FINAL EVALUATION REPORT

SUMMATIVE ASSESSMENT OF LOW CARBON DEVON

March 2023

ASH FUTURES

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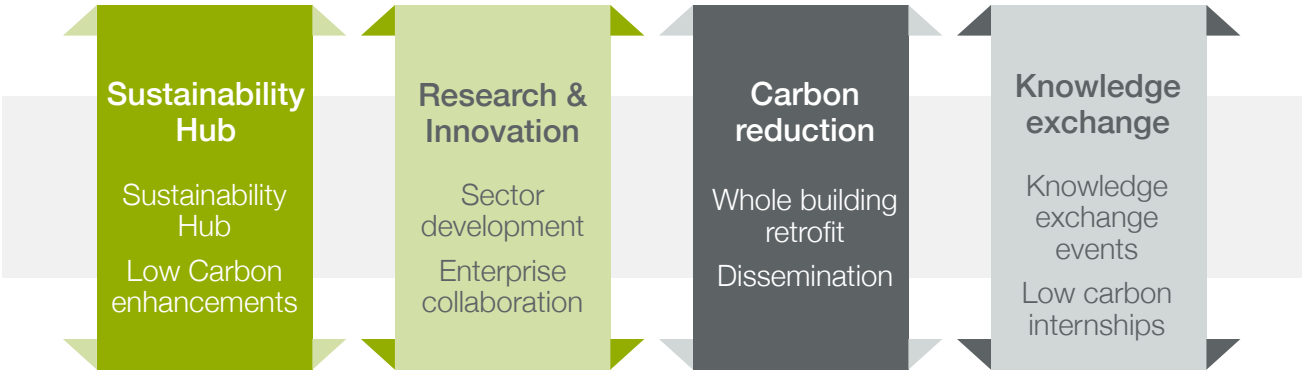
Low Carbon Devon is a project supporting eligible Devon (including Plymouth and Torbay) enterprises to shift to a low carbon economy through accessing research, business support and knowledge exchange at the University of Plymouth (UoP). This includes access to demonstration projects undertaken by the University of Plymouth. The project had a budget of £2.61m, with £1.53m coming from the European Regional Development Fund (ERDF). Approximately £650,000 is allocated to capital funding and £888,000 allocated to revenue funding.

The project had four broad strands, as illustrated below. These strands were designed to be complementary, and all contribute to the project's overall objective of developing an integrated programme that delivers a sustainability centre of excellence, energy reduction in public buildings, and knowledge exchange between the University of Plymouth and local Devon-based enterprises.



Positive change

Overall, the evaluation has found that the Low Carbon Devon project has made significant progress towards its core objective. The project has been an important vehicle to understanding what interventions will help businesses achieve their own low carbon objectives. Direct consultations with beneficiaries and stakeholders have shown that the project is effecting positive on-the-ground change. The project has been delivered at a time when the focus on decarbonisation and moving to net zero has become even more important. The policy context for the project has strengthened further since its inception.

What is striking about the businesses that have been supported through the project is their diversity. Many of the SMEs supported cannot be defined as working within the low carbon 'sector', but they all have strong objectives to reduce either their own carbon impacts, and/or develop products and services that will help reduce carbon impacts within the wider economy or society. Given how Low Carbon Devon has been structured through the different strands, the project has been able to help this diverse range of businesses – all working in different markets.

Our view is that the different strands have worked well together, and that the multi-faceted nature of the project has been well-designed. The project has been able to assist several businesses through the four Industrial Research Fellows that have been in place, working flexibly and responsively to business needs. The smaller more focused collaborations that were supported through the Devon Net Zero Innovation Fund represented a different form of support, but the range of projects shows that this has been an important channel to bring together businesses and the University of Plymouth. In some cases, these relationships between the University and a business are continuing beyond the project. The University has had a good focus on encouraging these longer-term relationships, and thinking about how it can continue to work and support the business beyond the ERDF funding.

The feedback that we have received with regards to the Low Carbon Devon 'Future Shift' internship programme has been very positive – both from internees and hosting businesses. The project has been able to support 39 internships through four cohorts, who have all worked on low carbon focused projects in their host business during a 3-month placement. The Future Shift programme has incorporated a sustainable leadership element (integrating the Plymouth Graduate Compass Framework) for internees which has supported the internee through growing their knowledge, expertise and confidence on sustainability. The feedback received shows this has been valued. There is evidence that several of the internees have continued to progress their careers within a low carbon focused context.

Strong team

The feedback received through this evaluation from both beneficiaries and wider stakeholders has been very positive about the support provided by the Low Carbon Devon project team. It is viewed as a tightly and well-managed project, diligently staffed by a small team of professionals and supported by a pool of wider academic expertise across the University. It is important to note that its delivery period also encompassed the Covid pandemic, and this presented delivery complications that the project team addressed well.

Its location within the University's Sustainable Earth Institute (SEI) has been beneficial in helping it broaden its reach. The leveraging of wider networks and existing relationships has been a particular benefit of the symbiotic relationship Low Carbon Devon has with the Sustainable Earth Institute.

Our independent evaluation view is that it has been able to 'punch above its weight' in terms of how it has been able to develop and deliver its messaging. It has taken a proactive approach to knowledge exchange and dissemination throughout the project period, including considering its legacy beyond ERDF funding. This can be illustrated by the fact that it has delivered 90+ events to approximately 4,500 attendees over the project period.

Consequently, our view is that its impact extends beyond directly assisting enterprises, although this is difficult to quantify.

Meeting outputs, outcomes and impacts

Our independent view is that output targets should be largely achieved and in some cases exceeded, with one outstanding dependency in relation to the remaining element of the capital programme. It is projected that the project will have assisted c78 businesses by the end of the project, 60 of which will have worked with the University in a relatively intensive manner.

The evaluation has found that the project has made very positive progress against all its outcomes. Beneficiaries interviewed for the evaluation are already acting on knowledge and information gained, even if it is to continue their R&D journey. It is clear from our evaluation discussions that the business benefits for some SMEs could be over the longer term. Nevertheless, our view is that participating SMEs are now much more informed about low carbon market opportunities and deployment opportunities (which we widely interpret as including energy efficiency, carbon foot printing and other sustainability activities). In this context LCD has contributed to development of new products, services and processes in SMEs, some of which are still developing and by no means all of which are reflected in the claimed/evidenced ERDF outputs.

In terms of impacts, our qualitative evaluation view is that progress has been made towards these but not in any way that can be robustly quantified. It is quite usual for impacts to be 'work in progress', especially in RD&I projects where SMEs are often still on their R&D journey. This is the case for Low Carbon Devon.

One concern that has been highlighted through the evaluation process relates to the geographical extent/coverage of the project. The project has had a clear geographical focus – in terms of the spread of businesses supported - on Plymouth and South Devon (including Exeter and Torbay). It has not been able to engage/reach businesses as well in more rural and peripheral parts of the target area despite having tried to do this.

The one area where we would encourage continued focus – including to the end of the project and beyond through continued SEI supported activity – is to continue to disseminate knowledge around the capital installations that have occurred across the University campus, particularly the innovative campus solutions that were delivered later in the project period. Continuing to showcase how the University's own low carbon focused capital investments (which go far beyond those supported through Low Carbon Devon) is important for the University to continue to act as a leader in this space.

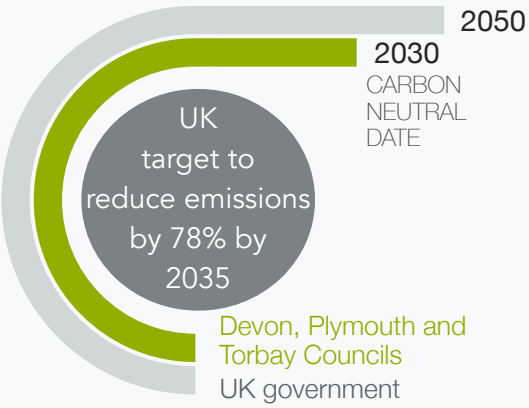
Key learning

University of Plymouth	Those designing / implementing similar interventions	Policy Makers
Take forward the internship model – and the active engagement of both interns and business hosts in sharing knowledge and experience - which has proven to give valuable outcomes for both interns and SME hosts. Take on board the benefits of working with SMEs at quite low levels of R&D activity in order to build UoP's knowledge exchange work and support more R&D in small businesses. If a Devon initiative is to be run again, identify that UoP could work with in order to maximise spread across Devon. Matching administrative requirements of ERDF with those of UoP has caused some issues e.g. on procurement. Useful to discuss how requirements will work at project development stage so that issues down the delivery line do not cause delays.	The model of the IRFs offers a very flexible model that could be adaptable to other situations. However, there is a need to be clear about the basic parameters of what might be provided. The Systems Shift events programme has proven to be a popular one. Its structure of raising awareness and taking action is a model which could be replicable elsewhere The internship model has also proven to be very valuable, well structured and productive. This could be transferred into other programmes – the active engagement of business host and intern being an important component in this. Where using a logic model to scope the project, ensure that impacts are commensurate to proposed activities and with indicators that can demonstrate change.	Encourage flexibility in business/ research collaboration and enable researchers to define the research needs with the business. Businesses are at different starting points in their R&D journeys and a rigid structure for an initiative cannot accommodate this. However, even within a flexible approach, our view is that there is a need to have some clear starting and end points as guidance.

Next steps

The project itself has had a clear focus on wanting to create a legacy after the current ERDF funding finishes in mid-2023 and this is welcomed. It also demonstrates that the project team has continued to think beyond the simple delivery aspects of the project. It is now focusing on this legacy aspect and conveying the message of what the project has achieved, its impact, what has been learnt and what needs to happen next to continue the low carbon journey. There has been a slight nuancing of the message from 'the Low Carbon Devon project' to 'a Low Carbon Devon'.

Our evaluation has concluded that there are many aspects of the project which would be important to continue, and it is our understanding that the University continues to investigate ways in which elements could be supported.



LOW CARBON DEVON: CONTEXT

Emissions per person in 2021

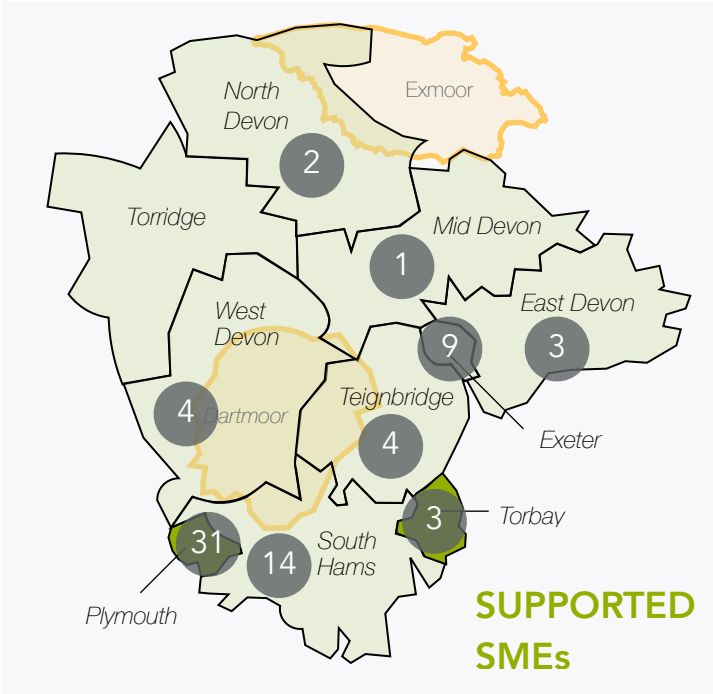
DEVON AREA	TORBAY AREA	PLYMOUTH AREA
3.6t CO_2	4.3t CO_2	4.3t CO_2

503,000 KWh

164t CO^2e

DECREASE IN UNIVERSITY BUILDINGS

90	4626	72	370
EVENTS HELD	ATTENDANCE AT EVENTS	BUSINESSES SUPPORTED	INTERNSHIP APPLICATIONS
39	23	5	19
INTERNSHIPS UNDERTAKEN	RESEARCH COLLABORATIONS	RESEARCH PAPERS	DNZIF ACADEMICS



CORE ACTIVITIES

- SUSTAINABILITY HUB
- CARBON REDUCTION
- RESEARCH / INNOVATION
- KNOWLEDGE EXCHANGE

PROJECTED SPEND: **CAPITAL** £1,094,6145

PROJECTED SPEND: **REVENUE** £1,518791

PROJECTED SPEND: **TOTAL** £2,613,405

LOW CARBON DEVON: ACHIEVEMENTS

TO FEB 2023

LOW CARBON DEVON — SUPPORTING ENTERPRISES TO REACH NET ZERO

1. Introduction

This is the Final Evaluation of the Low Carbon Devon project. It has been the subject of a longitudinal evaluation (illustrated in the diagram below), with an early observations report, two interim evaluation reports and this final evaluation which meets the requirements of Summative Assessment guidance.

The project

LCD is a project supporting eligible Devon (including Plymouth and Torbay) enterprises to shift to a low carbon economy through accessing research, business support and knowledge exchange at the University of Plymouth (UoP). This includes access to demonstration projects undertaken by UoP at its Plymouth campus, and which serve to illustrate the benefits of low carbon deployment. In broad terms, these demonstration projects form the capital investment component of LCD; the business support and knowledge exchange activities are the revenue elements of the project.

