of the project: *'As well as making our carbon reporting more accurate, bringing it in-house has saved us thousands of pounds in consultancy fees. At the same time it has enabled 2bm to focus on sustainability as a business and to understand exactly what we want to achieve, which is the baseline of carbon reporting. We've already switched to energy efficient LED lighting and reduced the number of water stations in our building. Now, we're looking at ways we can reduce our paper usage by new systems and also encouraging greener ways of business travel. We are also exploring longer-term options such as installing solar panels to help offset our carbon footprint, and planning to set sustainability targets later on this year.*

"NTU have done well to come up with a programme that's easy to follow and learn from and it's nice for SMEs like us to have that bond with the university and each other. We've had a lot of support to understand what a sustainable way forward looks like for 2bm, and I've learnt a lot."

CADXtra

CADXtra is a multi-disciplined design consultancy specialising in providing the full design package for many of the world's leading manufacturers including Reckitt, Alliance Healthcare, Fareva and Boots. CADXtra has received funding from SiE to recruit a new graduate to the business. The company has also worked closely with NTU's qualified and experienced Sustainability Consultants to calculate their carbon impact and put an action plan in place to reduce emissions.

The team at CADXtra told us: *'As a small business, we didn't have the internal resources to do all the things I wanted to do in the time I wanted to do them, so I looked for opportunities to bring in a local graduate and grow our team, and found the Sustainability in Enterprise programme. Kieran has been with us for a few months now and part of his role is to take the lead on developing our environmental policy and sustainability initiatives.'*

'As part of the programme, NTU calculated our first ever carbon footprint and gave us 29 recommendations for reducing our carbon emissions. The report showed that a significant proportion of our emissions comes from transport and heating. Kieran is exploring how we can successfully roll out as many of the recommendations as possible, from using segregated food waste bins, to reducing our business travel, to setting up a system for gathering accurate sustainability data.'

7. Value For Money

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This section of the Summative Assessment report provides an analysis of the value for money that the project has provided.

Firstly, it analyses the cost per output achieved by the project. It then goes on to investigate the carbon reduction outputs in more detail, comparing the carbon reductions achieved by this project to those forecast by the overall ERDF Programme. This section also analyses the payback periods for the capital grants element of the SiE project.

7.1 Cost per output

The table shows the cost per output for the key project outputs of businesses supported and CO_2e reductions. As requested by the ERDF guidance it shows cost of outputs by ERDF contribution, by match and by total costs. Expected figures are based on anticipated spend/ outputs by close of project.

The Sustainability In Enterprise project - cost per outputs				
	Contracted outputs		**Expected outputs by end of project**	
	C1: Businesses supported	**C34: Estimated annual decrease of tCO_2e**	**C1: Businesses supported**	**C34: Estimated annual decrease of tCO_2e**
Outputs	244	746	218	1,000
Cost per output based on ERDF spend – 50%	£2,000,000/244 = £8,200 per business support output	£2,000,000/746 = £2,700 per tCO_2e reduced	£1,943,534 / 218 = £8,915 per business support output	£1,943,534 /1,000 = £1,945 per tCO_2e reduced
Cost per output based on match funding – 50%	£8,200 per business supported	£2,700 per tCO_2e reduced	£1,943,534/218 = £8,915 per business support output	£1,943,534 /1,000 = £1,945 per tCO_2e reduced
Cost per output based on total project spend	£4,000,000/ 244 = £16,400 per business support output	£4,000,000/ 746 = £5,400 per tCO_2e reduced	£3,887,068/ 218 = £17,830 per business supported	£3,887,068/ 1000 = £3,887 per tCO_2e reduced

- The table shows that the project was aiming to spend £16,400 per business supported, but at the close of the project this is expected to be £17,830.
- It also shows that the project was aiming to spend £5,400 for every tCO_2e reduced, but by the close of the project this is expected to be £3,887.

7.2 Benchmarking - SiE outputs compared to the Operational Programme

The decision has been taken not to benchmark this project against other similar interventions. From working with partner projects under the tri-partite agreement it has become clear how the methodology from different projects used to estimate carbon reductions varies across programmes. We have therefore decided that any comparison of data from projects would be unreliable. As an alternative we have benchmarked the project against the anticipated outcomes as noted in the 2014-20 ERDF Operational Programme. This has been done for the carbon outputs only, as comparison data is not available for the businesses supported outputs.

7.2.1 Cost per outputs – ERDF Operational Programme

The table below sets out data from the ERDF Operational Programme. It identifies the ERDF financial allocation for the low carbon strand of the programme – Priority Axis 4, and the carbon reduction this strand was estimated to achieve.

Financial allocation and outputs targets For Priority Axis 4 - supporting the shift towards a low carbon economy	
ERDF allocation for the whole of Priority Axis 4: Supporting the shift towards a low carbon economy as included in the Operational Programme *Just union support, excluding private/ public match*	750 million euros = £660 million (23rd Feb 2023)
C34 – Estimated annual decrease of GHG, in tonnes of CO_2e for whole of PA4 programme – As included in the Operational Programme	338,752 tonnes CO_2e per annum
Anticipated average ERDF spend (excluding match) for each tonne of CO_2e reduction per annum for the PA4 Programme	£2,000
Data comes from the following publication: ERDF Operation Programme: Sum of the Spend/ Outputs across at PA4 Strands *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/949377/ERDF_Opertaional_Programme_Dec_2020.pdf*	

The data shows that on average the PA4 programme was expecting one tonne of CO_2e reduction per annum for every £2,000 of ERDF invested (excluding match). Over the page we compare this to the SIE project.

7.2.2 Cost per output – ERDF Operational Programme v SiE project

We can compare the average figure for the ERDF programme with the results from the Sustainability in Enterprise project to assess value for money. These figures exclude the fact that the project is anticipated to have generated significant additional carbon saving that have not been measured.

The table below shows an average cost per output for the SiE project in line with that expected from the ERDF programme – i.e. value for money in line with what was expected by the ERDF Programme.

The Sustainability In Enterprise project v PA4			
	SiE contracted	**SiE expected by the end of the project**	**ERDF programme (from above)**
Total ERDF allocation - excluding match funding	£2m	£1.95m	£660m
C34: Estimated annual decreased of GHG – tonnes of CO_2e	745.60	1000	340,000
Average ERDF spend per tonne of CO2 reduction	£2,682	£1,950	£2,000

It should be noted that two strands of the SiE project were not developed to deliver any carbon reductions for the businesses that they were working with at all. To reflect this, the table below considers only SiE project spend linked to the carbon reduction outputs.

The table shows that based on the strands that deliver carbon reduction activity the project has significantly over-performed against the ERDF average cost per output, representing excellent value for money.

The Sustainability In Enterprise project: carbon reduction strands v PA4		
	Estimated return for the elements expected to make low carbon saving – assume 60% of total spend	**ERDF programme (from above)**
Total ERDF allocation - excluding match funding	£1.17 million	£660m
C34: Estimated annual decreased of GHG – tonnes of CO_2e	1,000 tC02e	340,000 tC02e
Average ERDF spend per tonne of CO_2e reduction	£1,170	£2,000
Note: Total spend estimated at 60% of overall budget, as only 3 out of the 5 project strands were delivering carbon reduction outputs.		

These figures pose interesting questions for NTU going forward. Whether to focus purely on projects that deliver of CO_2e outputs, or whether to consider projects that deliver a more well-rounded programme focussed on changing mindsets.

7.3 Payback periods

This section investigates the payback periods of the capital grants/ capital spend that was made during the project i.e., how long it would take the business to recoup their initial capital outlay in associated cost savings. The table below lists the projects that have been awarded grant funding to date (March 2023), the associated cost savings per year, and the associated CO_2e savings per year.

Grants awarded by the SiE project and their associated cost and CO_2e savings					
Business	Total spend ex VAT	Grant request	Cost savings per year	Saving CO_2e tonnes per year	Payback period total spend/ cost savings per year (years)
Murphy & Son Ltd	£9,730	£3,892	£6,006	6.01	1.6
Print 4 Limited	£7,545	£3,018	£3,907	5.42	1.9
Fineprint (Nottingham) Ltd	£16,000	£5,000	£2,589	4.973	6.2
White Rose Trading CIC	£15,200	£6,099	£6,704	6.97	2.3
Crocodile Stores Limited	£12,778	£5,111	£3,567	5	3.6
Far UK Ltd	£11,196	£4,478	£386	2.737	29
Sprite Labels Limited	£46,500	£18,600	£7,121	8.07	6.5
NG1 Group Limited	£13,236	£5,294	£8,497	10.8	1.6
Sherwood Press (Nottingham) Limited (The) t/a The Sherwood Group	£34,631	£13,852	£13,510	26.57	2.6
Disco Bowl Limited	£24,437	£9,775	£2,871	3.57	8.5
Sherwood Press (Nottingham) Limited (The) t/a The Sherwood Group	£23,372	£9,349	£10,637	18.23	2.2
Marsh:Grochowski LLP	£15,660	£6,264	£867	0.77	18.1
Alpkit Ltd	£17,360	£6,944	£2,295	2.36	7.6
Art of Football Ltd	£25,326	£10,130	£7,101	3.484	3.6
Midland Fixings Ltd	£20,804	£8,321	£5,322	9.8	3.9
The Millward Partnership Ltd	£3,996	£1,598	£671	0.7	6
Copley Scientific Limited	£51,046	£20,418	£12,860	8.67	4
G Barra Limited	£14,838	£5,935	£2,067	2.13	7.2
Urban Fabric Architects LLP	£26,656	£13,328	£685	2.46	38.9
Total	£390,311.00	£157,406.00	£97,663.00	128.72	
Mean	£20,542.68	£8,284.53	£5,140.16	6.77	8 years
Source: Analysis of grant application forms for the carbon grants – up to 29th March 2023					
Businesses who have not had costs savings calculated at the time of reporting have been excluded from this table					

From the table we can see that:

- Payback periods for the capital carbon investments (capital spend by business/ cost savings per year) vary across the businesses supported from less than two years, to over 30 years. The mean payback period for businesses is circa 8 years. At the overall level, the payback period is circa 4 years (£390,311/ £97,663).
- At the overall level, one tonne of tCO_2e was saved for every £1,250 of capital grant awarded. (This calculation is the sum of the capital grants awarded to businesses (excluding match), divided by the estimated total tCO_2e saving per year).