LCD has a total project budget of £2,613,405, with an ERDF contribution of £1,537,367. Of the total ERDF grant support, £649,484.92 is allocated to capital funding and £887,882.09 is revenue support. All matched funding has been provided by the UoP[1] - a total of £1,076,038. LCD is led by the University of Plymouth and there are no other delivery partners – although there is a wider steering group which was constituted of a range of external organisations with an active interest in advancing the low carbon agenda. The project is delivered out of the University's multi-disciplinary Sustainable Earth Institute, hence there are linkages with academic expertise across the University.

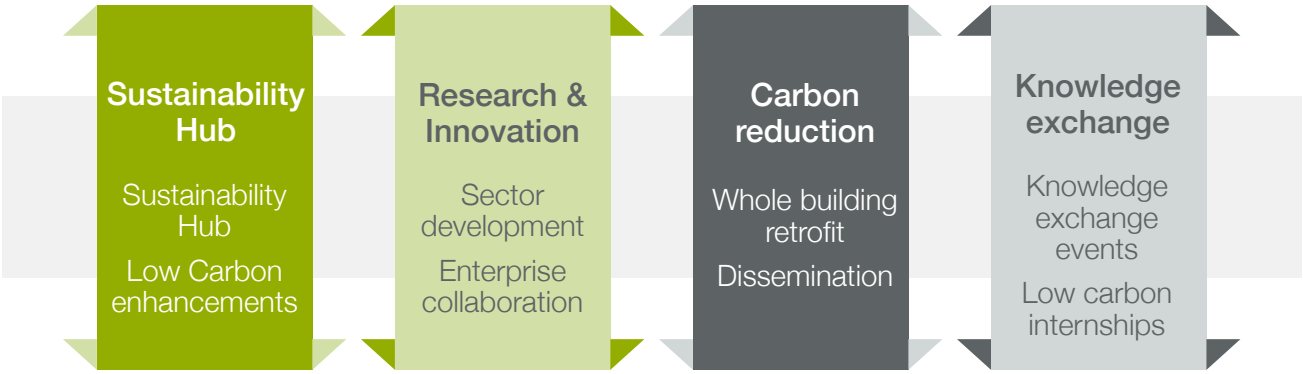
The project start date is given as 1st January 2018, although it is important to note that the Grant Funding Agreement (GFA) with the Managing Authority was not signed until October 2019. The project started 'at risk' following approval of the outline application - focusing on the capital element - which mainly covered refurbishment and retrofitting of Kirkby Lodge as the Sustainability Hub, the LED retrofitting in three university buildings and utilising UoP's matched funding.

Work on knowledge exchange and the enterprise focused revenue supported activities began once the GFA had been signed in 2019. Following the approval of a Project Change Request in 2022, activity is now scheduled to complete by May 2023, with a practical and financial completion date of June 2023.

[1] *Some of this has come indirectly from the University's successful bid into Salix Finance's Public Sector Decarbonisation Scheme*

LCD Activities

These are set out under four strands[2], as described below.



1. The Sustainability Hub

1(a) Sustainability Hub – Kirkby Lodge has been retrofitted to high environmental standards as the Sustainability Hub with a budget of £733,400. This has been provided as part of UoP's matched funding for the LCD project. The fit-out was to SKA Gold standards and it represents an 'exemplar' building in terms of some low carbon technologies[3]. The retrofitting also included the fitting out of a Communications Room and The Forum so that it can be a hub for research-enterprise collaboration and dissemination.

1(b) Low Carbon enhancements – described as a separate element in the ERDF application, these are further onsite campus developments to test and showcase new technologies including PVs, green walls, energy monitoring and energy data visualisation tools. Discussion indicates that in practice these have all formed part of the Sustainability Hub development (with one exception – the use of PVs which were installed on the Rolle building late 2021/early 2022). In that sense, 1(a) and 1(b) are not necessarily distinguishable or considered as separate strands.

2. Research and Innovation

2(a) Sector Development: This has involved the development of four specific market opportunities, with one Industrial Research Fellow (IRF) assigned to each based on their expertise and research background. The IRF work was business-led, responding to business needs raised in early discussions. The IRFs are supported with additional academic oversight/support through one or two supervising academics. The four specific foci of the IRFs are:

- Green walls and roofing: where the work of the IRF is to optimise the performance, effectiveness and viability of green walls in sustainable building design and to share information and best practice on this to organisations across Devon.
- Power Electronics: where the focus is on solar PV and other power electronic technologies, with LCD aiming to work with enterprises to develop and commercialise new/innovative power electronic technologies. The IRF work includes quantifying CO2 savings from deployed and developing new technologies.
- Creative industries: the intention here is to support a shift to low carbon practices and clean growth in this fast-growing sector, dominated by small and micro enterprises.

[2] *Initially there were three themes but this was re-cast into four at the Project Initiation Visit*

[3] *SKA is an environmental assessment and standard for non-domestic fit-outs and is owned and managed by RICS. See SKA Rating (rics.org)*

- Energy efficiency in buildings (occupant behaviour): this looks at how to motivate employee energy efficient behaviour at work, work with enterprises on energy management systems that can support them with the visual communication of products using different energy data visualisation tools and raise employee and visitor awareness about energy efficiency.

A minimum of 8 events across the four market opportunities were proposed to disseminate their work – two per theme. The breadth of events provided through the project (as discussed later) has significantly exceeded those initial objectives. The breadth of knowledge exchange and dissemination activities has been a notable characteristic of the project. The full delivery of events/ workshops is detailed in Annex A.

Research and enterprise collaborations have materialised in association with IRF activity. IRF interaction with businesses has led to an ERDF C1 ERDF output if the criteria of 12 hours of support has been met. Additionally, the collaborative work is also leading to an ERDF C26 research collaborations output and an ERDF C29 output (new-to-firm product) in some instances. Each IRF has worked with at least 2 SMEs on in-depth research collaborations, and over a reasonable timeframe. IRFs were recruited in July 2020 and broadly started their activities in September 2020. The contract period for the IRFs has been extended until end of April 2023. This has been helpful to allow the collaborative work to fully develop and give the opportunity to disseminate findings. In the latter stages of the project the focus has shifted onto completing the collaborations with businesses and disseminating findings, either through Low Carbon Devon events or through academic research publications.

2(b) Enterprise Collaboration: These are demand-led collaborations, largely leading from the knowledge exchange workshops. It was envisaged that 10 collaborations will come through this avenue, and that they will not include the four market opportunities that are covered by the IRF activity (2(a) above). This strand helps support new-to-market or new-to-firm products, services or processes in the low carbon/sustainability sector. Indirect financial assistance is provided in the form of researcher time to a maximum of £7,500 per enterprise. This support is delivered through academics[4] across the University of Plymouth. A key part of this demand-led strand has been the collaborations developed through the Devon Net Zero Innovation Fund (DNZIF). The researcher input is directly paid by LCD, so it is not a direct grant to the SME. The DNZIF had been initially intended to be a single call for 10 demand-led projects. However, because of limited demand in the first round, DNZIF was delivered through two tranches. In total eight SMEs have been supported through the DNZIF.

3. Carbon Reduction Projects

3(a) Whole Building Retrofit: The aim was that LED lighting retrofit would take place in four buildings on the University campus. This is associated with wider dissemination of the University's experience and learning to enterprises and public sector organisations, focusing on the application of new and different technologies and tools e.g. novel zoning of LEDs. Four buildings were identified for installation, with the work on three completed early in the project (the Scott, Smeaton, Fitzroy buildings). These 3 buildings were part-funded with the university's matched contribution coming from a successful application for Salix funding. The work for the final building (Rolle Building) has taken considerably longer to achieve. It was tendered twice, the second time in October 2022. The difficulty in progressing the project was due to escalating prices (caused by Covid and other factors such as the Russia-Ukraine war). The initial tender that was accepted had to be revisited due to these escalating prices. It is our understanding that the intention was that the

[4] *This equals about 300 hours of academic time*

contract to deliver the installation of LEDs in the Rolle Building in early 2023, with delivery following soon after. As it stands, we feel that it is appropriate to highlight this as one of the remaining risks with regards to project delivery – in terms of financial spend and output delivery (see later comment) and full achievement of project objectives.

The original intention was that there would also be development of an innovative testing facility to enable Devon SMEs to 'plug and play' i.e. test equipment etc. in controlled conditions, and with access to research expertise if needed. However, it is our understanding that this was tendered, but the tender returns were in excess of the available budget. Consequently, the project team has had to review possible approaches and an alternative simpler option was developed. This has two elements:

- Installation of innovative lighting configuration and controls in the Sustainability Hub to demonstrate the benefits of user control over lighting. This was installed in early January 23.
- Development of a 'low carbon monitoring facility' (LCMF) which has a range of innovative commercially available energy efficient monitoring technologies available in it for SMEs to use as a test facility. Equipment available includes a thermal imaging drone, acoustic sound camera, equipment for measuring thermal transmittance (U values) and air pressure measurement. This is now available to SMEs for use. The project held two Low Carbon Devon Technologies days in January 23 which showcased the Sustainability Hub as a LCD retrofit, the CobBauge Building as a LCD new build and the LCMF equipment as resources that businesses can access. It also plans a further dissemination event in early April. In addition, the project has also hosted other specific visits. For example, it hosted a visit by Plymouth Science Park (a landlord with multiple facilities/tenants) in early February – again demonstrating the LCMF. It has also received a visit from an SME wishing to develop a service assessing energy efficiency of buildings.

The LCMF is intended to still meet the objectives of this element of the project as far as possible– as set out below:

- Test and develop new innovative solutions and products for energy reduction and CO2 emissions with enterprises, including SMEs.
- Deploy and demonstrate a range of existing innovative, commercially available energy efficient technologies for the purpose of dissemination (as outlined above)
- Allow the Energy Efficiency in Buildings (Occupant Behaviour) Research Fellow to undertake more in-depth applied research into human factors and responses to the solutions and products. Again, the knowledge gained will be disseminated more widely (although it should be noted that this Research Fellow had left her post with LCD by the time the LCMF came into use by SMEs). It is our understanding that a temporary post has been recruited into the LCD project (using salary underspend), and this role is focusing on demonstrating the LCMF and support businesses in accessing the equipment. This role is also working with the academic supervisor for this IRF role.

3(b) Dissemination: This involves a programme of evaluation and dissemination events to showcase findings to Devon enterprises and other public sector organisations, in order to accelerate take up of energy efficiency/low carbon measures. C1 outputs may be attributable if SMEs attend at least 12 hours work of events. Additionally - and specifically in relation to the capital installations that are aimed to have an SME demonstration element there remains an expectation that C1 (and potentially C26 and C29 outputs) could emerge from this activity.

Dissemination of the LED lighting retrofit is targeted at public sector organisations (e.g. through the Plymouth Net Zero Action Group, which the SEI chairs) as well as SMEs. The intention was to use monitoring data 'before' and 'after' installation – focusing on data around cost and emission reductions. A methodology for measuring carbon emission reductions was developed (by Hulley and Kirkwood Consulting Engineers Ltd) for UoP and submitted to DLUHC[5]. However, the installation and initial use on/in University buildings took place during the Covid period. At various times during this period there were lockdowns (where use of the buildings was negligible) or many staff were hybrid-working (where use of the buildings was lower). It has been difficult to establish the change in energy use from a Business-As-Usual perspective.

The Plymouth Net Zero Partnership Action Group has been used as a forum for the dissemination of findings and learning from the capital installations. The group involves various Estates staff from different (often large) organisations, many of which are responsible for promoting sustainability of estates assets within their respective organisations. This is seen as a good channel to disseminate the lessons learned, data etc. from the capital elements of the project. The project has hosted tours of the campus highlighting the net zero activities being implemented by the university.

4. Knowledge Exchange

4(a) Knowledge Exchange events: 12 events were proposed in the ERDF application, although not specifically defined given the intention for them to be demand and/or opportunity led. In practice these have mostly been virtual events, although there has been a return to face-to-face events in the latter part of the programme – with many held at the Sustainability Hub.

LCD organised knowledge exchange events have been branded as a 'Systems Shift' programme with two elements:

- 'Inspire Ambition' workshops/events – raising awareness of low carbon opportunities
- 'Take Action' workshops/events - practical workshops focused on making changes

The members of the LCD team, as well as the project as a whole, is also an active participant in wider events, attending events provided by other organisations to help promote the project. Various team members are involved and active in other partnerships that are pursuing the low carbon agenda – helping to keep abreast of interesting developments elsewhere.

A list of events organised by/attended by LCD through the programme is set out in Annex A.

A key knowledge exchange deliverable was the Sustainable Earth Institute's (SEI) 2021 annual conference, with the title 'climate emergency – the race to net zero carbon', which was delivered through LCD support. This virtual event reached an international audience and involved the whole LCD team and associated academics. This event had 700 participants over the 2-day programme, with 1,100 having registered for the event. From this event, c85 Devon-based SMEs expressed an interest in having further involvement with LCD, helpful in terms of developing a pipeline of potential SME partners.

More recently (November 2022) LCD held an event 'Low Carbon Devon Showcase; practical stories and actions towards net zero' showcasing several SMEs it had supported as well as hosting presentations from key speakers on low carbon topics. Again, this was intended to spread knowledge and learning as well as raise the profile of the project and the need to address low carbon issues. This was an in-person event at University of Plymouth with an audience of some 130 people, drawing on presentations by students (interns) and staff at UoP, as well as SMEs and other

[5] *Noted in output review document dated March 2021*

organisations. Participants also had the opportunity to visit the Sustainability Hub and Rolle Building PVs as part of the carbon reduction dissemination activities.

In addition, it is also hosting a 'next steps' event in March 23 (entitled 'Low Carbon Devon Next Steps; the art of the possible'), which aims to work with supported organisations to explore what opportunities there are beyond the Low Carbon Devon project and to learn about networking opportunities.