Value For Money

Costs per output

- Overall (ERDF plus Match) £17,830 was spent per business supported.
- Overall (ERDF plus Match) £3,887 was spent per tonne of tCO2 saved.

Payback periods

- Payback periods for the capital carbon investments (capital spend by business/ cost savings per year) vary across the businesses supported from less than two years, to over 30 years. The mean payback period for businesses is circa 8 years. At the overall project level, the payback period is circa 4 years (£390,311/ £97,663).
- For the businesses awarded carbon grants, one tonne of carbon emissions were saved for every £1,250 of grant awarded. (This calculation is the sum of the capital grants awarded to business (excluding match), divided by the estimated total tCO_2e saving per year).

Value for money – impact for the future

- In terms of carbon reductions, the overall project has achieved value for money in line with that expected by the PA4 ERDF Programme. However, many businesses were given a roadmap to further carbon reduction in coming years, and the project also achieved significant carbon reductions that could not be measured/ monitored and therefore have not been reported. It is expected that the value for money of the project will increase significantly over coming years.

8. Conclusions, Lessons Learnt and Recommendations
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The conclusions, lessons learnt, and recommendations have been split into those that are strategic and those that are more operational.

8.1 Conclusions, lessons learnt and recommendations - strategic

a) Barriers to entry

The project has made a significant impact in terms of reducing the barriers for businesses who want to improve their environmental performance. Barriers that have been significantly reduced for businesses engaging with the SIE project are the knowledge and expertise gap and pressures related to time and resource.

Main barriers to improving environmental performance		
	Pre-SiE Support	Post-SiE Support
Lack of knowledge and expertise	79%	2%
Lack of time and resources	58%	15%
Lack of capital funding	46%	48%
Lack of data collection, monitoring or management systems	44%	8%
Lack of policy or strategy	42%	2%
Not a priority	7%	2%
Staff resistance to behavioural change	6%	7%
Factors out of our control (e.g., rented premises / accessing suppliers)	Not asked	40%
Source: Enrolment/ Exit forms. Data for exited participants, Feb 2023, who agreed data can be used for research		

Post SiE support, the lack of capital funding, and limitations related to leased premises or ownership of historic buildings/ challenging premises are the biggest barriers.

The figures show how projects like SiE can have a significant impact on businesses over and above achieving the contracted outputs.

b) Holistic business support / longer delivery periods

Feedback from businesses supported by the SiE project suggests that they have an appetite for ongoing low carbon and sustainability support – they want their engagement with the university to be a longer-term journey rather than a one-off process.

Linked to the above, analysis of the feedback from the businesses supported suggests that businesses who received support from more than one strand of the SiE project saw better outcomes than those who just received support from one strand.

Future projects need to consider how they can provide a support structure for businesses that delivers a holistic and ongoing programme of support that can change as the business develops. The types of support needed will change as the businesses progresses - from the initial measurement, and addressing the 'low hanging fruit', to dealing with more complex innovations and decarbonisation that depends on external infrastructure or more disruptive innovations.

Longer project delivery periods would mitigate against some of the problems caused by supply chain issues and allow for continuity to support business to bed in new processes.

c) Stage of the journey

Analysis and feedback from those taking part in SiE demonstrated how businesses are at widely different stages in their low carbon journey, with some very advanced, and some just beginning.

Linked to this, the data analysis shows that medium sized businesses saw better outcomes from engaging with the project than smaller businesses – potentially as they are further developed in terms of low carbon. Discussions with the project team showed that the low carbon challenges faced by micro businesses are very different to the challenges faced by the medium sized businesses.

Any future projects need to ensure that they can meet the needs of all businesses, with a wide range of activities and initiatives on offer that can be tailored to meet the needs of any business regardless of size, sector, whether they own/ rent and their level of carbon awareness.

d) Engaging businesses

Linked to the above, analysis suggests that there are still many businesses that haven't engaged with low carbon support programmes and that there is an ongoing need for the 'get started' type support.

Data shows that:

- There are almost 50,000 micro and small businesses in the D2N2 area who are yet to put a plan in place to combat climate change.
- There are over 25,000 businesses in the D2N2 area who are yet to take steps to address energy usage.

Whilst these are high numbers, actually engaging with many of these businesses will be challenging – many businesses – small and micro businesses in particular, simply won't be ready to engage or will have no interest in engaging.   Marketing and promotional activity will remain crucial in any future project – sufficient budgets will need to be in place to ensure a comprehensive awareness raising programme.

e) Knowledge exchange

It was noted that the knowledge exchange within the project has been particularly successful- businesses were able to gain expertise in how to measure/ implement low carbon activity themselves. Had they used external support / consultancy etc, they could have secured their carbon calculations/ carbon footprint but they would have been unlikely to have been taught how to do these calculations.

f) Regional governance group

It was suggested that the existing tripartite agreement between low carbon delivery partners in the area could be widened into a Regional Governance Group covering low carbon issues. Membership could be expanded to include low carbon delivery providers and local government. This group could:

- Share insights and data, both to members and interested parties.
- Collaborate / partnership working on future low carbon initiatives.
- Signpost businesses to the support available and align and simplify net zero support.
- Champion low carbon business support/ share best practice in low carbon business support.
- Advise, provide consultancy, and ensure best practice projects in terms of businesses can introduce low carbon into their business.

Aligned to the above, the sustainability expertise across NTU (and potentially other partners) could come together to form a net zero diagnostic for D2N2, providing a service to other business support projects.

8.2 Conclusions, lessons learnt and recommendations – delivery and operational

Key delivery and operational related recommendations are:

a) Low carbon targets / value for money

Measuring and reporting carbon reductions can be time consuming and this needs to be factored into future programmes in terms of staff resources.

b) DocuSign

It was agreed that the DocuSign system for enrolment works smoothly and effectively and has been very successful and has achieved a high completion rate for the exit surveys. It was suggested this should be rolled out across all of the University's projects.

c) Marketing

It was noted that every strand of the project was working on different timescales/ on a different trajectory, and many were targeting different audiences. It was suggested in future projects of this nature each project strand needed a tailored approach to marketing.

d) Delivery area

The team felt that going forward there is scope to deliver over a wider catchment area. A wider catchment area will provide greater peer support and networking opportunities that will accelerate net zero progress. It will also create economies of scale on functions like marketing and business development. It will also avoid a patchwork approach which is confusing and detrimental to busy business owners.

Appendix 1

This appendix sets out the findings of the business survey in more detail.