4(b) Low Carbon Internships: The intention was for 35 enterprises to receive bespoke support to make a shift to low carbon solutions, through hosting internships from UoP students/graduates. The internships have been for 3 months (either part-time or full-time) and are fully funded by LCD. They are branded as the 'Future Shift' programme. As well as the internship with the SME, the Future Shift Programme incorporates a sustainable leadership development element for internees, supporting them in their internship and growing their knowledge, expertise and confidence on sustainability. The use of the Plymouth Graduate Compass framework[6] has been integrated with the low carbon internships for this purpose[6].

There have been four cohorts of internships – two in 2021 and two in 2022. In total 39 internships have taken place across the four cohorts. This final evaluation has drawn on feedback/information from the first three Cohorts – internees and SME hosts, as well as discussions with several businesses that have hosted internship opportunities.

[6] This is a UoP framework designed to support students in wider learning and skills development beyond their specific subjects, in four broad areas: academic, civic, professional and personal. It has been adapted to suit the LCD internship programme and is being linked to workshops, alongside the internship period. This specific aspect of the internship programme is being separately researched by UoP

SAGE TECH MEDICAL

SageTech Medical Equipment Ltd *successfully applied for the Devon Net Zero Innovation Fund to use the University of Plymouth's expertise to test and optimise absorptive materials they use to recover anaesthetic gases.*

SageTech Medical Ltd is a Paignton-based technology company, founded in 2015 by a team of scientists and engineers to reduce anaesthetic agents that are harmful to the environment. In recent years attention has turned towards the impact of potential greenhouse gases in anaesthetic agents. Currently these gases alone are responsible for around 2% of all NHS emissions – using a bottle of desflurane has an equivalent global warming impact as burning 440kg of coal.

Connecting the chemistry lab with business, Low Carbon Devon supported research into the capture of harmful anaesthetic gases exhaled by patients during surgery. The captured gas can be recycled and purified saving it from being released into the atmosphere and resulting in the creation of a reduced carbon product that can be resold.

The DNZIF funded ten weeks of practical research – overseen by Dr Lee Durndell and his co-investigator Dr Varina Dos Santos Durndell – enabling access to academic expertise and specialist laboratory equipment.

The outcome of this work is that two new innovations are being actively pursued by SageTech Medical to continue the development of its capture material. Following the successful improvement of their capture material SageTech Medical are in the process of scaling this work by seeking additional funding to continue their work with the University for a further 12 month project.

2. The evaluation brief

The brief for the LCD evaluation was to address the Summative Assessment requirements set out by DLUHC (formerly MHCLG), the Managing Authority for ERDF nationally[7]. These cover five broad headings (shown in the table below), with several subheadings:

ERDF requirement: Areas for evaluation.	ERDF requirement: Detailed questions to respond to.
Relevance and consistency	The continued relevance of the project in the light of changes in policy or economic circumstance Critical analysis about the appropriateness of the project design given its objectives.
Progress against contractual targets, reasons for differences and expected lifetime results	Whether the project has delivered as expected in terms of outputs and spend, factors explaining performance.
Delivery and management:	Experience of delivery and management and lessons learned. This is a more qualitative assessment of implementation. It also needs to incorporate to what extent the horizontal principles are integrated into and shaping delivery – accepting that environmental sustainability is fundamental driver for the project.
Impacts – economic impacts attributable to the project where possible (intended and actual)	Requires reporting on progress towards outcomes and impacts in the project logic model (with each outcome and impact discussed in the evaluation report). Also includes additionality, contribution to ERDF programme result indicators, and Strategic AddedValue that the project has created.
Value for money and cost effectiveness in the light of intended and unintended outcomes and impacts	Analysis of the value for money that the project has provided, benchmarked against other similar interventions where possible. This usually covers both quantitative and qualitative value for money
Conclusions and lessons learnt	Identifying lessons for - Low Carbon Devon (this is particularly relevant for the two interim evaluations and the ability to learn in order to improve ongoing project delivery). - Those designing and delivering similar interventions - Policy makers

In addition to meeting these requirements, UoP also indicated other project-specific evaluation questions in the brief. These are:

Impacts (all of which are considered in the impacts section):

- What are the perceived benefits to the participants in the project (enterprises, academics, students and graduates)?
- What were the short and long-term impacts of the project's activities on enterprises, the local economy and others (e.g. interns, academics)?
- What has worked well and not so well?
- Has the project had any wider impact?
- Who benefited most, and why?

Sustainability (the last bullet is considered in relation to Strategic Added Value, the first two in relation to impacts and objectives):

- To what extent will the benefits accrued by the project be maintained in the future?
- What will happen to participants when the project ends?

[7] *ESIF-GN-1-033 ERDF Summative Assessment Guidance v4*

- How are participants engaging with the University mechanisms for greater collaboration – e.g. KTPs, Innovate UK funding, REF Impact and KEF?

Efficiency

- What did participants think of our services? How can we improve them? This is covered by the summative assessment question on quality of delivery

Effectiveness

- Did we achieve all our planned outputs – if not, why not? This is the same question which the Summative Assessment addresses

Our Evaluation Work[8]

This has been a longitudinal evaluation undertaken in several stages, as noted earlier.

Initially an **evaluation framework** was developed to guide all three stages of the evaluation work. This scoped the evaluation approach and data collection methods and tools, mapping the latter onto the Summative Assessment questions. The evaluation framework has very much been our guiding document for each evaluation stage and has been reviewed at each evaluation point to ensure ongoing relevance. It is available as a separate document if requested.

An early '**Observations Report'** was then undertaken in October 2021 at the request of LCD at inception stage (not defined in the original evaluation brief). This reviewed processes (management, delivery and monitoring) and made early recommendations to help LCD develop and enhance their systems.

A **1st Interim Evaluation** was then undertaken in November – December 2021, reporting in January 2022. Again, this focused on process, management and delivery with some recommendations to aid this

The **2nd Interim Evaluation** report was delivered in November 2022. This began to focus on early indications of impact, reviewing feedback from the LCD internship programme, DNZIF participants (SMEs and academics) and the SME collaborations with IRFs. It also reviewed project progress and the implications of the PCR submitted and approved at the end of 2022.

This **final evaluation** draws on all our previous work as well as considerable primary and secondary research undertaken for this phase. It covers all questions required of Summative Assessments, as well as those posed by LCD in the evaluation brief. Specifically, this stage of the work has involved further consultations with businesses that have been supported through the programme. This final stage has involved direct interviews with 14 businesses – encompassing the main strands of the project (IRF, internship and DNZIF).

Annex 2 gives further detail on the evaluation methodology and the tasks undertaken at each stage of evaluation.

Structure of the Report

Our reporting structure for the Final Evaluation continues to follow the required Summative Assessment structure which has been developed through the 1st and 2nd Interim Evaluation reports. The remainder of this report is therefore set out as follows:

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[8] *Note that LCD is called the PULSE (Plymouth University Low Carbon, Sustainability and Energy) project on the logic model– a title which changed to Low Carbon Devon after the project was approved.*

- Section 3 - covers evaluation questions around context, relevance and consistency
- Section 4 - deals with progress towards contracted targets (outputs and financial)
- Section 5 - addresses management and delivery
- Section 6 - covers progress on outcomes and impacts
- Section 7 – looks at value-for-money consideration.
- Section 8 - draws together conclusions and makes recommendations

There is also an Executive Summary which can also be made available as a standalone document for dissemination.

Each section has conclusions using a Red, Amber, Green (RAG) rating approach The definition of the RAG does vary for each section, depending on topic. Very broadly it relates to:

Green – good achievements already made

Amber - sound progress towards achievements/targets, although not fully realised as yet

Red – limited progress towards targets/objectives, with a risk and lack of clarity regarding whether they will be achieved

Bird Eyewear *(https://findyourbirds.com/) is an eyewear company based in Exeter focused heavily on sustainability of its products. It develops innovative products using sustainable materials for its frames such as certified woods, renewable cork and recycled aluminium.*

As a B-Corp company it was speaking at B-Corp event and met the Knowledge Exchange manager for Low Carbon Devon. As an R&D focused business it had several projects at different stages of their development and these work packages were well matched against a potential internship.

In that context the internship has worked well. The business has actually hosted two internees, although the first had to finish early due to personal circumstances. The second Low Carbon Devon internee focused on two broad strands of work – the business wanted to detail and capture its carbon emissions, and it also needed to go through the re-accreditation process for its B-Corp status. The internee primarily focused on the first of these aspects, although that process helped with the re-accreditation process.

The internee's work is feeding into a Carbon Impact report which the business is developing and will be highlighted on the company website. The work also focused on the business' supplier credentials and their alignment against Bird Eyewear's own objectives.

The benefits of the internship are indirect. It will help visibility around its own low carbon credentials and ethos of the business. It is feeding into the marketing of the business, with the hope that it will help with conversion rates for people visiting the company's website.

Overall, the internship was a positive experience for the business. As a young, growing company it provided an opportunity to bring forward some of their work packages more quickly than they would have been able to. The business felt that the wraparound support provided by Low Carbon Devon to both the internee and the hosting business was helpful and led to a positive experience for all.

BIRD EYEWEAR

3. Context, relevance and consistency

This section reviews the policy context in which LCD is operating and changes within that context, in order to consider whether the rationale for the project remains relevant. It also reviews the project structure and targets and the possible impacts on these of external context changes.

The policy and economic context

The context at the time of the project submission

The logic model and ERDF application outline the context of the project when it was submitted. In broad terms it sets out how the climate crisis presents an opportunity for stimulating low carbon economic growth, but the speed of this development is stifled by an information failure. The Sustainability Hub is therefore identified as a resource which can act as a centre of excellence for sustainability research and practice, motivating low carbon deployment and stimulating academic support for new market opportunities.

The strands of activity that build on this – knowledge exchange, academic research, evidenced energy savings initiatives – all serve to address the information failure issue for Devon SMEs.

The ERDF Call

LCD responds to a Priority Axis (PA) 4 Rolling Call in the Heart of the South West Local Enterprise Partnership (HotSW LEP) area, of which Devon is a part, initially issued in 2016 and finally closing in June 2018.

- PA4 supports a shift to a low carbon economy across sectors. It has five investment priorities and all of these were included in the Call. These were:
- PA4a: Promoting the production and distribution of energy from renewable resources
- PA4b: Promoting energy efficiency and renewable energy use in enterprises
- PA4c: Supporting energy efficiency, smart energy management and renewable energy use in public infrastructure, including in public buildings, and in the housing sector
- PA4e: Promoting low carbon strategies for different types of areas
- PA4f: Promoting research and innovation in, and adoption of, low-carbon technologies

The Call in HotSW was particularly seeking projects that would, amongst other things:

- help SMEs reach new markets, create opportunities for development of new low carbon products and services and commercialisation
- support the growth of sectors/technologies with existing or potential advantage
- address low carbon challenges and opportunities

Changes to the context since project start and impact on project activity/delivery

The focus on transitioning to a low (or net zero) carbon economy has intensified since the project was first developed and submitted for ERDF funding, as more is known about the climate crisis. This has manifested itself in an ever-increasing policy focus at an international, national and local level. The need to keep global temperature rise within a 'manageable' threshold (the Paris Agreement sets this out as below 1.5°C) grows in urgency, as shown in the sixth IPCC Synthesis Report of 2023.[9]

[9] *https://report.ipcc.ch/ar6syr/pdf/IPCC_AR6_SYR_SlideDeck.pdf*

UK – National

Within the UK, there has been a proliferation of carbon reduction related policies. In terms of overarching context, the UK's sixth Carbon Budget has put into legislation the target to reduce emissions by 78% by 2035 compared to 1990 levels – seen as an ambitious target[10]. The ambition is to reach net zero by 2050.

As stated, there are a wide range of carbon-reduction related policies that flow from this overall legislative target. In terms of economic development, three are highlighted here:

- In 2020, the UK set out a 'Ten Point Plan for a Green Industrial Revolution' – putting the UK at the forefront of many green technologies and in the process creating new green jobs[11]
- In October 2021, the then Department for Business, Energy and Industrial Strategy (BEIS) published the 'Net Zero Strategy: Build Back Greener'. This builds on the earlier policy framework and sets out further policies for the keeping the UK on track to achieve its carbon reduction targets. It also sets out a vision for a decarbonised economy in 2050.

The 'Build Back Greener' Plan notes that intervention will still be required to address any potential market failures and continue to invest in innovation which will help commercialise new technologies and increase the options available to meet the challenge.

- The UK Hydrogen Strategy was published in August 2021 – a new low carbon solution to help the journey to net zero. It looks at the potential for growing a UK hydrogen economy. It sets out goals and principles for developing and scaling up a UK hydrogen economy and a roadmap of how to do this over the next 10 years. This includes discussion of its economic potential including jobs and supply chains

More broadly, other policy intentions are also supportive of low carbon activities. For example:

- The UK Environment Act passed into law in 2021, aiming to improve air quality amongst other things, as well as make better use of resources – the latter including a big focus on reducing waste
- There is growing interest and activity in carbon offsetting linked to reducing carbon footprints and pathways to net zero. Whilst not enshrined in policy as such there is now a very strong movement around carbon offsetting, including for businesses who are encouraged to reduce their carbon footprints and offset these appropriately. There are a number of tools available to help businesses do this
- COP 26 was held in Glasgow in 2021. This reiterated the urgent need to keep global temperature rise to 1.5°C or less, with the emphasis on 'real world' action to achieve that. The Climate Pact that emerged from COP 26 highlights that over 90% of world GDP is now covered by net zero commitments whilst 153 countries have put forward new 2030 emissions targets. The Glasgow Climate Pact describes this as accelerating 'the drumbeat' on achieving net zero. It also discusses accelerating collaboration between governments, businesses and civil society to deliver on climate goals faster.