a) Primary Motivations for Taking Environmental Action

Pre-SiE support, businesses taking part in the project were asked aut their primary motivations for taking environmental action. The results can be seen in the graph below.
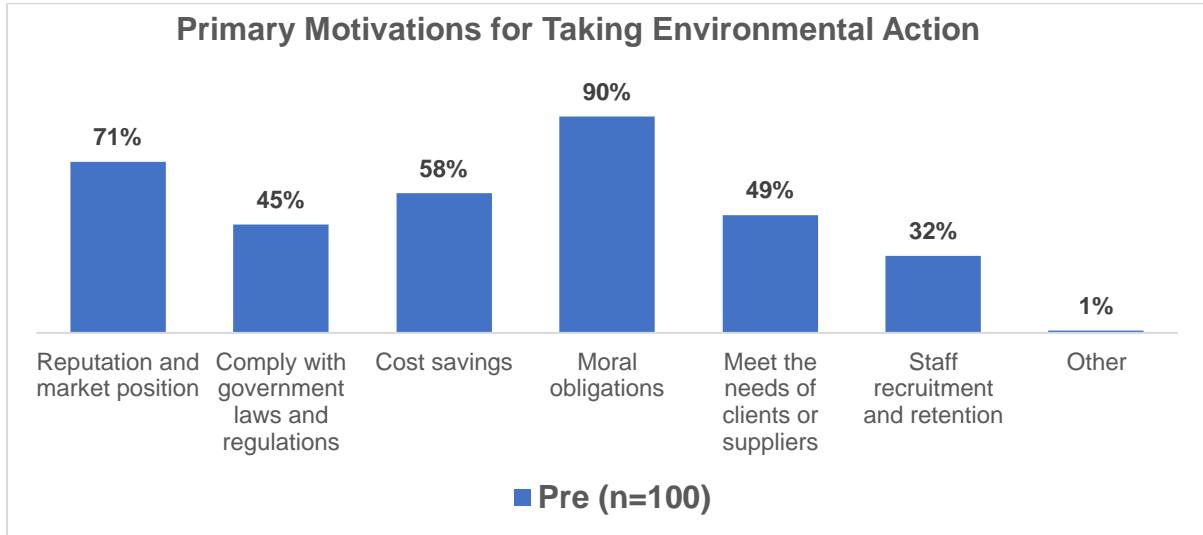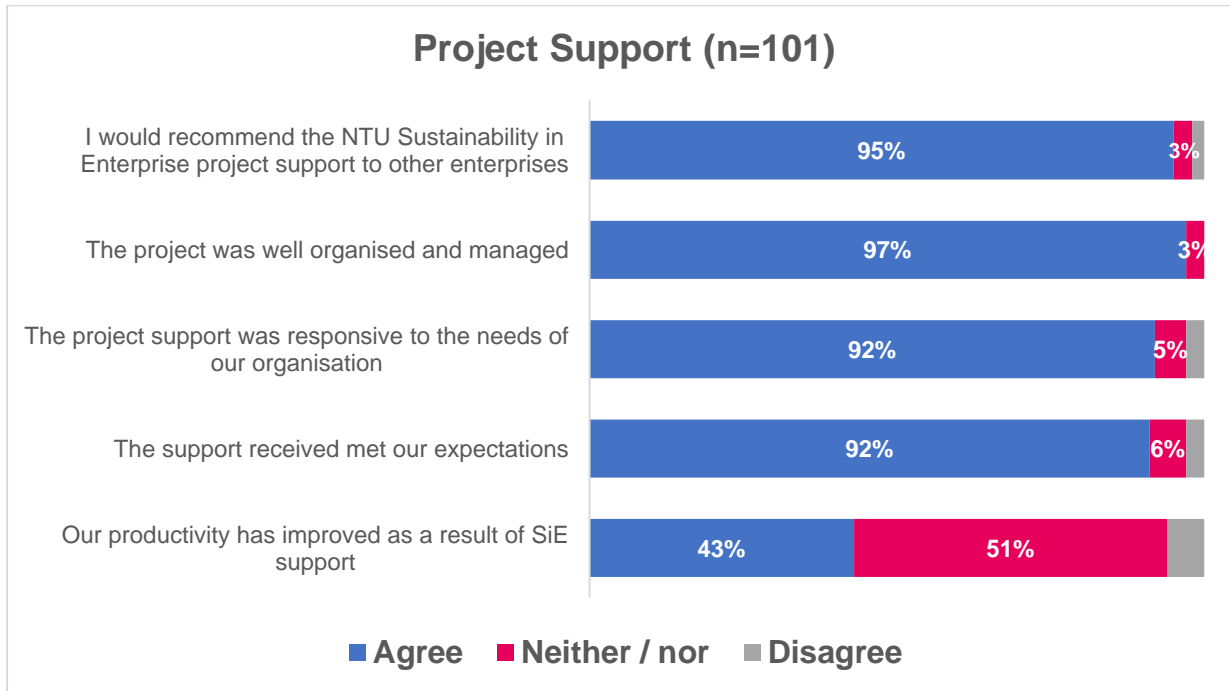

b) Main Barriers to Improving Environmental Performance

Both pre and post SiE support, businesses were asked about the main barriers to improving environmental performance. The results can be seen in the table below.
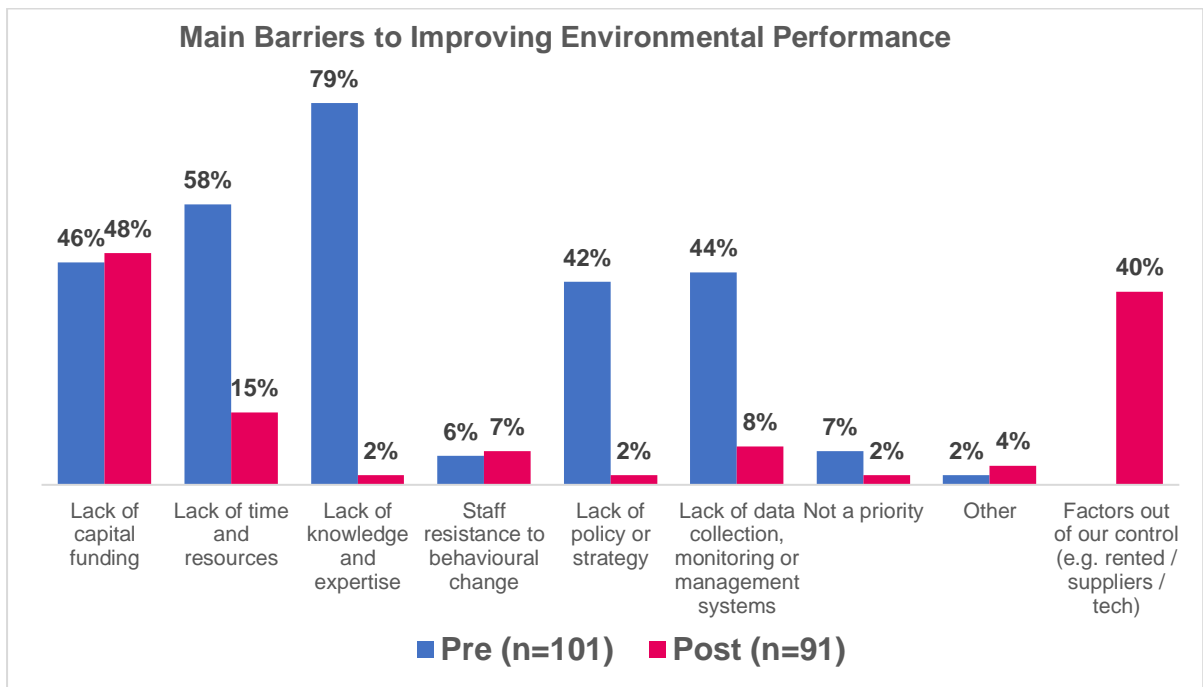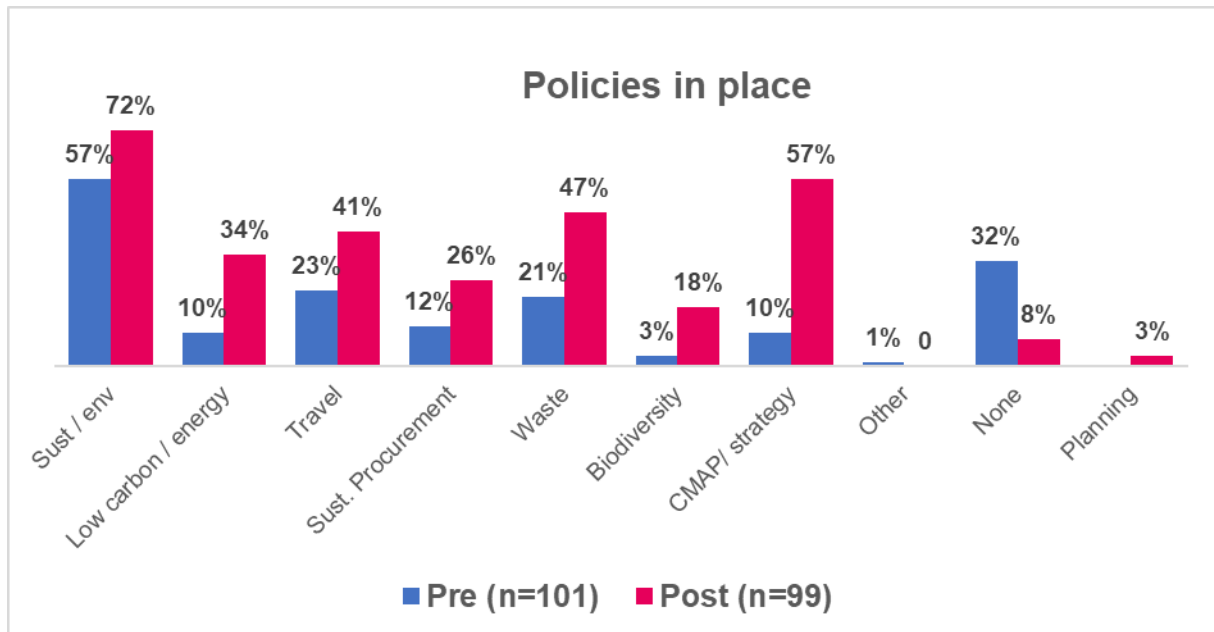
c) The Support Offered

Post SiE support, businesses were asked a range of questions about the support that was offered, including about the quality and the management of the project. The results can be seen in the table below.