More recently, the UK Government's commitment to moving towards its net zero ambitions was demonstrated by the announcement of the creation of a Department for Energy Security and Net Zero, as well as the creation of the Mission Zero Coalition launched in March 23. LCD fed into the Net Zero Review undertaken by the UK Government.

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[10] *https://www.gov.uk/government/news/uk-enshrines-new-target-in-law-to-slash-emissions-by-78-by-2035*

[11] *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936567/10_POINT_PLAN_BOOKLET.pdf*

Local

All three Upper Tier Local Authorities across Devon (Devon County Council, Torbay Council and Plymouth City Council) have declared climate emergencies in response to the climate crisis.

- In Devon, a range of public, private and voluntary organisations have come together to form the Devon Climate Emergency Response Group[12]. This group has been established to endorse the principles of the Devon Climate Declaration. An independent Net-Zero Task Force[13] was then established to develop the Devon Carbon Plan. The Director of UoP's Sustainable Earth Institute is a Core Member of the Net-Zero Task Force, with other academics from the UoP also advising the group. The Devon Carbon Plan has been published[14] with a headline target to reduce Devon's emissions to net-zero by 2050 at the latest, with a reduction of 50% by 2030 compared to 2010 levels. Again, the LCD project formally fed into the Devon Carbon Plan, highlighting x20 actions that the project could support, mapping against the LCD strands (i.e. internship, links with IRFs etc.)
- In Torbay, the Climate Emergency declaration in 2019 has led to the development of an Action Plan[15] which is working towards carbon neutrality by 2030 This focuses on an initial set of actions including support for small businesses to help them save money, through saving carbon, energy waste and water.
- Plymouth declared a climate emergency in 2019 and has a commitment to become a carbon neutral city by 2030. It has two action plans – a Climate Emergency Action Plan[16] which it and others in the Plymouth Net Zero Partnership[17] are working towards; and a Corporate Carbon Reduction Plan focusing on its own Council day-to-day activities and carbon reduction. As noted elsewhere, members of the LCD team are integral members of the Plymouth Net Zero Partnership.

Since the project was developed and started, the overall focus on transitioning to a low carbon economy has sharpened considerably. In our view, the overall justification and rationale for the LCD project has increased. The multi-faceted nature of activity within the project is addressing this overall need (transitioning to a low carbon economy) through a variety of ways. The overall climate crisis will of course require a multi-faceted and highly complex set of solutions. At a local level, the project should play an important part in developing knowledge within the SME community.

Other external impacts

A key significant change in context since the project has started has been the Covid-19 pandemic. This has affected the project in two main ways:

- It has required a change in how the project has delivered its support, principally a shift from a face-to-face and physical events and interactions to a model of online delivery. Whilst we feel that it has managed this shift well, it has constrained some aspects – we comment on this through the report. The project has now shifted to a hybrid form of support, including some face-to-face involvement with beneficiaries (either on a one-to-one basis or in a group context through events e.g. the Future Shift internship workshops have been delivered face-to-face with an online option for those not able to travel at the allotted time).

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[12] *https://www.devonclimateemergency.org.uk/governance/devon-climate-emergency-response-group/*

[13] *https://www.devonclimateemergency.org.uk/governance/net-zero-task-force/*

[14] *Devon Carbon Plan – Quick Reads – Devon Climate Emergency*

[15] *Torbay Climate Emergency Action Plan - Torbay Council*

[16] *https://www.plymouth.gov.uk/sites/default/files/CEAP_2019_2020_PlymouthClimateEmergencyActionPlan.pdf*

[17] *https://www.plymouth.gov.uk/environmentandpollution/climateemergency/plymouthnetzeropartnership*

- It has impacted on delivery timescales for the project such as on recruitment of staff. It also meant budgets for travel and subsistence and face to face events were under-used. This has created significant challenges for the project team to overcome, to try and maintain progress on project activities, outputs and keep to financial profile as much as possible.

  It also caused a delay in procuring and delivering the capital elements of the project e.g. the carbon reduction projects. These issues were accentuated by the significant increase in cost for some capital items that have occurred since Covid and heightened due to the impact of the events such as the Ukrainian conflict. This has meant that one element of the project (the LCMF) has only been installed and available for SMEs to use in the last few months. Having a strong legacy plan for this resource will therefore be important to ensure maximum benefit for businesses is obtained post LCD and the ERDF funded period.

Another change in context is the increasing cost of energy supplies. The last 12 months has seen a significant increase in the cost of energy, and these upwards trends have quickened throughout 2022 – with prices reaching historical highs at the end of 2022. This has now become a major concern for all businesses. The importance of highlighting this is that it is expected that this will provide additional impetus to improve factors such as improved energy efficiency, renewable generation etc. The 'push factor' provided by ever-increasing energy costs may act as an important stimulant to further efforts to improve aspects such as energy efficiency. Conversely, it has meant that some of the potential financial benefits to businesses from undertaking energy efficiency measures have been difficult to determine over the past 12 months. However, this doesn't undermine the carbon impacts of the support provided.

Realism of achieving targets

As stated above, we do not feel that there have been any changes in the policy and/or economic context that question the original rationale for the LCD project. Indeed, we firmly feel that it strengthens the rationale and justification for the support being provided.

The fact that the project itself and members of the team (and the wider Sustainable Earth Institute) are key members of the local networks and groups which are developing responses to the climate crisis demonstrates that the project could have a key role to play. The emphasis will be on how effectively it can deliver its learning through its knowledge exchange activity and overall project dissemination.

In terms of how this may have affected its contracted ERDF (output and financial targets), our independent view is that these were set at a scale that was achievable. Despite the external impact caused by Covid 19, evidence from the project over time has been that they remain achievable. We comment on this in the next section.

Certainly from a 'demand perspective', the social (the recognition that we need to do something now), economic (increasing energy prices) and policy (legislative commitments to reducing carbon emissions) influences have grown stronger since project start, confirming the rationale and context for the project.

Structure of LCD and appropriateness to meet objectives

LCD sets out one objective for the project:

To develop an integrated programme that delivers a sustainability centre of excellence, energy reduction in public buildings, and knowledge transfer between the University of Plymouth and local Devon-based enterprises

As set out earlier, LCD then put in place strands of activity covering both capital and revenue spend and intended to deliver different strands of activity to contribute to outputs, outcomes and impacts and ultimately this objective. We have summarised these strands of activity in the following diagram:

In the context of this section, our overall view is that the project has set out a structure that should deliver against its objective:

- The Sustainability Hub Centre of Excellence has been developed and has a range of demonstration elements and signage around the building to highlight these. Other demonstration equipment has been installed in other buildings of UoP
- The low carbon monitoring facility has recently been completed and is available for SMEs to use to test equipment and ideas
- Knowledge exchange has happened through both targeted collaborations with SMEs (internships, DNZIF and IRFs) and much more widely through the System Shift events programme

However, it has experienced some practical delivery challenges (already discussed):

- Delays in delivery arising from Covid 19 impacts
- Delays in procurement of capital investments, initially through Covid-19 impacts and then consequential impacts on suppliers and costs of materials

Additionally:

- We also perceive a practical challenge in demonstrating the benefits of some of the capital investments in UoP buildings beyond the Sustainability Hub itself. In other buildings, the investments are not so physically obvious and their physical demonstration capability therefore more limited, although this was addressed in the latter stages of the project as physical events were possible once more.

Activities and delivery are discussed in more detail in subsequent sections. At this point of analysis we remain of the view that the project set out a logic model which was well designed/aligned against the achievement of its core objectives.

Conclusion

Green = project remains realistic and appropriate

Amber = project remains partially realistic and appropriate

Red = project no longer very realistic or appropriate

Contextual changes and impact (pressure) on project delivery	Our overall conclusion is that external national and local policy changes have significantly strengthened the rationale and justification for the LCD project and the forms of support that have been provided. Other external changes/events, notably Covid 19, have had impacts and created pressure on project delivery. However, it is to the credit of the LCD team that they have managed to deliver all aspects of the project, albeit that some capital spend has only been achieved quite late in the project (and one element still to be delivered). In our view, legacy plans for these elements will be important to ensure maximum benefits for businesses and other organisations can be derived – beyond the lifespan of the LCD project.
Realism of targets and likelihood of their performance given contextual changes or project design weaknesses	Our independent view is that targets were set at a scale that was achievable. Despite the challenges of project delivery during and post the pandemic, we remain of the view that they were always achievable. This reflects our view that the project was well designed at the outset.
Appropriateness of project structure to meet its objectives	Our conclusion is that the project did set out a structure and logic model which broadly aligned against the achievement of its core objectives. The project has been well designed and structured to work towards its stated objectives (as commented later).

Prestige Packaging *applied to the Devon Net Zero Innovation Fund to help support the development of their innovative carbon-neutral packaging products through carbon-neutral production and distribution. Following their application to the DNZIF the Low Carbon Devon team linked the company with expertise within the University of Plymouth to assist with identifying new market opportunities and designing innovative and disruptive packaging solutions. This new collaboration combined expertise from Dr Anthony Rowbotham – Associate professor in Mechanical Engineering, working alongside research assistants. Master design students also helped with the later design stages of the project. Research Associate Amanda Burton began working on-site with the business one day a week. Amanda provided examples of carbon neutral processes within the business and created a detailed Action Plan of recommendations of carbon saving opportunities.*

Prestige Packaging are actively looking at reducing their carbon footprint by carrying out an Environmental Audit of current processes, setting targets for reducing impacts and creating an Action Plan to work towards environmental targets.

Enabled by the University of Plymouth expertise supported via the DNZIF, Prestige Packaging are now able to offer over a million new plastic free packaging alternatives to supermarkets. Once testing is complete, this will generate additional future sales, creating two full-time roles within the business and an estimated reduction in carbon output of over 200 tonnes annually.

PRESTIGE PACKAGING

4. Progress against contractual targets

This section reviews progress towards the contracted outputs for LCD, together with its budget and the split between capital and revenue funding.

Progress towards Output Targets

UoP submitted a bid under two of the PA4 priorities as stated above – 4c and 4f. The output targets which relate to LCD are those associated with the two PA4 priorities under which LCD was submitted (4c and 4f). These are listed below, with the target numbers set out:

- C1 – Enterprises assisted (65)
- C5 – new enterprises supported (7)
- C26 – enterprises co-operating with research entities (35)
- C29 - enterprises supported to introduce new to the firm products (15)
- C32 – decrease in energy consumption in public buildings (515, 388 Kwh/pa)
- C34 – estimated annual decrease in GHG emissions (181 tonnes/pa)

Additionally, LCD identified C30 as an output target (additional renewable energy capacity developed with a target of 0.0188 MW). It reported against this output in early 2022 (Jan-March 22) and included MCS Certificates for the Sustainability Hub and the Rolle building as evidence. As discussed, the project submitted a Project Change Request in Spring 2022. As part of this submission, one of the output targets (C26) has marginally increased, with others remaining the same.

The ERDF application set out how different strands of activity in LCD would contribute to specific outputs - see Table 1. Whilst reporting does not require this link to be made, it is useful to see how activities are intended to lead to outputs as context for review of progress in their achievement.

Table 1: Links between activities and outputs to be delivered

1a	Sustainability Hub	C30 - 0.0188 Mw; C32 - 72,420Kwh/year; C34 - 25.46 tonnes/year
1b	Low carbon enhancements	C30 - 0.0188 Mw; C32 - 72,420Kwh/year; C34 - 25.46 tonnes/year
2a	Sector development	C1 - 8; C26 - 8; C29 - 4
2b	Research - enterprise collaboration	C1 - 10; C5 - 1; C26 - 10; C29 - 5
3a	Whole building retrofits	C32 - 423,700Kwh/year C34 - 148.96 tonnes/year
3b	Dissemination	C1 - 2; C26 - 1; C29 - 1 ** (linked to innovative campus solutions)
4a	Knowledge exchange events	C1 - 10; C5 - 2
4b	Low carbon internships	C1 - 35; C5 - 4; C26 - 16; C29 - 5

** However, if an enterprise attends other KE events for at least 12 hours then they will also be counted as a C1 output.

Table 2 sets out reported progress on outputs by LCD to date (end of December 2022), together with their assessment of projected achievement by project closure – provided by the project team. These outputs targets – both end-of-programme and in-quarter targets are based on those set out in the Project Change Request. We subsequently comment on this. The RAG definitions in this report are based on those outlined in the DLUHC guidance.

Following on from the 2nd interim report, it is encouraging that the project has begun evidencing the achievement of C29 output (new-to-firm products), with the expectation that more will be evidenced/claimed as the project draws to a close. The expectation is that this will flow through from the IRF, DNZIF and internship strands. As previously commented, the expectation was always that these were going to be 'back-ended' in the programme.

Table 2: Progress on outputs as at end Dec 2022 (Q12 Claim)

	Original GFA	Revised PCR target	Total at time of evaluation	% target	Projected to end of programme	% target
ERDF Capital Expenditure (£)	£1,212,536	£1,104,077	£842,613	76.3%	£1,094,614	90.3%
ERDF Revenue Expenditure (£)	£1,400,869	£1,509,369	£1,276.242	84.6%	£1,518,791	108.4%
C1 No. enterprises receiving support	65	65	72	111%	78	120%
C5: No. new enterprises supported	7	7	9	128.5%	10	142%
C26: No. enterprises cooperating with research institutions	35	39	58	148.7%	60	171%
C29 No. enterprises to introduce new to firm products	15	15	10	66.7%	19	127%
C30 Additional capacity of renewable energy production	0.0184	0.02668	0.02731	102.3%	0.02731	102.3%
C32 Decrease in primary energy consumption in public buildings (KWh/year)	515,388	515,388	288,189^	55.9%	456,680	88.6%
C34 Set. GHG reductions (tonnes CO2e in a given year)	181	181	88.4^	48.8%	153.9	85.0%
Key	Greater than 95%		between 85% and 95%		less than 85%	

^Note that there has been an error in previous reporting on this output, reflecting cumulative total rather than annual savings. It is our understanding that this will be rectified in the Q1 2023 quarterly claim/progress report.

C1 - Enterprises Assisted

The intention has always been that that these were to be achieved through a combination of internships, knowledge exchange events, IRF research across the four market opportunities, other research/enterprise collaborations achieved through the DNZIF, and dissemination around building retrofits. The project has achieved a significant (72) number of C1 outputs. Therefore, it has already exceeded the contract target and should be seen as a considerable achievement for the project.

C5 – new enterprises supported

As shown in Table 2, the contractual target for this output has now been fully achieved. It has supported 9 new enterprises against a target of 7 – again, these outputs having been delivered through the IRF, knowledge exchange and internship activities.

C26 – enterprises co-operating with research institutions

These were mainly expected to come from the IRF and DNZIF participants. They represent longer-term and more sustained collaborative relationships. Our discussions with IRFs indicate a guide of a minimum of 40 hours of IRF time with the enterprise in a C26 context. IRFs previously identified several SMEs where a strong level of engagement was achieved. Consequently, the project has now significantly overachieved against the contractual target – cooperating with 58 businesses in a relatively in-depth manner (including the internships) against the contractual target of 39.

C29 - New to the firm products

Since the 2nd interim report the project has begun to claim/evidence new product development within supported businesses – with 10 C29 outputs claimed, and an expectation this will increase by the project close. The project hopes that 9 more new products can be claimed/evidenced.

Again, this has been delivered through a mixture of IRF, DNZIF and internship activity. The ERDF Output Definition guidance for C29 (new-to-firm product) states that 'supported projects that aimed to introduce new to the firm products but did not succeed are still counted' - not that the new to firm product or service must be operational.

C32 – Decrease in energy consumption in public buildings

A methodology for calculating this (and C34 GHG reductions) was commissioned by LCD. This has been submitted to and agreed with DLUHC (Appendix 4 of Claim 5). The C32 indicator needed a specific approach to be developed, given that the definition provided[18] was not wholly relevant to the type of work carried out through LCD. The methodology now allows LCD to capture an improvement in energy efficiency, with an anticipated annual decrease in energy consumption figure estimated. LCD has reported against this output indicator, based on the work already carried out. We are aware that one IRF has also been monitoring energy data on these buildings.

The project has reported against these targets in previous quarterly progress reports. In Claim 5, it included a report undertaken independently that estimated the decrease in annual primary energy consumption of public buildings (C32) and GHG reductions (C34). This was completed on five buildings across campus – Fitzroy, Smeaton, Scott, Rolle and Kirby Lodge – noting at the time of the report the energy improvement works for Rolle were still in detailed design stage and not yet implemented. Consequently, some of the benefits noted below were modelled expectations.

Building	Annual lighting energy decrease, including controls (kWh/annum) (C32 output)	Annual tonnes of carbon saved, including lighting controls ($kgCO_2e$) (C34 output)
Fitzroy	71,537	25.1
Smeaton	140,040	49.2
Rolle	227,148	79.9
Kirby Lodge	63,954^	9.6
Total	**502,679**	**163.8**
Scott	12,658#	4.5
Total	**515,337**	**168.3**

Source: Sustainability Hub – Low Carbon Devon – Hulley and Kirkwood – March 21

^ Given the nature of improvements at Kirby Lodge this related to general improvements in energy efficiency

This did not include lighting controls so is set out separately here

[18] *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/719940/ESIF-GN-1-002_ERDF_Output_Indicators_Definition_Guidance_v6.pdf*

This shows that just the improvements made to the campus buildings to date has the potential to deliver a good proportion of the C32 and C34 targets. However, given the delays in installation of the LED lighting in the Rolle building, some of this may only be evidenced relatively late in the project period. Therefore, there is a dependency on the completion of all the intended capital elements of the project in terms of both reduction in energy consumption and GHG savings (see below). This was noted in the last progress report submitted by the project – with the overall decrease in energy consumption and GHG to be reported after the successful installation of the LEDs in the Rolle building. Given this capital element has still to be delivered then this may be viewed as a risk at this stage of the project.

C34 – GHG reductions

The methodology for calculating this was developed alongside that for the C32 output, so the same points made above also apply here. The delivery against this target is reflected in the table above. It does mean that the final figure is 85% of target – a slight underachievement, although this does depend on what will be delivered through the Rolle LEDs.

Financial achievement against Budget

LCD has spent 81.1% of its total budget as at end December 2022 (the latest claim available). This offers a differing picture in terms of the capital and revenue elements of the project. In terms of capital, it has spent 76.3% of its total capital budget. The major outstanding capital item relates to the installation of LEDs within the Rolle building (with £220,000 allocated to this element within the overall capital budget). The indicative timescale is for spend/defrayal to occur in the last quarter of the project (April-June 2023) and we reiterate the risk noted earlier. The project itself recognises this risk. The financial projections provided by the team show that c99% of the capital budget will be spend by the end of the project. However, it is projected that there will be a projected marginal overspend against the revenue budget (c0.6%). The project team are confident that the full budget will be spent by project end, just with a different allocation between capital and revenue spend.

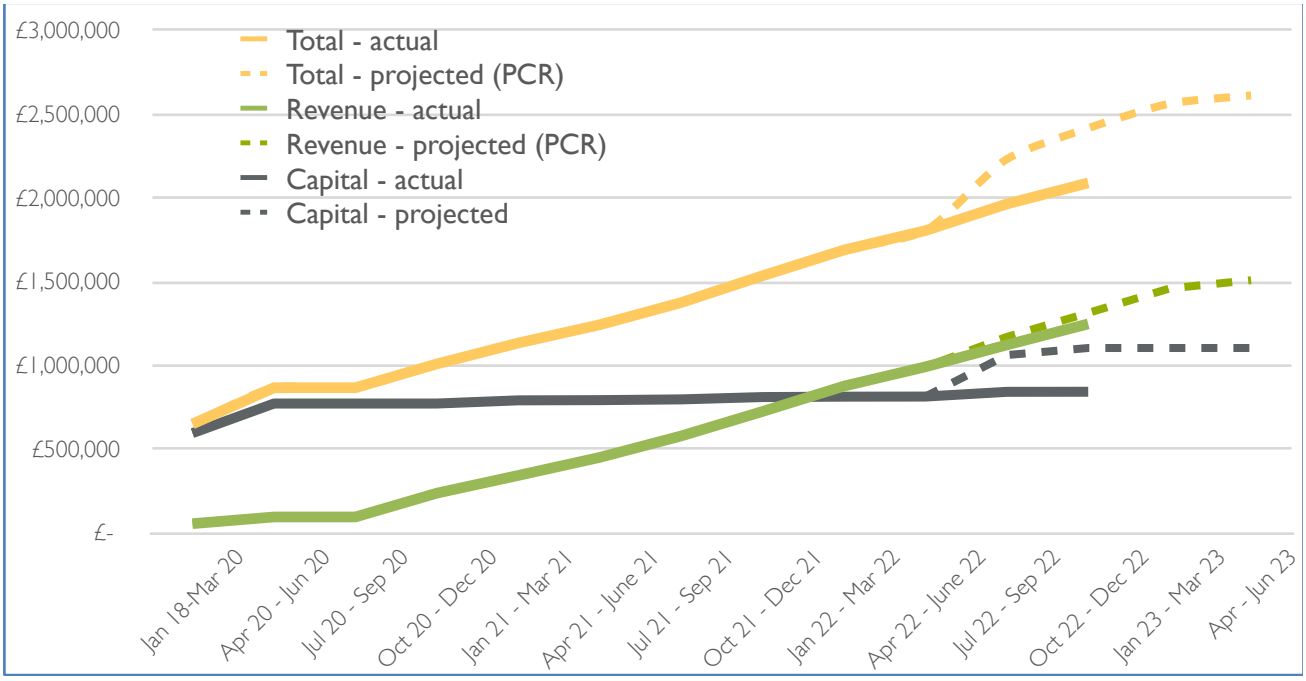
There are also some outstanding spend amounts expected from the Innovative Campus Solution – expected to be incurred in Q1 2023.

Revenue expenditure has been broadly consistently throughout the project period – reflecting that it largely represents the salary costs of the Low Carbon Devon project team. As noted previously, expenditure against the revenue partly reflected the fact that the revenue-funded activity did not commence until the ERDF application had been fully approved and GFA signed off. Revenue expenditure has now reached c97% of its original in-quarter profile, and 84.6% of its original end-of-project budget allocation. The extension of the project – including the extension of staff contracts - provided further opportunity to spend against the revenue budget. In our view, the risk that was highlighted in the 2nd interim report has reduced, although – as with most fixed-term projects – some risk remains as project staff begin to find opportunities elsewhere and begin to leave. Consequently, there may be some slight underspend against staff costs.

We recognised that the submission of the PCR in 2022 provided the project an opportunity to review its budget profile, and this has been useful.

Overall, expenditure is 87.6% of in-quarter profile and 81.1% of its end-of-project budget allocation. We have presented the cumulative expenditure data in a series of charts below – showing both the expenditure profile as reflected in the approved PCR. As would be expected the historical profile of spend exactly matches the PCR profile up to June 22.

Chart 1: LCD expenditure (total, capital and revenue) versus PCR profile[19]



Source: (LCD quarterly claims and PCR)

Table 3: Progress against budget as at end December 2022 (from Q12 claim)

Indicators / Expenditure	PCR funding profile	Total achieved at Dec 2022	% of Target
Capital costs	£1,104,077	£842,613	76.3%
Revenue Costs	£1,509,369	£1,276,242.09	84.6%
Total project costs	**£2,613,406**	**£2,118,856**	**81.1%**

Conclusion

For this section, the key should be read as: **green** = target should be broadly met; **amber** = target will be partially met; **red** = target will not be met.

Progress against contracted output targets	We are confident in the project achieving its contracted ERDF output targets. There has been good progress since the 2nd interim evaluation report, with more businesses in the process of being supported and not yet claimed. In some cases, contractual output targets are already now significantly exceeded. Our independent view remains that the output targets are achievable. The one dependency does seem to relate to the installation of LEDs within the Rolle building on the university campus, and those outputs which are dependent on the evidencing around the reduction in energy consumption and GHG savings. The risk around new-to-firm products has reduced. Some pressure remains on evidencing those final few projects to fully achieve output target. The LCD team are aware of this.
Progress against contracted budget	The project has spent c81% of total project costs to date, with two delivery quarters remaining. The key risk relates to the capital spend on installation of LED lighting within the Rolle building. The RAG rating here now reflects the closing of the gap in budget that had been noted in the previous evaluation reports, as well as the projected underspend against the capital budget allocation. We feel it is appropriate to continue to highlight as a risk at this stage of the project, although we recognise that the risk is diminishing as the project draws to a close. This risk mostly focuses on the capital element of the project.

[19] *Note that the project incurred little expenditure during July-Sept 2020, so to consolidate time and the process it was agreed with DLUHC that the project could submit a narrative progress report and then submit financial claims for July-December 20 in a single claim*

EMERALD GREEN POWER

Emerald Green Power *(https://www.emerald-green-power.com/) is a spin-off company which is an industry focused business manufacturing green hydrogen from renewable sources. It was formed in 2020 to focus on opportunities within the UK and Europe. However, as part of its expansion it has had difficulties in accessing appropriate skills. It was engaged with the Low Carbon Devon project already through various discussions and the internship programme was then highlighted as a potential opportunity to bring in some support through a short-term placement. The business received a high number of applications for the 3-month internship, and the skills offered compared favourably with the skillset held across the wider Devon area.*

It already had a reasonably large internship programme through its parent company Hydro Star, but the Low Carbon Devon internship programme provided an opportunity for resource to focus on specific project needs at the time. The business had recently won a contract from he Department of Business, Energy, Innovation and Skills (BEIS) and the Low Carbon Devon internee was able to focus on a specific element of this large project. The business was looking into the feasibility of a establishing a 100MW hydrogen project on the Marsh Barton industrial estate in Exeter and the Low Carbon Devon internee focused on various elements – including looking at other hydrogen installations in industrial estates elsewhere and feeding into the development of wider business plans.

The BEIS project was the first stage of the ongoing work, and the input of the internee was integral to progressing onto further development/feasibility work. The business was so impressed that they would have wished to offer a permanent job to the internee, although he chose to pursue other opportunities elsewhere in the low carbon field.

5. Delivery and management

This section looks at the delivery and management of LCD, drawing on review of project documents and discussions that have taken place throughout the evaluation process.

Management and Staffing of the Project

The Management Structure

The LCD Project Director has responsibility for the delivery of the project, although this post is only part of the Project Director's responsibilities within the University of Plymouth. His time spent on LCD is 0.1 FTE. The Project Director reports to the Deputy Vice Chancellor (Research and Enterprise).

The Project Director is supported by the Deputy Director, also the manager of the Sustainable Earth Institute. Again, this role sits alongside other responsibilities for the Deputy Director – representing 0.3 FTE.