Project Support (n=101)

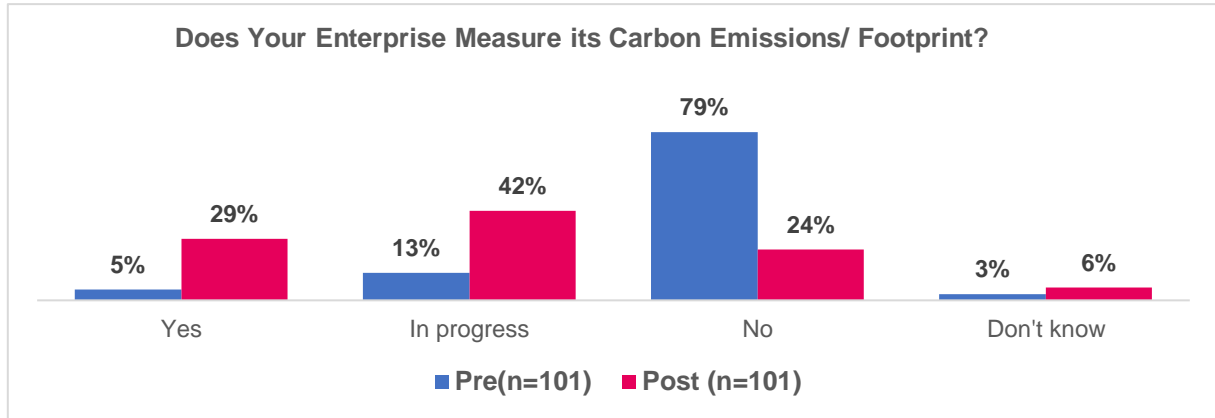| Statement	Agree	Neither / nor	Disagree
I would recommend the NTU Sustainability in Enterprise project support to other enterprises	95%	3%	
The project was well organised and managed	97%	3%	
The project support was responsive to the needs of our organisation	92%	5%	
The support received met our expectations	92%	6%	
Our productivity has improved as a result of SiE support	43%	51%	

d) Policies Businesses Have In Place

Both pre and post SiE support businesses were asked what policies they have in place. The impact that the project has had can be seen in the graph below.

Policies in place

	Pre (n=101)	Post (n=99)
Sust / env	57%	72%
Low carbon / energy	10%	34%
Travel	23%	41%
Sust. Procurement	12%	26%
Waste	21%	47%
Biodiversity	3%	18%
CMAP/ strategy	10%	57%
Other	1%	0
None	32%	8%
Planning		3%

e) Emissions Targets/ Carbon Footprint

Both pre and post SiE support businesses were asked whether they measured their carbon emissions/ footprint. The impact that the project has had can been seen in the graph below.
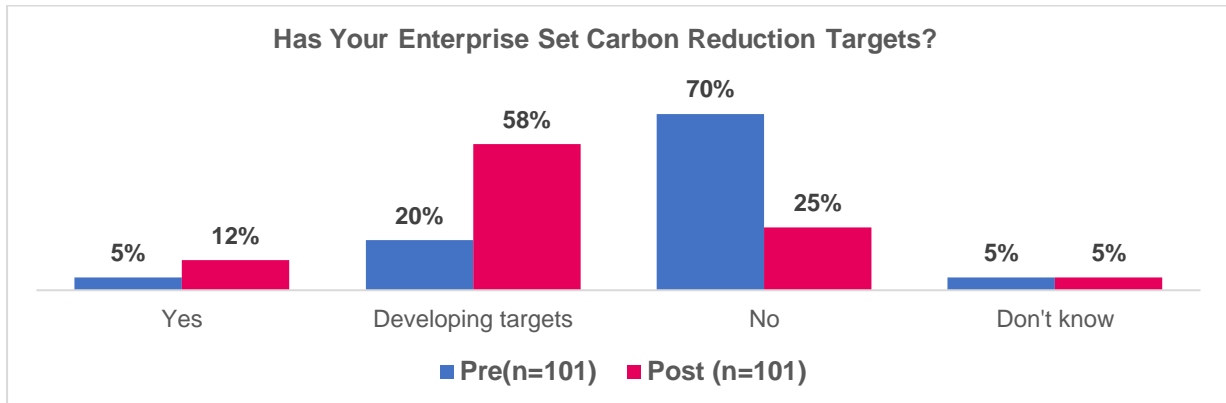
Does Your Enterprise Measure its Carbon Emissions/ Footprint?

If yes, which scope	Pre (n=18)	Post (n=71)
Scope 1	81%	37%
Scope 2	63%	38%
Scope 3	25%	24%
Not sure	-	52%
Note: Pre-support data based on small sample size.		

f) Carbon Reduction Targets

Both pre and post SiE support businesses were asked whether their enterprise had set carbon reduction targets. The impact that the project has had can been seen in the graph below.
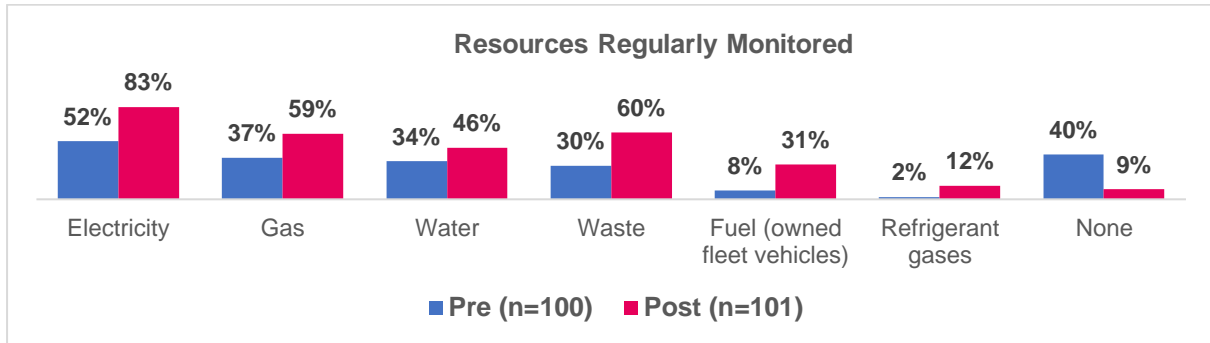
Has Your Enterprise Set Carbon Reduction Targets?

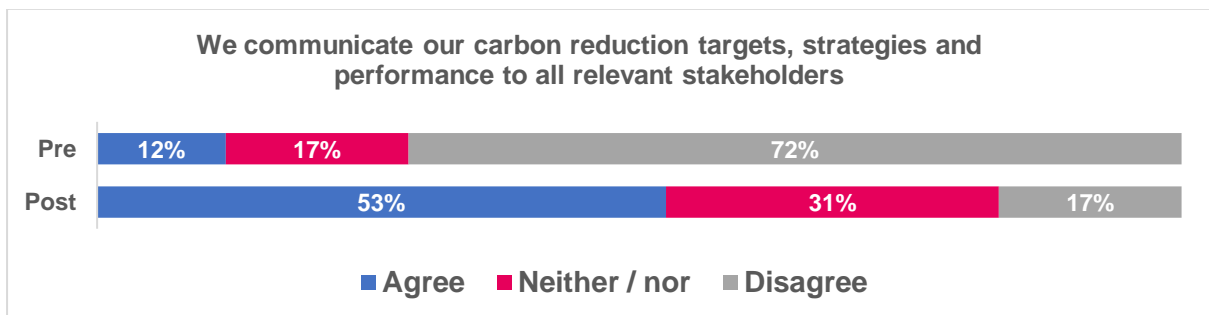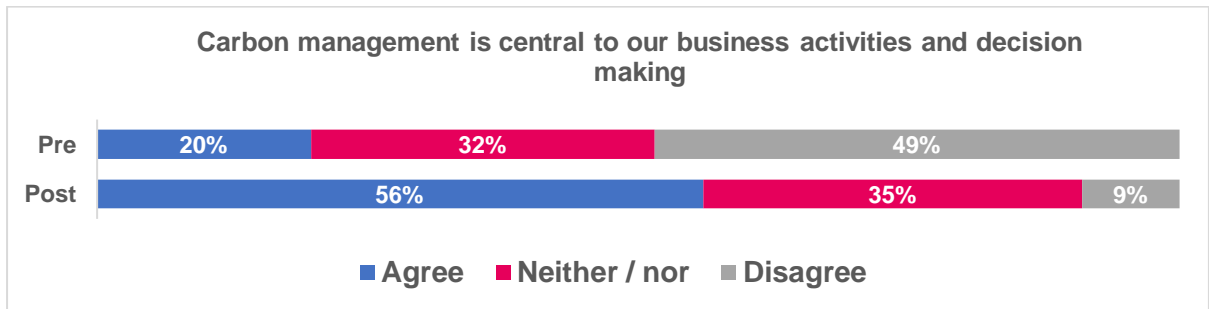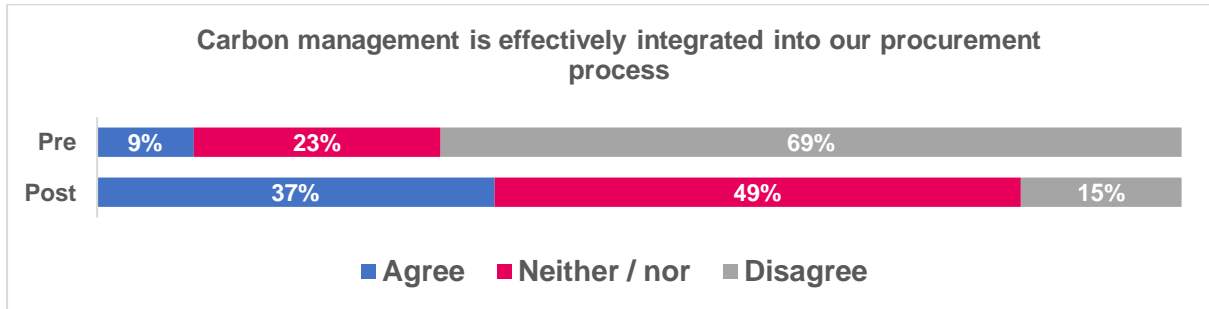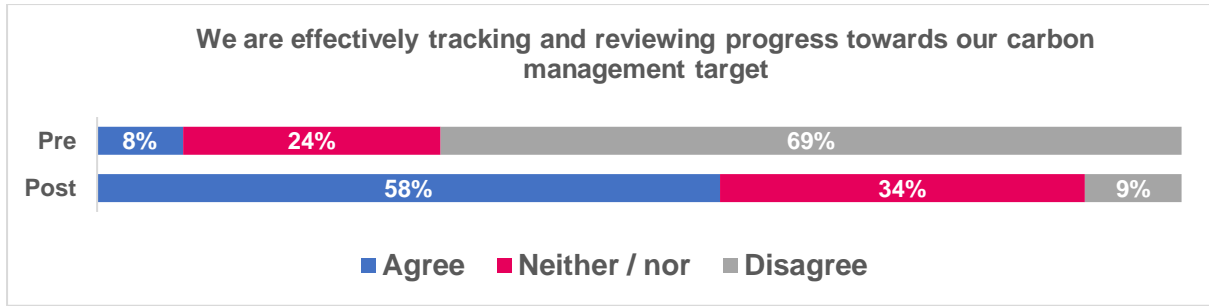| If yes, or developing, which scope	Pre(n=14)	Post (n=71)
Scope 1	43%	41%
Scope 2	43%	37%
Scope 3	36%	18%
Not sure	43%	52%
Note: Pre support data based on small sample size		

g) Resources Monitored

Both pre and post SiE support businesses were asked which resources they regularly monitored. The impact that the project has had can been seen in the graph below.