The day-to-day operation and delivery of LCD has been the responsibility of the Project Manager. This is a full- time role specifically dedicated to the project. This management structure feeds into a Steering Group which provides advice and oversight and whose responsibilities are set out in the Terms of Reference (see below comment). The University of Plymouth is the sole delivery body for the project. There is no wider partnership.

The Staffing Structure

This management structure oversees several roles focused on the administration and delivery of the project. These are:

- Project Administrator
- Marketing and Events Officer
- Knowledge Exchange (KE) Officer
- 4 Industrial Research Fellows

These posts have been largely devoted to the LCD project, although some roles may be shared between individuals.

In addition to these roles, there are several other posts across the University of Plymouth which devote some of their time to LCD. This includes some further marketing and comms support, administration support, and supervising academic time. All of these roles have some time allocation to the project and their time is captured and evidenced through their Outlook calendars. The amount of time allocated to the academic supervisory role is relatively small (c5%-10% of the academic time). There was also some compliance support provided at the start of the project period to oversee the processes put in place.

The feedback that we have received reiterates the view expressed throughout the evaluation process (1st and 2nd interim reports) - that the LCD team functions well and has been well managed. The overall approach to delivering the project is set out in its Project Management Handbook, with roles and responsibilities of key roles set out. Our view has consistently been that it is has been well managed from both a delivery, financial management and strategic perspective.

The experience of working directly with the LCD team for the purposes of this evaluation has also informed our view – it has consistently been a well-managed project which is focused on providing quality support to Devon SMEs. The team have been engaged and enthused in terms of meeting

the project's objectives of the move to a low carbon economy. Each of the team members brings different skillsets, which are complementary. The project team has regular meetings, each of which cover differing needs – as set out below.

Meeting	Frequency	Attendees
Operations Team Meeting	Weekly	LCD Project Core Team
Research and Innovation Catch Up Meeting	Monthly	LCD Project Core Team and IRF Supervisors
Sustainability Hub Low Carbon Devon Steering Group	6 Monthly	Steering Group Members

The team works together in a variety of ways – dependent on need – although some of the roles do have a focus on their own remit – notably the IRFs. However, our discussions with the IRFs also highlight that they do work together when required. Although they are all focusing on their own research area and market opportunity they do work together when the opportunity arises or there are linkages to be made.

In the earlier stages of the evaluation process (particularly in the 1st interim report) we commented that there was a risk related to the short-term contracts in place for the 4x IRFs. This risk has been addressed somewhat by the extension of contracts – with IRFs in place to the Spring 23. This was one issue that was addressed through the Project Change Request submitted in 2022. We have consistently felt this was a positive outcome and allowed the IRFs to fully complete their collaborative research projects, as well as continuing to focus on dissemination where appropriate. This is now occurring as the project draws to a close. However, it is also important to note that at least one IRF has now moved onto a different position within the university, and it is realistic to expect that further moves will occur as their contracts (as well as wider project staff) draw to an end. This is not unusual in a fixed-term project such as Low Carbon Devon.

Again, in the earlier stages of the evaluation process (1st interim report as well as in the early observations report) we commented on our view that there appeared to be a great deal of dependence on the KE Officer in terms of project activity. The KE Officer role has been largely responsible for the internship programme, but also had responsibility for designing and formulating some of the programme of events, communicating the opportunities that were available through the DNZIF and IRF collaborative research etc. The role is also responsible for facilitating the early engagement in the collaborative research projects – helping to establish initial contact between the business and the IRF on occasion. We raised a concern that the KE Officer role could be a 'pinch point' in the flow of work and was noted as an observation. The project has previously responded that it recognised this risk and had put in place some mitigating measures (as reflected in the 1st interim report). Our view has consistently been that the risk remained through the project – particularly as the KE officer is now a 2-day week role (having incrementally decreased over the past few months), but the risk is easing as the programme nears its final phase. For example, the internship programme is largely completed, and the DNZIF strand is also drawing to a close. It is also useful to highlight that the workload of the KE Officer was carefully monitored/ managed by the Project Manager through delivery. Following on, the reduction in the KE officers working pattern has been considered by the project management in the context of actual and projected workload. The reduction in hours could be seen that the risk (as previously highlighted in the initial interim reports) has been well managed by the team.

It is useful to note that the approved PCR had an allowance for increased expenditure for the Marketing & Events Officer during the latter stages of the project, reflecting the increased emphasis on dissemination, messaging around impact and communicating the legacy of the project which is now taking place.

Effectiveness of Governance and Management Structure

Governance and Management

The LCD project formed a Steering Group whose membership is made of a wide range of individuals representing key organisations in Devon. Firstly, our view remains that it has done well to construct this group which brings considerable skills and experience to the oversight of the project. In addition, the Steering Group represents the opportunity for linkages to be made with other related low carbon activity. For example, working with the Devon Green Innovation Fund (a Devon County Council initiative)[20] who is on the LCD DNZIF awards panel to illustrate the usefulness of linking with other partners, LCD have had input into that scheme to ensure that it complements and does not compete with the DNZIF for example. The feedback we received in this final evaluation phase is that there was a good level of communication between Devon County Council (DCC) and Low Carbon Devon to ensure that both schemes were complementary to each other. For example, the Devon Green Innovation Fund was aimed at supporting larger projects (larger in scale than the DNZIF), did not involve collaborative academic research, and was not able to be delivered within Plymouth or Torbay local authority areas. Devon County Council is a member of the LCD Steering Group.

A further example is the representation of South West Manufacturing Advisory Service (SWMAS) on the Steering Group and the subsequent close working relationship with its own 'Make it Net Zero' programme. The two projects have developed and hosted collaborative events/workshops for SMEs.

The Steering Group has a Terms of Reference which guided its role and remit within the context of the project. It originally met on a six-monthly basis. Early in this evaluation we attended a Steering Group meeting to facilitate a short group discussion. This was then followed up with a short online survey to members. As a result of this we made some initial observations and recommendations based on the feedback received and our own observations (October 2021). These have very largely been actioned by Low Carbon Devon. We have reviewed Steering Group minutes and our view is that it has appeared to have played a useful role in helping to guide the project, with particular consideration made exploring linkages between organisations/activities. The early observations we made with regards to its focus appears to have been recognised and there has been a shift from programme delivery to more strategic issues.

In broad terms, it has ensured a greater emphasis has been given to more strategic issues and making linkages, with less onus on programme delivery unless something needed to be highlighted to group members. However, in some of our discussions with Steering Group members it was also highlighted that the scope of influencing the project was quite limited, given that it needed to deliver against the ERDF contract.

Steering Group meetings now take place 3x per year to maintain momentum and closer working between members, and an online platform was developed where information for Steering Group members was posted (although we have not reviewed and therefore cannot comment whether this was a well-used resource).

[20] *https://www.devon.gov.uk/news/challenge-fund-launched-to-help-growth-of-community-energy-sector/*

Feedback from the project team has indicated that the Steering Group has provided a useful resource and forum through which to highlight the work of the project, as well as seeking guidance and having the reassurance of oversight.

Overall, the establishment of a Steering Group seems to have been a useful activity, particularly as the University of Plymouth could have chosen to have delivered the project 'unilaterally'.

Communications

As previously shown, the LCD project has specific resource for marketing and communications activity – a marketing and events officer (MEO). The MEO leads on events development, delivery and promotion/communications for the whole LCD team, to ensure a consistent LCD feel for all events. In addition, in a variety of ways all members of the team also have had some responsibility for 'getting the message out' with relation to the project. This could be either promoting opportunities for support e.g. internships, DNZIF, collaborative research etc. or highlighting what the project is learning and achieving e.g. knowledge exchange activities. In terms of this latter role, the KE Officer and IRFs play a fundamental role. The MEO works closely with the other team members in terms of specific activity e.g. promoting an upcoming event; promoting the active collaborations with enterprises on social media. In particular, there has been a close working relationship with the Knowledge Exchange Officer – meeting regularly to discuss planned events, messaging etc.

The project has had a Communications Plan that aims to provide guidance to its marketing and communication activity. This sets out aspects such as branding, compliance to ERDF reporting requirements etc.

From our discussions held it is clear that the project utilises a variety of channels and methods to promote the project and communicate to key stakeholders and target audience. In term of electronic channels it primarily uses the LCD LinkedIn page and Instagram accounts and also the Sustainable Earth Institute's Twitter Account. The LinkedIn account now has c1,300 followers (up from c1,000 followers at the stage of the 2nd interim report) and the SEI Twitter account currently has c3,410 followers (up from c3,350) – therefore both providing good reach. The Instagram account was launched in January 2022 – primarily aimed at students/graduates as well as creative industry businesses given their tendency to use that channel as well as smaller enterprises and sole traders that aren't on LinkedIn. The Instagram account currently has c490 followers. The feedback from the marketing and communications team has been that LinkedIn has been a particularly useful resource for promoting the project activity and reaching out.

It also uses other methods such as the SEI e-newsletter and social media accounts for the University and other organisations such as the Heart of the South West LEP, Devon and Plymouth Chamber of Commerce, North Devon Manufacturing Association, Plymouth City Council etc.

As the project has progressed, there have been gradual shifts in the focus of marketing and communications activity – broadly described in three phases:

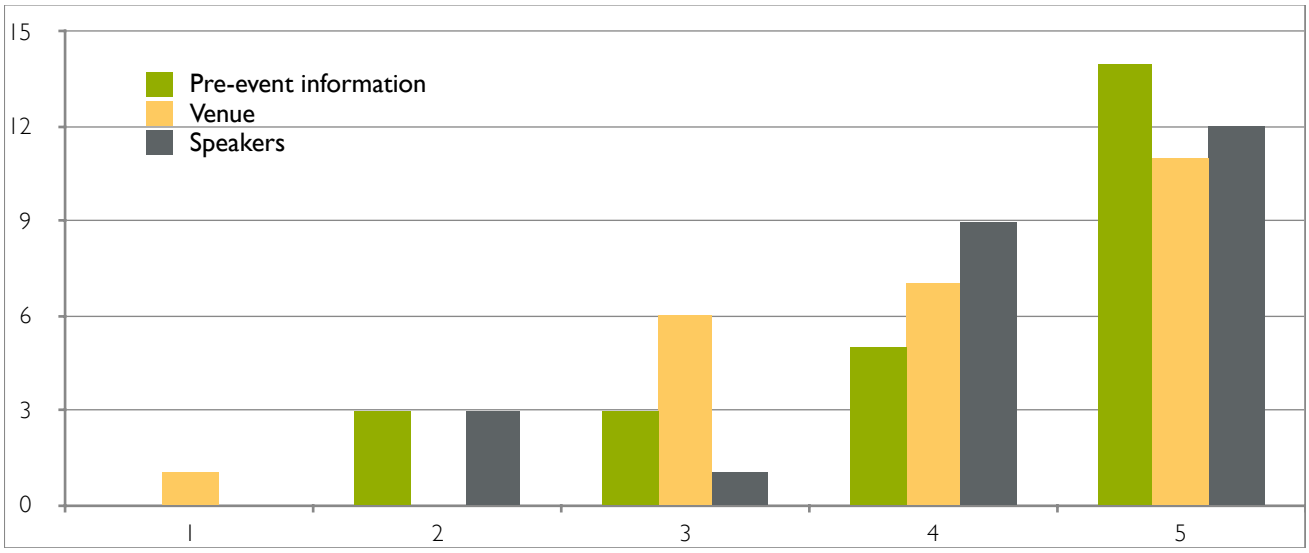
1. Initial development and establishment of the Low Carbon Devon brand
2. Promoting the project and its offer
3. Promoting the work that has been done, sharing good practice and knowledge exchange and dissemination

In addition to these communication channels marketing and communications activity also takes place through a plethora of networks that either the project has, or individual team members. A review of the networks that are used for communications is extensive – certainly covering Devon through a variety of networks. There is also the 'soft' networking that takes places between

individuals. Finally, there are the events themselves which represent an effective way of raising awareness of the project. For example, the fact that c800 people attended the SEI event in 2021 meant that the project was able to communicate widely – and beyond Devon (recognising that its ERDF funded activity is focused on this geography). Similarly, around 130 people also attended the showcasing event – which was a physical event – in late 2022.

The feedback from 25 individuals who attended the showcasing event was largely positive – as shown in Chart 1.

Chart 1: How did you rate the (showcasing event) on a scale of 1-5 (where 5=excellent) (n=25)



Source: Feedback information from Low Carbon Devon showcasing event

"Great to be challenged and encouraged by what organisations are doing"

"I always reckon that if I gain one useful insight from such an event it's been worth going. I gained several and there are possibly a couple more still to come from follow ups so it was well worth it"

"Left feeling very inspired"

"The format of short presentations is to be commended. No-one rambled, people were clear and succinct"

As part of this evaluation we have also reviewed some of the communications content that has been produced by the project - and our view is that this continues to be of a high quality. Whilst some of the communication activity has a clear LCD focus, it is also fair to say that other communications focus on the wider 'low carbon' question.

The feedback from the marketing and communication team is that they have been mindful to utilise different brands according to the audience. In some instances, the communication has purely been focused on the Low Carbon Devon brand, whilst in other occasions the communications emphasis may have been more through the SEI and/or University of Plymouth brand.

It is also useful to highlight that the marketing and communication team felt that the project has engaged with a slightly different audience than perhaps it envisaged at the outset. For example, it has had good traction with organisational types such as social enterprises, low-carbon oriented organisations such as environmental consultancies. It has felt that it has had to work harder to connect with other organisations such as large manufacturing businesses, even though specific efforts were made. This is also true from a geographical perspective (see comment elsewhere).

The main observation that we continue to conclude in terms of communication and messaging is that that the project continues to largely 'punch above its weight' in terms of the breadth, scale and reach. For a relatively focused project in terms of available resource, we feel LCD has been successful in raising awareness of its activities. There are some specific observations here:

- We do feel that the ERDF funding has allowed flexibility to give a good level of project visibility. The fact that several of the posts i.e. the KE Officer and the IRFs, have a focus within their respective roles of linking in with networks, communicating interesting research outcomes etc. has been beneficial for communications and raising awareness.
- Clearly, the project has benefited from being part of the wider University of Plymouth structure, specifically being within the Sustainable Earth Institute and its existing communication reach and established 'brand'.
- We feel the project has been successful in keeping a good flow of information through its various channels. The impression you get when 'following' the project is that it is very active and embedded within the low carbon agenda (within Plymouth, Devon and beyond).
- However, in terms of visibility we have consistently questioned the level of awareness across Devon as a whole. The project appears to have supported several businesses in Plymouth and the surrounding area, with less evidence that it has fully extended its 'reach' into rural and northern parts of Devon.

In the 1st interim report we questioned whether it would be beneficial to target specific marketing and communications activity on those areas which have had apparent 'gaps' in delivery to date. We are aware that specific marketing and communication activity was targeted at these more rural areas e.g. offering the carbon footprinting workshops to be held in North Devon (although due to a lack of interest subsequently not held in the area), as well as links with North Devon Manufacturing Association etc. – although it still remained difficult to gain traction. We are also aware of links established with the Centre of Technology and Innovation Excellence (CoTIE) in Barnstaple, and LCD communications also appear in business support focused on rural areas.

However, it remains that the majority of organisations that have been assisted through the LCD project have been located in Plymouth and South Devon. We have mapped this again in this final evaluation report and highlighted later. However, we cannot necessarily comment on whether this outcome is a result of lower appetite for support from organisations in more rural areas of Devon, or whether it has partially been as a result of difficulties 'getting the message out' to those more peripheral areas. In terms of the latter, we cannot fully comment on whether this was complicated by Covid disruption. Certainly one aspect that has been highlighted in our discussions is perhaps the perceived distance of those areas/businesses from the University of Plymouth.

In addition, feedback from the marketing and communications team indicates that another area that was slightly more problematic related to the DNZIF – as perhaps demonstrated by the low uptake/scale of applications in the initial round. Initially it was difficult to develop the initial messaging around the scheme, including what the 'offer' was. The initial quality of applications in the first round demonstrated that applicants didn't fully understand what the DNZIF was aimed towards. The marketing and communication team subsequently utilised examples of collaborative research from elsewhere in the University to illustrate the type of opportunity that was available through the DNZIF. This resulted in improved quality of applications and some increase in interest.

Whilst the project was able to build a faithful audience through its programme of events, it was sometimes difficult to translate this into potential businesses that could be supported through the other strands of activity i.e. translating into ERDF outputs.

Finally, as the project moves towards its closure the focus of the marketing and communication activity has been on legacy and conveying the message of what the project has achieved, its impact, what has been learnt and what needs to happen next to continue the low carbon journey. There has been a slight nuancing of the message from *'the Low Carbon Devon project'* to *'a Low Carbon Devon'*.

Our discussions with SMEs and feedback from internship hosts suggests that SMEs have found out about LCD from a mix of sources. This includes direct contact from the team, and sometimes existing relationships. Our view is that proactive engagement of the team has been important throughout the project. Personal networks have played an important and useful role, and team members have been encouraged to develop their own networks for the purposes of getting the LCD message out. The fact that several members of the team attended certain events meant that it presented a range of skillsets.

Several of the businesses that we have spoken to have indicated that they were initially proactively approached by the project, highlighting the support that was available and to open discussions about how the business' own requirements could align with the wider project objectives.

The project is now looking to use the networks and contacts it has created to forge stronger links between businesses and organisations involved in the low carbon field across Devon. In has continued to deliver a series of carbon-footprinting workshops. This was developed in partnership with SWMAS and Plymouth City Council. For example, a physical event at the Sustainability Hub allowed an opportunity for local carbon consultancy businesses to showcase their work to abut 50 attendees. The project has been exploring the potential to create a network of carbon consultancy businesses – again with a focus on its legacy.

These types of activities can enhance Low Carbon Devon's strategic reach and influence, either as a legacy of the ERDF funding and/or as a foundation on which to build future activity.

Delivery of the capital elements of the project

The capital elements of the project have been delivered by UoP through external contracts – using UoP procurement processes. They primarily took place in the first 12 months of the project.

They are intended to act as exemplars and live resources on which subsequent research and knowledge exchange work can be placed. A core facility has been the refurbishment of Kirkby Lodge as the Sustainability Hub. It provides a range of educational and collaboration facilities. It has been refurbished to high environmental standards, achieving SKA Gold Star rating. Features include a green wall, with specific research focus being provided by an LCD IRF. This work will look to optimise performance and viability of green walls in sustainable building design and share best practice. This facility has attracted growing interest – for example with national media[21].

In practice the pandemic initially constrained use of the Sustainability Hub as intended – it was shut for actual use all through 2020 and into 2021. Only in more recent times has it been accessed to the levels envisaged. However, we do know from discussions with the IRFs that the capital investments of LCD have proven useful for research purposes (e.g. in relation to energy savings, energy efficiency, green walls).

The pandemic clearly had an impact on the availability of these investments as practical demonstrators throughout 2020 and 2021, as facilities where energy savings and low carbon benefits can be demonstrated. It was more difficult to evaluate reductions in energy use when the

[21] *https://www.dailymail.co.uk/sciencetech/article-10238597/Living-walls-plants-cut-homes-energy-bill-reducing-heat-loss-30.html*

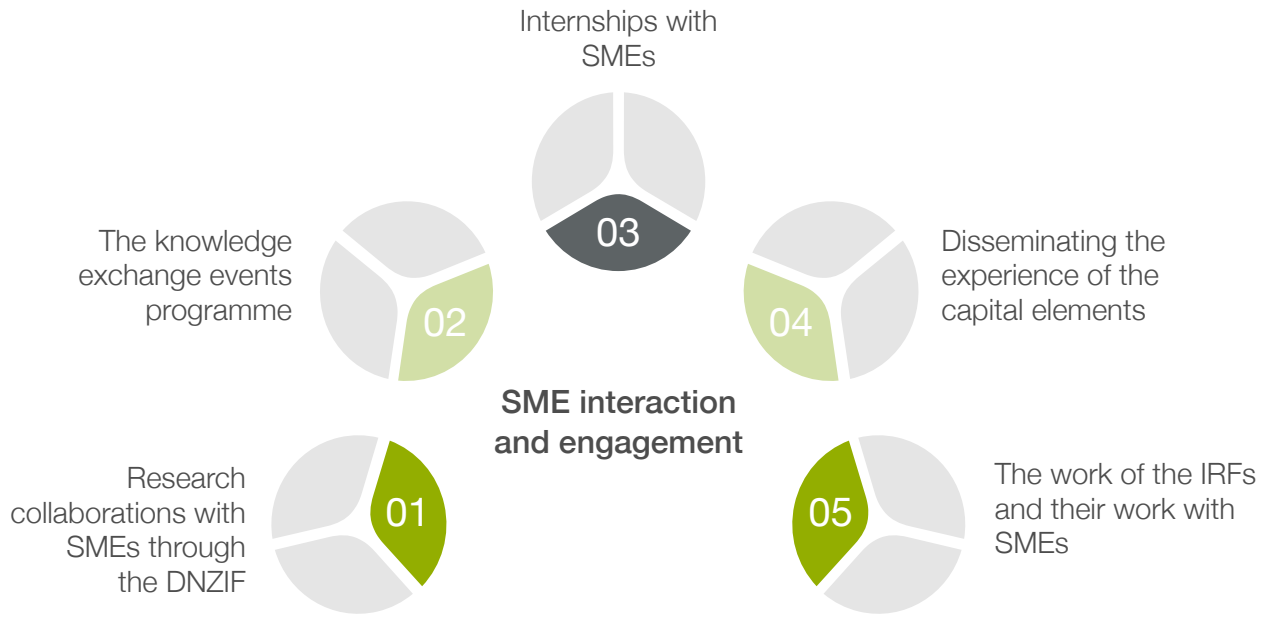
buildings have not been used to the pre-pandemic levels e.g. the impact of homeworking. We remain interested in how the innovative testing facilities and equipment will be used to the benefit of LCD, and more importantly the wider business community as intended. It has been carried out quite late in the programme so the scope for wider engagement is relatively tightly time-limited within the context of the project. However, the project has hosted events which have drawn interested organisations/individuals in to look at the new equipment and how it could be accessed.

As previously commented, the installation of LEDs in the Rolle building has been a problematic element of the project through a reasonable proportion of the project. Attempts at tendering for the contract to install the LEDs has been made, with previous tender submissions being greater than available budget. The project has been impacted by rising costs in the industry. The project team aimed to address this in the tender that was issued at the end of 2022 by building in flexibility into the tender i.e. price per floor, to try to ensure that submissions could match available budget. This contract commenced at the start of March 23, with delivery scheduled for Q2 2023.

4.4 Knowledge Exchange Management and Delivery

The Knowledge Exchange model adopted

Interaction with SMEs is being achieved in several ways, as set out in Section 1:



Knowledge exchange core processes

Engagement with the SME community has taken place across all LCD team members. The KE Officer and IRFs have had an outward-looking focus. Our view is that team members have been proactive in identifying and engaging with SMEs that the project could potentially collaborate and support. We have several examples of where the businesses have cited that they were initially approached by the project, sometimes as a consequence of informal discussions at events, networks etc.

However, our discussions with the team have indicated varying degrees of ease identifying and engaging with the right SMEs. For example, where the IRFs are working with new and novel technologies, then finding potential SMEs partners in Devon can be quite hard as it is a very nascent market in Devon. An example of this are green walls, with relatively few organisations/ businesses (or certainly those that would be eligible within the ERDF project) active in this activity.

The process of knowledge exchange requires some core elements – having effective management, delivery and monitoring (providing evidence for outputs claimed). The key elements to this are:

- An **Organisational Needs Analysis** (ONA): for the SME as a confirmation of eligibility for LCD support and evidencing a C1 output claim. The ONA will be completed and signed off by the SME prior to support as evidence of eligibility and then providing evidence for the SME to be claimed as an ERDF output. We reviewed the ONA form in our October Observations Report and recommended two changes to enhance its use. Both of these have been adopted by the project
- An **Activity Log**: each SME interaction has an activity log associated with it, which records time spent by LCD staff on working with an SME. Activity logs have to be signed by the SME and LCD to evidence and agree the activity for monitoring. This is valuable evidence. We have reviewed some associated with the internship strand. Our view is that they are quite extensive, particularly for the internship strand where internee time is collected (a three-month internship is counted as 481 hours of support).

Beyond this, different strands of activity have different associated application and paperwork processes, which we cover in the next subsection on selecting beneficiaries.

Selecting beneficiaries

Selecting beneficiaries happens in various ways depending on the strand of activity:

- For the DNZIF and internships, there are application processes in place (noting that some of the relationships between the academic and business were already in place although this does not necessarily mean that they were actively working together prior to LCD).
- For research collaborations with the IRFs, the process is totally flexible and has been influenced by informal discussions and initial contacts
- For business support building on events, the process is self-selecting by SMEs who attend

DNZIF application process

We have reviewed the application form for the DNZIF. The questions requested of applicants seem appropriate. There have been two application rounds for DNZIF. There were seven applications made in the first application round of which five were eligible. These application forms were quite comprehensive in terms of the level of information provided (although noting earlier comment about whether these applications were well matched against the objectives of the DNZIF). In the second round, there were four applications of which three were successful – 8 in total.

Accessing Academic partners

One aspect of the DNZIF process is that applicants needed to apply with an academic, requiring a degree of relationship between the business and academic. In Round 1 all the applicants stated they had had undertaken previous RD&I activity, and four out of the five applicants had existing relationships with the UoP. None of the supported SME's was therefore undertaking RD&I for the first time. The inference is that this strand is not necessarily stimulating businesses to be innovative for the first time, but allowing those businesses to progress innovative activity. Our interviews in this stage with businesses supported through the DNZIF also confirm that most of them were 'innovation active', with several quite heavily involved in R&D. In some cases (although not all), the DNZIF has enabled existing relationships between SMEs and UoP to develop, rather than enabling new relationships to be established. In some other cases, the collaborative relationship was new.

However, what has been key (and based on feedback from both the DNZIF beneficiary and the relevant academic) has been that DNZIF funding helped provide the opportunity for the university and the business to work together. The funding – albeit relatively small in research income terms – did provide a vehicle for collaboration to start. As commented elsewhere, in some cases this now has the potential to continue through other routes.

We noted in the 1st Interim Report that it can be hard for SMEs new to RD&I/University of Plymouth to find an academic to work with. In response to this, Low Carbon Devon did offer a 'matching service' to SMEs to make the connections with academics in Round 2. This was helpful.

This difficulty was illustrated in the responses to an online survey that was sent to SMEs interested in DNZIF but who did not submit applications. In both rounds, several SMEs made an initial expression of interest but did not progress to an application. A survey was sent out 13 SMEs who had expressed initial interest in both DNZIF rounds, to see why they did not make a full application. Six responses were received to this survey which provides some useful feedback.