Resources Regularly Monitored

	Electricity	Gas	Water	Waste	Fuel (owned fleet vehicles)	Refrigerant gases	None
Pre (n=100)	52%	37%	34%	30%	8%	2%	40%
Post (n=101)	83%	59%	46%	60%	31%	12%	9%

h) Impact Statements

Both pre and post SiE support businesses were asked whether they agreed with a range of statements. The impact that the project has had can been seen in the graphs below.

We are aware of the risks and opportunities associated with carbon emissions

	Agree	Neither / nor	Disagree
Pre	88%	8%	4%
Post	98%	2%	

We have the required knowledge and skills to calculate the carbon footprint of our business

	Agree	Neither / nor	Disagree
Pre	12%	20%	69%
Post	73%	18%	9%

We are effectively managing our carbon emissions and successfully implementing carbon reduction projects as planned

	Agree	Neither / nor	Disagree
Pre	9%	20%	71%
Post	62%	31%	7%

We are effectively tracking and reviewing progress towards our carbon management target

	Agree	Neither / nor	Disagree
Pre	8%	24%	69%
Post	58%	34%	9%

Carbon management is effectively integrated into our procurement process

	Agree	Neither / nor	Disagree
Pre	9%	23%	69%
Post	37%	49%	15%

Carbon management is central to our business activities and decision making

	Agree	Neither / nor	Disagree
Pre	20%	32%	49%
Post	56%	35%	9%

We communicate our carbon reduction targets, strategies and performance to all relevant stakeholders

	Agree	Neither / nor	Disagree
Pre	12%	17%	72%
Post	53%	31%	17%

We have carbon reduction behavioural change and awareness raising programmes for staff

	Agree	Neither / nor	Disagree
Pre	12%	16%	73%
Post	59%	27%	14%

Appendix 2 - Project Delivery and Management

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This section provides additional staff feedback on the project delivery, management and governance.

Administration and Reporting Processes

Consultations with the project manager, project leads, and wider staff team have highlighted the following challenges, good practice and lessons learned in terms of the administration processes.

a) Good Practice – Administration and Reporting Processes

The staff team were asked about any good practice in terms of the administration and reporting processes. Comments included:

- **Ongoing Support** - The ongoing support of the administration team was recognised in the staff feedback, with one team member commenting: *'The team have been fantastic throughout and have made everyone's job easier due to their organisation'*.
- **DocuSign** – It was agreed that the DocuSign system for enrolment has worked smoothly and effectively and has achieved a high completion rate for the exit surveys. It was suggested this should be rolled out across all University's projects.

b) Challenges – Administration and Reporting Processes

The staff team were asked about any challenges faced in terms of the administration and reporting processes and how these were overcome. Comments included:

- **Administratio**n – It was noted that at the beginning of the project administration processes were slow to be implemented. However, throughout the project, this was rectified and amended.
- **Administration and Academic Collaboration –** It was suggested that the academic roles and the administration roles are very disparate. More could be done to ensure that each understands more about the requirements of the other's role/ responsibilities to ensure better joined-up working.
- **Staff Meetings** - It was noted that staff meetings tended to run over their scheduled time slots in the early days and that the project was very meeting heavy at the start which was not necessarily a good use of time. It was also noted that staff meetings could be passive due to the volume of information that needed to be shared. It was generally agreed that this has settled down now and lessons have been learnt have been implemented.

Management and Governance

This section sets out the challenges, good practice and lessons learnt in terms of the management and governance processes of the SiE project.

Staff consultations have highlighted that overall, the project is considered to have been well managed. The online staff survey circulated as part of the Summative Assessment asked operational project staff '*In your opinion, has the overall SiE project been well managed by NTU?*' 12 members of the team responded, with all 12 (100%) telling us that the project has been well managed.

In addition, positive comments have been received about the overall project management including:

- *'The best programme I've worked on in terms of organisation and management'.*
- *'Went above and beyond, and tried to have a wider impact beyond the project, developing partnerships and engaging stakeholders'*

a) Good Practice – Management and Governance

The delivery team were asked about good practice in terms of management and governance. Comments included:

- *'We were trusted to manage each strand of the project and were not micro-managed. This allowed us to develop each strand of the project in the best possible way'.*

b) Challenges – Management and Governance

The staff team were asked about any challenges faced in terms of the management and governance of the project and how these were overcome. Key themes emerging from the staff survey included:

- **Planning** - It was suggested that in some areas the project was reactive, rather than pro-active, with rapid changes in how the project was delivered during the early stages. For future projects it may be beneficial to spend more time planning out the proposed activities during the development stage so that the project is ready to *'hit the ground running'* once it becomes operational. This Low Carbon was a first for NTU, but the experience gained through delivery will be invaluable in informing future schemes.
- **Resourcing Issues** - Team members noted that the project has had staffing resource issues, including staff leaving, staff on long period of absence, and staff switching roles. Whilst it was noted that these issues have been well managed by the central team, it was agreed that this has put the project under strain at times. Future projects need to consider staff contingency planning, succession planning, and handover procedures to reduce the impacts of this risk in future.

Marketing

This section sets out the staff and business feedback with regards to the marketing of the project. It should be noted that there were significant staffing changes within the marketing element of the project delivery that were outside of the control of the management team.

The Staff Perspective

Staff completing the online questionnaire were asked how successfully they thought the SiE project had been marketed. There were 13 responses, with 11 (85%) saying '*Quite Successfully*' and 2 (15%) saying '*Very Successfully*'.

a) Successes – Marketing

Staff were asked about the successes of the marketing for the project. Key themes emerging included:

- **Case Studies** - The testimonials and case studies were well received.
- **Webpage** – Staff commented that the webpage is working well, and that people can find the SiE project on the internet – *'it has a good presence online'*.

b) Challenges and Suggestions for the Future – Marketing

Staff were asked about the challenges and suggestions for the future of the marketing approach.

- **Simple Message** – it was agreed that the project has quite a complex offer, and a very simple message is needed when marketing the whole project.
- **Tailored To Each Strand** – It was noted that every strand of the project was working on different timescales/ on a different trajectory, and many were targeting different audiences – '*too broad an offer for one overarching marketing approach'*. It was suggested that each project strand needed a tailored approach to marketing – *'Need to split the offer up into the nitty gritty and really target each strand'*.
- **Language –** It was noted that getting the right tone for marketing had been challenging as business knowledge on the subject is very varied, and awareness/ familiarity of low carbon language even changed during the project.
- **Business Contacts** – Feedback from the Project Design strand of the project highlighted that the last five companies they have enrolled on the scheme are because they had a ring around some local businesses. It was suggested that in future projects there some dedicated resource for someone ringing round and cold calling businesses.

The Business Perspective

Data from the enrolment forms suggests that the majority of businesses found out about the project via an email from NTU (34%), with 23% finding out by word of mouth, and 10% through an NTU event.

Appendix 3A : Project Leads Consultation Questions

Background
• Brief background to their element of the project
• Has the context/ operating environment changed since the project was developed?
• What was the impact of COVID-19/ BREXIT/ War in Ukraine on delivery and demand?
• Does the project align with policy and strategy/ are there any changes going forward with regards to policy and strategy that future projects need to consider?
• What data are they collecting and how will this be used in the evaluation?

Outputs/ Targets
• Are the targets set for their element of the project realistic / achievable? Have any been challenging to achieve and why?
• Is the project delivering its intended offer to a high standard?
• Did the project engage and support the right beneficiaries?

Management and Governance
• Is the project well managed overall? Could it be improved in any way? Suggestions for the future?
• Are the right governance / management structures in place - do they operate in the way they were expected to? Could this be improved?

Benefits from internal collaboration and other areas of the university.
Benefits for collaborating for them.

Marketing and Communication
• How effectively is the project marketed? Could this be improved? Any successes?
• How effective is communication with stakeholders – internal and external? Is the project linked into other schemes/ signposting to other initiatives etc?

Successes and Impact
• Which are the most / least successful elements of the project far?
• What benefits do you think have been achieved for the businesses supported to date?
• Are you aware of any unexpected economic or social outcomes? Maybe papers being published/ jobs created/ links being made with other organisations?
• Are there any notable examples of good or innovative practice?
• Would the businesses have been able to achieve the outcomes/ impact without the support of the project?

Lessons Learnt/ Suggestions for the Future
• Do you have any suggestions for delivering/ developing/ managing future projects?
• Is there anything that businesses needed that cannot be offered through the project?

Supporting the Evaluation
• Are there any questions that you think we should be asking the wider staff team as part of the evaluation?

Appendix 3B: Wider Staff Consultation Questions – Online Survey

Management and Governance
- In your opinion, has the overall SiE project been well managed by NTU?
- Were there any challenges faced in terms of the management and governance of the project?
- Is there anything that has worked particularly well, or do you have any good practice to share?
- Are there any lessons learnt in terms of the management and governance of the project?
- Do you have any other suggestions or improvements in terms of the management and governance of the project that could be considered for future schemes?

Administration and Reporting Processes
- Were there any challenges faced in terms of the administration of the project?
- Is there anything that has worked particularly well, or do you have any good practice to share, in terms of the administration of the project?
- Are there any lessons learnt in terms of the administration of the project.
- Do you have any other suggestions or improvements in terms of the overall administration of the project that could be considered for future schemes?

Partnership Working
- In your opinion, has the partnership working, signposting, and collaboration across the different strands of the project been successful?
- Do you think the collaborative / cross-university approach to the project has, or will have, any long-term impact for your department/ school?
- Were there any challenges faced in terms of the partnership working/ collaboration?
- Are there any lessons learnt in terms of the collaboration/ cross university approach to the project?
- Do you have any other suggestions or improvements in terms of the collaboration/ cross university approach that should be considered for future projects?

Marketing
- How successfully do you think the overall SiE project was marketed?
- Were there any challenges faced in terms of the marketing of the project?
- Is there anything that has worked particularly well, or do you have any good practice to share, in terms of the marketing of the project?
- Are there any lessons learnt in terms of the marketing of the project?
- Do you have any other suggestions or improvements in terms of the marketing of the project that could be considered for future projects?

The Programme of Support
- Was there any low carbon or sustainability support that businesses asked for, that couldn't be delivered through the SiE project or any of the strands?
- Is there any low carbon or sustainability support that you think is needed by businesses that could/ should be delivered in future programmes?

Legacy
- In your opinion, what is the legacy of the SiE Project?
- Have you personally learnt any new skills from working on the SiE project?

At the Project Strand Level of Detail
- what impact did the individual project strand have for the businesses/ graduates who were supported or the university?
- Would these have been able to achieve these impacts without the SiE project?
- Were there any challenges faced when delivering this strand?
- Is there anything that has worked particularly well, or do you have any good practice to share, in terms of this strand?
- Are there any lessons learnt in terms of this strand?

Appendix 3C Business Interview Questions

Motivations

- What motivated you to think about/ implement low carbon activities? Any particular policies or ideas, things you have read?

Carbon Impacts

- Can you tell me about how you have implemented any carbon reduction activities as a result of the project? This could relate to building energy, business travel, own transport fleet, supply chain, staff commute, water, and waste?

- In what ways did the project affect carbon management practices within the organisation? For example, did it increase your awareness, bring about changes in organisational behaviour, or reveal knowledge or skills gaps in the workforce? If new policies in place – can the impacts be evidenced?

- **Check exit survey to see if they are measuring carbon emissions**, if they aren't, ask why, what is stopping them etc.

- Have they set carbon reduction target? If yes, which scopes?

- Is having a target is relevant to them – setting KPIs?

- Do you understand the terminology used to categorise low carbon activity in terms of scope 1/ 2/ 3 etc? If yes, can you provide insights into your carbon footprint based on Scope 1, Scope 2 and Scope 3?

- Have you set a specific target date for achieving Net Zero goals? What are the primary challenges or obstacles you are encountering in their efforts to reach this target?

What Next

- What barriers do you face in terms of implementing future low carbon initiatives? Finance/ skills etc? What support do they need to help to overcome this?

- What will you do next in terms of low carbon? What is the legacy from your involvement with SiE?

Counterfactual

- What would you have done if the project wasn't around? Where would you be now?

Value of the Support

- Would they pay for the type of support that they have received/ can they put a value on the support received?

Appendix 4A: Business Enrolment Survey

Sustainability in Enterprise Survey

This short survey about your current environmental sustainability practices will inform the support you receive from the Nottingham Trent University Sustainability in Enterprise project. We would be grateful if you could answer each question to the best of your knowledge. It should take no longer than 5 minutes to complete. The survey outlines a range of business practices that support carbon reduction. We acknowledge that all businesses will be at different stages of this journey.

The data gathered will help assess our impact on beneficiaries as part of the project evaluation. The data will be confidential and protected. No personal details will be published, nor will they be shared for commercial or marketing purposes. All personal information collected will be handled in line with the retained EU law version of the General Data Protection Regulation ('UK GDPR') and the Data Protection Act 2018.

We would, additionally, like to use this data for an NTU research project, informing how small and medium size enterprises are best supported to manage their carbon emissions. The research data will also be processed in accordance with data protection law and any information used in published material will be anonymous. Please confirm whether you give consent for your data to be used for NTU research purposes:

Yes ☐   No ☐

1. **Please state Enterprise name:**

2. **Which of the following does your enterprise have in place?** *select all that apply*

    Sustainability or environmental policy ☐   Low carbon or energy policy ☐   Travel policy ☐

    Sustainable procurement policy ☐   Waste management policy ☐   Biodiversity policy ☐

    Carbon management action plan/ strategy ☐   Other (please specify) ☐   None ☐

3. **Have you developed carbon reduction activity or plans in any of the following areas?** *select all that apply*

    Buildings energy ☐   Own transport fleet ☐   Business travel ☐

    Procurement and supply chain ☐   Waste ☐   Staff commute ☐

    Water ☐   Other (please specify) ☐   None ☐

4. **Do you have any sustainability related certification?**

    Yes (please specify) ☐

    Planning (please specify) ☐

    No ☐

    Not sure ☐

5. **Does your enterprise regularly monitor the following resource use? (Related to the enterprise only)** *select all that apply*

Electricity ☐	Gas ☐	Water ☐	Waste ☐
Fuel (owned fleet vehicles) ☐	Refrigerant gases ☐	None ☐	

6. **Does your enterprise measure its carbon emissions/footprint?** Choose an item.
    6a. If yes, or in progress, which emissions sources do you measure? *select all that apply*

    Scope 1 ☐   Scope 2 ☐   Scope 3 (all or part) (please specify which) ☐

7. **Has your enterprise set carbon reduction targets?**   Choose an item.
    7a. If so, which? *select all that apply*

    Scope 1 ☐   Scope 2 ☐   Scope 3 (all or part) ☐   Not sure ☐

8. **What are your enterprise's** primary **motivations for taking environmental action?** *select all that apply*

    Reputation and market position ☐   Comply with government laws and regulations ☐

    Cost savings ☐   Moral obligation ☐

    Meet the needs of clients or suppliers ☐   Staff recruitment and retention ☐

    Other (please specify) ☐

9. **And what are the main barriers to improving your environmental performance?** *select all that apply*

    Lack of capital funding ☐   Lack of other time and resources ☐

    Lack of knowledge and expertise ☐   Staff resistance to behavioural change ☐

    Lack of policy or strategy ☐   Lack of data collection, monitoring or management systems ☐

    Not a priority ☐   Other (please specify) ☐

10. **What specific benefits are you seeking through the support offered?**

11. **To what extent do you agree with the following statements, in relation to your enterprise?**

	Strongly agree	Agree	Neither / nor	Disagree	Strongly disagree
We are aware of the risks and opportunities associated with carbon emissions	☐	☐	☐	☐	☐
We have the required knowledge and skills to calculate the carbon footprint of our business	☐	☐	☐	☐	☐
We are effectively managing our carbon emissions and successfully implementing carbon reduction projects as planned	☐	☐	☐	☐	☐
We are effectively tracking and reviewing progress towards our carbon management target	☐	☐	☐	☐	☐
Carbon management is effectively integrated into our procurement process	☐	☐	☐	☐	☐
Carbon management is central to our business activities and decision making	☐	☐	☐	☐	☐
We communicate our carbon reduction targets, strategies and performance to all relevant stakeholders	☐	☐	☒	☐	☐
We have carbon reduction behavioural change and awareness raising programmes for staff	☐	☐	☐	☐	☐
We are able to manage the conflicts between carbon management and core business activities/growth	☐	☐	☐	☐	☐

Appendix 4B: Business Exit Survey

Sustainability in Enterprise Survey

This short survey about your current environmental sustainability practices will inform the support you receive from the Nottingham Trent University Sustainability in Enterprise project. We would be grateful if you could answer each question to the best of your knowledge. It should take no longer than 5 minutes to complete. The survey outlines a range of business practices that support carbon reduction. We acknowledge that all businesses will be at different stages of this journey.

The data gathered will help assess our impact on beneficiaries as part of the project evaluation. The data will be confidential and protected. No personal details will be published, nor will they be shared for commercial or marketing purposes. All personal information collected will be handled in line with the retained EU law version of the General Data Protection Regulation ('UK GDPR') and the Data Protection Act 2018.

We would, additionally, like to use this data for an NTU research project, informing how small and medium size enterprises are best supported to manage their carbon emissions. The research data will also be processed in accordance with data protection law and any information used in published material will be anonymous. Please confirm whether you give consent for your data to be used for NTU research purposes:

Yes ☐   No ☐

12. Please state Enterprise name:

13. **Which of the following does your enterprise have in place?** *select all that apply*

Sustainability or environmental policy ☐	Low carbon or energy policy ☐	Travel policy ☐
Sustainable procurement policy ☐	Waste management policy ☐	Biodiversity policy ☐
Carbon management action plan/ strategy ☐	Other (please specify) ☐	None ☐

14. **Have you developed carbon reduction activity or plans in any of the following areas?** *select all that apply*

Buildings energy ☐	Own transport fleet ☐	Business travel ☐
Procurement and supply chain ☐	Waste ☐	Staff commute ☐
Water ☐	Other (please specify) ☐	None ☐

15. **Do you have any sustainability related certification?**

Yes (please specify) ☐
Planning (please specify) ☐
No ☐
Not sure ☐

16. **Does your enterprise regularly monitor the following resource use? (Related to the enterprise only)** *select all that apply*

Electricity ☐	Gas ☐	Water ☐	Waste ☐
Fuel (owned fleet vehicles) ☐	Refrigerant gases ☐	None ☐	

17. **Does your enterprise measure its carbon emissions/footprint?** Choose an item.

6a. If yes, or in progress, which emissions sources do you measure? *select all that apply*

Scope 1 ☐   Scope 2 ☐   Scope 3 (all or part) (please specify which) ☐

18. **Has your enterprise set carbon reduction targets?**   Choose an item.

7a. If so, which? *select all that apply*

Scope 1 ☐   Scope 2 ☐   Scope 3 (all or part) ☐   Not sure ☐

19. **What are your enterprise's primary motivations for taking environmental action?** *select all that apply*

Reputation and market position ☐   Comply with government laws and regulations ☐

Cost savings ☐   Moral obligation ☐

Meet the needs of clients or suppliers ☐   Staff recruitment and retention ☐

Other (please specify) ☐

20. **And what are the main barriers to improving your environmental performance?** *select all that apply*

Lack of capital funding ☐   Lack of other time and resources ☐

Lack of knowledge and expertise ☐   Staff resistance to behavioural change ☐

Lack of policy or strategy ☐   Lack of data collection, monitoring or management systems ☐

Not a priority ☐   Other (please specify) ☐

21. **What specific benefits are you seeking through the support offered?**

22. **To what extent do you agree with the following statements, in relation to your enterprise?**

	Strongly agree	Agree	Neither / nor	Disagree	Strongly disagree
We are aware of the risks and opportunities associated with carbon emissions	☐	☐	☐	☐	☐
We have the required knowledge and skills to calculate the carbon footprint of our business	☐	☐	☐	☐	☐
We are effectively managing our carbon emissions and successfully implementing carbon reduction projects as planned	☐	☐	☐	☐	☐
We are effectively tracking and reviewing progress towards our carbon management target	☐	☐	☐	☐	☐
Carbon management is effectively integrated into our procurement process	☐	☐	☐	☐	☐
Carbon management is central to our business activities and decision making	☐	☐	☐	☐	☐
We communicate our carbon reduction targets, strategies and performance to all relevant stakeholders	☐	☐	☐	☐	☐
We have carbon reduction behavioural change and awareness raising programmes for staff	☐	☐	☐	☐	☐
We are able to manage the conflicts between carbon management and core business activities/growth	☐	☐	☐	☐	☐

Appendix 5: Data Analysis – NTU Academics – The Slides below summarise the analysis undertaken by the NTU NBS and ADBE researchers.

Slide 1

Nottingham Trent University

SiE Impact on SMEs - Results

09/03/2023

Slide 2

Content

- Sustainability/Carbon Management policies
- Carbon reduction activities
- Monitoring resource use
- Measuring the carbon emissions/footprint

- Carbon reduction targets

- Carbon management practices

- Client feedback on the project outcomes

Slide 3

Data collection and sampling

- In this study, data were collected from the SMEs that were included in the SiE project using online surveys from September 2021 to January 2023.

- The pre-intervention survey instrument consisted of 11 questions and the post-intervention survey instrument consisted of 16 questions.

- The number of participants who had responded to the pre-intervention survey was 215 and the number of participants who had responded to the post-intervention survey was 124. Only SMEs who had responded to both pre- and post-intervention surveys were included in this study. After the elimination of the participants who had responded to neither of the surveys and those who had not given consent to the use of their data for the research, the final study sample was determined to be 101.

Slide 4

Results

Descriptive information on the respondent SMEs

| Criteria	Characteristics	Frequency	Percent (%)
Annual turnover (€)	≤ 2,000,000	71	70.3
	2,000,001-10,000,000	27	26.7
	10,000,001-50,000,000	3	3.0
Number of employees	Less than 10	34	33.7
	10-49	47	46.5
	50-249	17	16.8
	No response	3	3.0
Size	Micro	37	36.6
	Small	46	45.5
	Medium-sized	18	17.8
Firm age	0-5 years	10	9.9
	6-10 years	21	20.8
	11-20 years	33	32.7
	21-40 years	26	25.7
	≥ 41	11	10.9

Descriptive statistics

- Table shows the annual turnover, number of employees, size and age of the SMEs that are included in the study. It was identified that, of these SMEs;

- 70.3% had an annual turnover of under or equal €2 million, 26.7% were between €2,000,001 to €10,000,000 and 3.0% were between €10,000,001 to €50,000,000.

- 33.7% had less than 10 employees, 46.5% had 10 to 49 employees, 16.8% had 50 to 249 employees, and 3 (3.0%) left this question unanswered.

- 37 enterprises (36.6%) were micro, 46 enterprises (45.5%) were small, and 18 of them (17.8%) were medium-sized enterprises.

- 9.9% of the SMEs had existed for 5 years or less, 0.8% were 6 to 10 years, 32.7% were 11 to 20 years, 25.7% were 21 to 40 years and 10.9% were longer than 40 years.

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Sectors in which the SMEs included in the study operate

Figure shows that 14 companies were involved in manufacturing, 11 companies in wholesale and retail, 11 companies in arts, entertainment and recreation, 9 companies in construction, and 13 companies in professional, scientific and technical sectors of the SMEs included in the study.
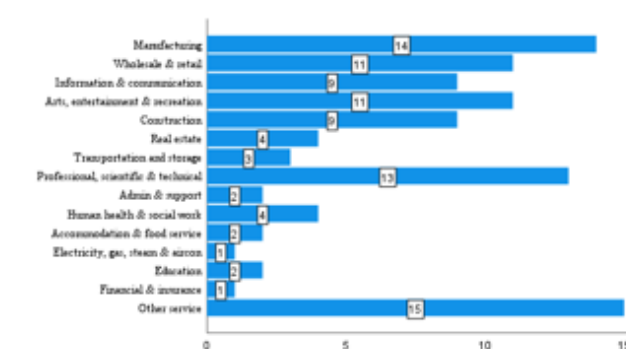
NTU

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Comparison of pre- and post-intervention results of the Sustainability/Carbon Management policies implemented in SMEs

- As seen in Table 3, after the intervention, the rates of implementing sustainability/environmental policy, sustainable procurement policy, carbon management action plan/strategy, low carbon or energy policy, waste management policy, travel policy, and biodiversity policy in the SMEs increased from 57.4% to 71.3%, 10.9% to 25.7%, 9.9% to 56.4%, 8.9% to 33.7%, 19.8% to 47.5%, 21.8% to 40.6%, and 2.0% to 17.8% respectively.

- These results suggest that the intervention had a significant impact on shifting to sustainability/carbon management policies practices in SMEs.

Table 3. Comparison of pre- and post-intervention results of the Sustainability/Carbon Management policies implemented in SMEs using a McNemar's test

Policies	Pre-intervention (N=101)		Post-intervention (N=101)		p value
	Not applied	Applied	Not applied	Applied	
Sustainability or environmental policy	43 (42.6%)	58 (57.4%)	29 (28.7%)	72 (71.3%)	0.040*
Sustainable procurement policy	90 (89.1%)	11 (10.9%)	75 (74.3%)	26 (25.7%)	0.009*
Carbon management action plan/strategy	91 (90.1%)	10 (9.9%)	44 (43.6%)	57 (56.4%)	<0.001*
Low carbon or energy policy	92 (91.1%)	9 (8.9%)	67 (66.3%)	34 (33.7%)	<0.001*
Waste management policy	81 (80.2%)	20 (19.8%)	53 (52.5%)	48 (47.5%)	<0.001*
Travel policy	79 (78.2%)	22 (21.8%)	60 (59.4%)	41 (40.6%)	<0.001*
Biodiversity policy	99 (98.0%)	2 (2.0%)	83 (82.2%)	18 (17.8%)	<0.001*

*p<0.05 statistically significant; N - total number of participants

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Comparison of pre- and post-intervention results of the carbon reduction activities implemented in SMEs

- Table 4 shows that after the intervention, the rates of implementing carbon reduction activities in building energy, transport fleet, business travel, procurement and supply chain, waste, staff commute, and water areas in SMEs increased from 5.9% to 72.3%, 2.0% to 25.7%, 5.0% to 50.5%, 4.0% to 48.5%, 5.9% to 51.5%, 5.0% to 40.6%, and 4.0% to 20.8% respectively.

- These results suggest that the intervention had a significant impact on implementing carbon reduction activities in building energy, own transport fleet, business travel, procurement and supply chain, waste, staff commute, and water areas in SMEs.

Table 4. Comparison of pre- and post-intervention results of the carbon reduction activities implemented in SMEs using a McNemar's test

Carbon reduction activities	Pre-intervention (N=101)		Post-intervention (N=101)		p value
	Not applied	Applied	Not applied	Applied	
Building energy	95 (94.1%)	6 (5.9%)	28 (27.7%)	73 (72.3%)	<0.001*
Own transport fleet	99 (98.0%)	2 (2.0%)	75 (74.3%)	26 (25.7%)	<0.001*
Business travel	96 (95.0%)	5 (5.0%)	50 (49.5%)	51 (50.5%)	<0.001*
Procurement and supply chain	97 (96.0%)	4 (4.0%)	52 (51.5%)	49 (48.5%)	<0.001*
Waste	95 (94.1%)	6 (5.9%)	49 (48.5%)	52 (51.5%)	<0.001*
Staff commute	96 (95.0%)	5 (5.0%)	60 (59.4%)	41 (40.6%)	<0.001*
Water	97 (96.0%)	4 (4.0%)	80 (79.2%)	21 (20.8%)	<0.001*

*p<0.05 statistically significant; N - total number of participants

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Comparison of pre- and post-intervention results of monitoring resource use in SMEs

- Table 5 shows that, after the intervention, the number of SMEs that regularly monitored electricity use, gas use, waste generation, fuel use, and refrigerant gas use increased from 52 to 84 (from 51.5% to 83.2%), 37 to 60 (from 36.6% to 59.4%), 29 to 59 (from 28.7% to 58.4%), 8 to 31 (from 7.9% to 30.7%), and 2 to 12 (from 2.0% to 11.9%) respectively.

- These results suggest that the intervention had a significant impact on enabling the monitoring of electricity, gas, fuel, and refrigerant gas usage and waste generation in SMEs.

Table 5. Comparison of pre- and post-intervention results of monitoring resource use in SMEs using a McNemar's test

Monitoring resource use	Pre-intervention (N=101)		Post-intervention (N=101)		p value
	Not applied	Applied	Not applied	Applied	
Electricity	49 (48.5%)	52 (51.5%)	17 (16.8%)	84 (83.2%)	<0.001*
Gas	64 (63.4%)	37 (36.6%)	41 (40.6%)	60 (59.4%)	<0.001*
Water	66 (65.3%)	35 (34.7%)	56 (55.4%)	45 (44.6%)	0.134
Waste	72 (71.3%)	29 (28.7%)	42 (41.6%)	59 (58.4%)	<0.001*
Fuel (owned fleet vehicles)	93 (92.1%)	8 (7.9%)	70 (69.3%)	31 (30.7%)	<0.001*
Refrigerant gases	99 (98.0%)	2 (2.0%)	89 (88.1%)	12 (11.9%)	0.002*

*p<0.05 statistically significant; N - total number of participants

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Comparison of pre- and post-intervention results of measuring the carbon emissions/footprint in SMEs

- As seen in the Table 6, after the intervention, the number of SMEs indicating that they measured the carbon emissions to start to manage them as part of their policies and strategies increased from 4 to 29 (from 4.0% to 28.7%). In addition, the number of SMEs indicating that the carbon emission measurement process was in progress increased from 14 to 42 (from 13.9% to 41.6%).

Table 6. Comparison of pre- and post-intervention results of measuring the carbon emissions/footprint in SMEs using a McNemar-Bowker test

Variable	Pre-intervention (N=101)			Post-intervention (N=101)			p value
	No	In progress	Yes	No	In progress	Yes	
Carbon emission/footprint	83 (82.2%)	14 (13.9%)	4 (4.0%)	30 (29.7%)	42 (41.6%)	29 (28.7%)	<0.001*

*p<0.05 statistically significant; N - total number of participants

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Comparison of pre- and post-intervention results of measuring the carbon emissions/footprint scopes in SMEs

- Table 7 shows that after the intervention, the number of SMEs indicating that they measured their emission resources within Scopes 1, 2, and 3 increased from 13 to 25 (from 12.9% to 24.8%), 10 to 26 (from 9.9% to 25.7%), and 4 to 17 (from 4.0% to 16.8%) respectively, and the increases were considered to be significant.

Table 7. Comparison of pre- and post-intervention results of the scopes SMEs focused on while measuring the carbon emission resources using a McNemar's test

Variable	Pre-intervention (N=101)		Post-intervention (N=101)		p value
	No	Yes	No	Yes	
Scope 1	88 (87.1%)	13 (12.9%)	76 (75.2%)	25 (24.8%)	0.012*
Scope 2	91 (90.1%)	10 (9.9%)	75 (74.3%)	26 (25.7%)	<0.001*
Scope 3	97 (96.0%)	4 (4.0%)	84 (83.2%)	17 (16.8%)	<0.001*

*p<0.05 statistically significant; N - total number of participants

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Comparison of pre- and post-intervention results regarding the targets for reducing carbon emissions in SMEs

- Table 8 shows that after the intervention, the number of SMEs indicating that they had a target for reducing carbon emissions increased from 5 to 12 (from 4.9% to 11.8%). In addition, the number of SMEs indicating that the process of setting a target for reducing carbon emissions was in progress increased from 20 to 59 (from 19.6% to 57.8%).

Table 8. Comparison of pre- and post-intervention results regarding the targets for reducing carbon emissions in SMEs using a McNemar-Bowker test

Variable	Pre-intervention (N=101)			Post-intervention (N=101)			p value
	No	Developing	Yes	No	Developing	Yes	
Carbon reduction target	76 (75.2%)	20 (19.8%)	5 (5.0%)	30 (29.7%)	59 (58.4%)	12 (11.9%)	<0.001*

*p<0.05 statistically significant; N - total number of participants

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Slide 13

Comparison of pre- and post-intervention results of the scopes SMEs focused on regarding the targets for reducing carbon emissions

- Table 9 shows that after the intervention, the numbers of SMEs that had a target for reducing carbon emissions within Scopes 1, 2, and 3 increased from 6 to 29 (from 5.9% to 28.4%), 6 to 26 (from 5.9% to 25.5%), and 5 to 15 (from 4.9% to 14.7%) respectively.

Table 9. Comparison of pre- and post-intervention results of the scopes SMEs focused on regarding the targets for reducing carbon emissions using a McNemar's test

Variable	Pre-intervention (N=101)		Post-intervention (N=101)		p value
	No	Yes	No	Yes	
Scope 1	95 (94.1%)	6 (5.9%)	72 (71.3%)	29 (28.7%)	<0.001*
Scope 2	95 (94.1%)	6 (5.9%)	75 (74.3%)	26 (25.7%)	<0.001*
Scope 3	96 (95.0%)	5 (5.0%)	86 (85.1%)	15 (14.9%)	0.013*

*p<0.05 statistically significant; N - total number of participants

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Comparison of pre- and post-intervention results of carbon management practices in SMEs

- As seen in Table 10, the overall result of carbon management practices scale in SMEs differed significantly before (M=22.79, SD=6.73) and after (M=32.94, SD=5.53) the intervention (p<0.001). These results suggest that the intervention had a significant impact on improving carbon management practices in SMEs.

Table 10. Comparison of pre- and post-intervention results of carbon management practices in SMEs using a paired t-test

Carbon management practices	Pre-intervention (N=101)		Post-intervention (N=101)		t value	p value
	Mean	SD	Mean	SD		
We are aware of the risks and opportunities associated with carbon emissions	4.31	0.85	4.43	0.59	-1.38	0.170
We have the required knowledge and skills to calculate the carbon footprint of our business	2.18	1.03	3.81	0.92	-12.67	<0.001*
We are effectively managing our carbon emissions and successfully implementing carbon reduction projects as planned	2.17	0.88	3.63	0.80	-12.41	<0.001*
We are effectively tracking and reviewing progress towards our carbon management target	2.17	0.93	3.57	0.92	-10.95	<0.001*
Carbon management is effectively integrated into our procurement process	2.17	0.88	3.29	0.85	-9.10	<0.001*
Carbon management is central to our business activities and decision making	2.61	1.13	3.58	0.87	-7.46	<0.001*
We communicate our carbon reduction targets, strategies and performance to all relevant stakeholders	2.18	1.00	3.42	0.92	-9.42	<0.001*
We have carbon reduction behavioural change and awareness raising programmes for staff	2.23	1.07	3.56	0.97	-11.27	<0.001*
We are able to manage the conflicts between carbon management and core business activities/growth	2.71	1.05	3.63	0.83	-7.84	<0.001*
Carbon management practices (overall)	22.79	6.73	32.94	5.53	-12.95	<0.001*

Scale - 1-Strongly disagree, 2-Disagree, 3-Neither/nor, 4-Agree, 5-Strongly agree

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Client feedback on the project outcomes

- Table 11 shows the mean scores for SMEs' feedback on the project outcomes.

- These results suggest that in general, SMEs responded positively to the project and this experience met their expectations.

Table 11. Client feedback on the project outcomes

Client feedback	Mean	SD
Our productivity has improved as a result of the SiE support.	3.52	0.83
The support received met our expectations	4.37	0.73
The project support was responsive to the needs of our organisation.	4.40	0.72
The project was well organised and managed.	4.59	0.55
I would recommend the NTU Sustainability in Enterprise project support to other enterprises	4.60	0.64

SD - Standard Deviation; Scale - 1-Strongly disagree, 2-Disagree, 3-Neither/nor, 4-Agree, 5-Strongly agree

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Thank you

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