Notably, respondents made the point about the difficulties of finding an academic partner (and with available time). Five of the six respondents to the survey got as far as identifying an academic partner, with four of these finding it either 'difficult' or 'very difficult'. The following table sets out reasons why those responding to the online survey did not progress applications (note that SMEs could select more than one option). All the SMEs responding also indicated that they had not progressed the RD&I work they had been considering – although 3 of the 5 definitely would still like to pursue it (2 were not sure). Most identified the need for external support to do this (with all still interested in working with UoP on this). Our discussions with DNZIF SMEs for this final evaluation and feedback in the online survey both indicate that the project team played an important role in brokering contacts between SMEs and academic partners.

Responses to some of the key questions in the brief online survey are shown in the following charts.

Chart 4: How easy to understand how the activity fitted with the DNZIF? (n=6)

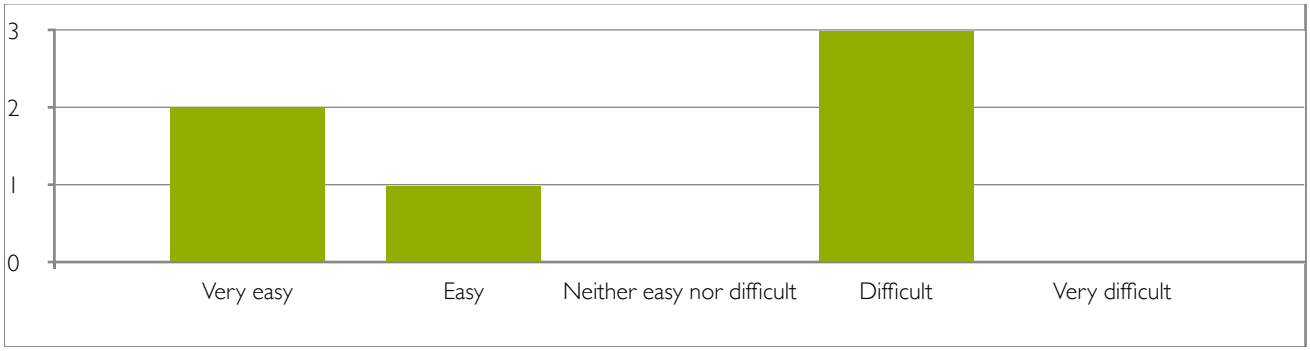
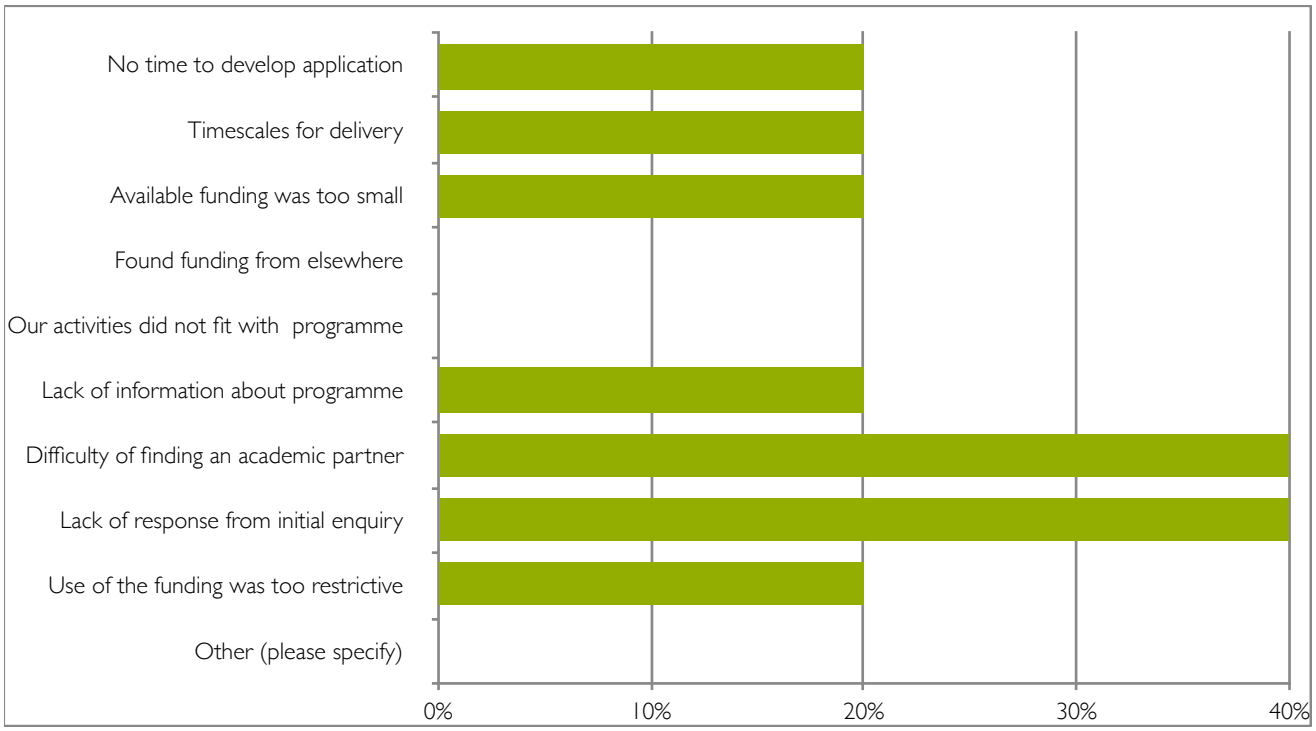


Chart 5: Why did you not progress your application to the DNZIF? tick all that may apply



The application process

The application guidance note sets out the assessment criteria that was used. In Round 1 we had sight of the final score achieved by each applicant, although we have not seen (a) what is given to assessors in terms of what and how to score; and (b) who makes the final decision. We understand that the assessors undertook this individually and then came together as the Awards Panel to collectively discuss the scoring and decision. We note that the applications scored between 44 and 57 out of a potential total of 70 (62% - 81%). It may have been valuable to review those applications which received lower scores – potentially providing pointers for the application and guidance process for future similar schemes (although beyond the timeframe of the LCD project).

We also note that assessors had some queries for applicants recorded on the scoring sheets. We understand that any queries are referred to the applicant. Responses are assessed by a subgroup of the awards panel and, if sufficiently addressed, the decision of the Awards Panel is confirmed.

The range of activities that have been supported through both DNZIF rounds are varied and could lead to interesting and valuable results. All the applicants identify that their next steps would be seeking out further funding for ongoing development. One acknowledges that if this stage does not show good potential results, then their next steps might be different. However, it is not clear whether all collaborations will necessarily directly lead to new products or services – for some it is a step in the journey, but not necessarily the end of their product development. Our consultations with DNZIF businesses indicate that the collaborative projects will not all lead to new product development – and perhaps it was unrealistic to expect that to happen in all cases.

Internships

Internees were assessed through an application process. Alongside this, SMEs were required to write a brief for what they sought in terms of an internship and this is advertised across the networks that LCD have used. Internship opportunities have been advertised within UoP and externally to graduates.

Applications needed to include (a) CV, (b) a covering letter outlining why they would fit the internship opportunity they are interested in; (c) an example of something achieved which they are proud of. We reviewed the applications of the successful internees. Their enthusiasm comes through in the covering letters particularly. The CVs are mainly not specifically tailored to the internship work opportunity, so asking for something written around an achievement seems very helpful – it is both a practical demonstration of ability to write coherently etc. and also in revealing what is important to them.

The SME intern hosts went through a deliberative application process, rather than a formal application form, which consisted of meeting with the KE Officer to discuss their project idea, scope and proposal. This was then reflected upon by both parties, with a follow-up meeting to confirm the specific details and discuss whether this fitted within the scope and suitability of the project. The decision was then made to proceed or not. In the meantime, the KE Officer checked enterprise eligibility and secured completion of the ONA form..

LCD set up an internship agreement with an SME host. This made clear that the SME was totally responsible for interviewing and selecting their intern[22] – UoP did not provide any comment on the applications received, they just advertised the intern opportunity. The SME was also responsible for managing the internee, making payments and claiming this back from UoP.

Feedback from Cohorts 1, 2 and 3 internees and SME hosts indicates both sides found the application process relatively easy. Comments made included reference to good support from Low Carbon Devon, notably the Knowledge Exchange Officer. This was also confirmed in our interviews with SME hosts for this final evaluation, with several commenting positively on how supportive, and integral to the process, the KE Officer was throughout their internship.

The other factor to highlight from our interviews with SME hosts was the positive feedback regarding the quality of applications they received. The majority felt the quality and the skillset offered from applicants was high, particularly set in the context of the wider Devon workforce where a shortage of 'green skills' remain. Following on, there was a high level of satisfaction regarding the internees they were able to access through the Low Carbon Devon internship programme, with only a very small amount of placements not working out as hoped.

COHORT 1, 2 AND 3 INTERNEES (12)	VERY EASY	QUITE EASY	QUITE HARD	VERY HARD
Finding out about the internship opportunities	5	6	1	-
Understanding requirements from job descriptions	8	4	-	-
Completing the application	8	4	-	-
Obtaining further information if required	9	3	-	-
Being interviewed for an internship post	6	5	1	-

[22] *We note that the activity log for one SME has an entry of time for recruiting, interviewing and appointing the intern.Whilst the SME host has the responsibility for this, the KE officer role is flexible and can help the SME in writing job descriptions and preparing the recruitment process if required.*

COHORT 1,2 AND 3 SME HOSTS (16)	VERY EASY	QUITE EASY	QUITE HARD	VERY HARD
Finding out about the internship opportunities	11	4	1	-
Completing paperwork (ONA/internship agreement)	8	8	-	-
Preparing job description for intern task	7	9	-	-
Shortlisting, interviewing and agreeing with LCDevon	7	8	1	-
Managing the intern while in post	8	8	-	-
Attending change leadership workshops with the intern	-	8	3	5

Suggestions (some of which have been taken on board) made to improve the process included:

- Setting out dates for sustainable leadership workshops at the outset so that required time commitments are clear (although useful to note that the key dates are set out by the KEO at the outset – the responses above indicate that these were not fully understood/recognised). Several of the businesses we spoke to commented that there was a reasonable time burden/ commitment to attending these workshops, although most recognised they played a useful role. The broad consensus was that these could have been slightly less frequent
- Making sure the interview process is not too close to the intern start date - to avoid problems for internees of making arrangements in time to start the internship
- Reviewing internee applications before submission to ensure graduates are effectively maximising the communication of their relevant experience i.e. providing some help and guidance to potential internees in terms of the presentation of their case

IRF – SME collaborations

Discussions with IRFs throughout evaluation process identified that finding SMEs for collaborations had been a very ad hoc and individual process to each IRF. There is no set application process or approach to identifying SMEs, although, as stated earlier, each SME has to complete an ONA to confirm eligibility, once a collaboration opportunity has been identified. Networking and informal discussions have played an important role in this strand.

Our discussions with IRFs indicate that identifying SMEs for collaborations very much reflects the dynamics of the 'sector'[23] each IRF is working in. For example in the creative sector, the motivation of a creative based SME is not one of RD&I initially - they are looking for business support and funding. So the discussion needs to build and develop from their initial interest, not the LCD agenda as such. This contrasts with the Green Wall 'sector', which is new and emerging and with relatively few SMEs active (providing the underpinning justification for work in this area) – so the need has been to be proactive in explaining the opportunities that may exist to elicit interest.

[23] *We use the word sector here – recognising that the IRF strand is not necessarily sector-focused, with the exception of the creative industries IRF*

From the discussions we have had with IRFs, our view is that each has approached the question of securing SME collaborations imaginatively and proactively. As a result there have been some very interesting collaborations that have emerged. The flexibility in the current arrangements has been a benefit, allowing IRFs to tailor it to both theirs and the SMEs needs.

We have interviewed the IRFs again as part of this final phase of the evaluation and when asked to reflect on the flexibility of the approach they have confirmed that it was a key element of how they engaged with their beneficiaries. In a couple of the discussions one possible tweak/amendment to the process could have been to establish slightly more defined set of expectations about when the collaboration through the project could have been drawn to a close slightly more 'neatly'. One possible alternative approach could have been to:

1) Initial stage of engagement and developing project proposal – to be kept as fluid/flexible as possible to allow for the IRF to find out about business needs/aspirations etc. and how to match against IRF expertise and research focus
2) This would then move into a more structured and more clearly defined phase which sets out agreed deliverable and the deliverables/milestones when the collaboration would then be drawn to a close

This may have been a beneficial alternative way of structuring the approach, allowing sufficient flexibility and fluidity to those early engagements, but then providing a bit more structure to ensure that both parties to have a broad understanding of timelines and time commitments. We recognise this may not have worked in the case of all IRF activity.

Our discussions throughout the evaluation with SMEs who have been involved in IRF collaborations have indicated that developing the collaboration relationship has been flexible and easy and they have been positive about the engagement. They have been pleased with the speed at which the work went (challenging some pre-held concerns around the speed of academic collaboration) and the level of access they have been afforded to the IRF. There seems to have been a clear focus from the IRF to focus the support on those areas which would add most value to the SME – either augmenting what they may already been considering/doing or developing new ideas and opportunities. On occasion, this has involved the IRF doing some early research work to identify an innovation that the SME could consider. In all cases, our discussions have indicated that the collaboration was shaped by early and flexible discussions between the IRF and the SME.

Importantly, our discussions in this phase of the evaluation have indicated that the collaboration was leading to the potential for positive outcomes for both the SMEs themselves, as well as the IRFs in terms of research interests. In our view this has been a key finding of this evaluation – that the IRF process has been very much led by the needs of the SME, whilst also producing research outcomes which will be beneficial to IRF for their own research/academic career purposes.

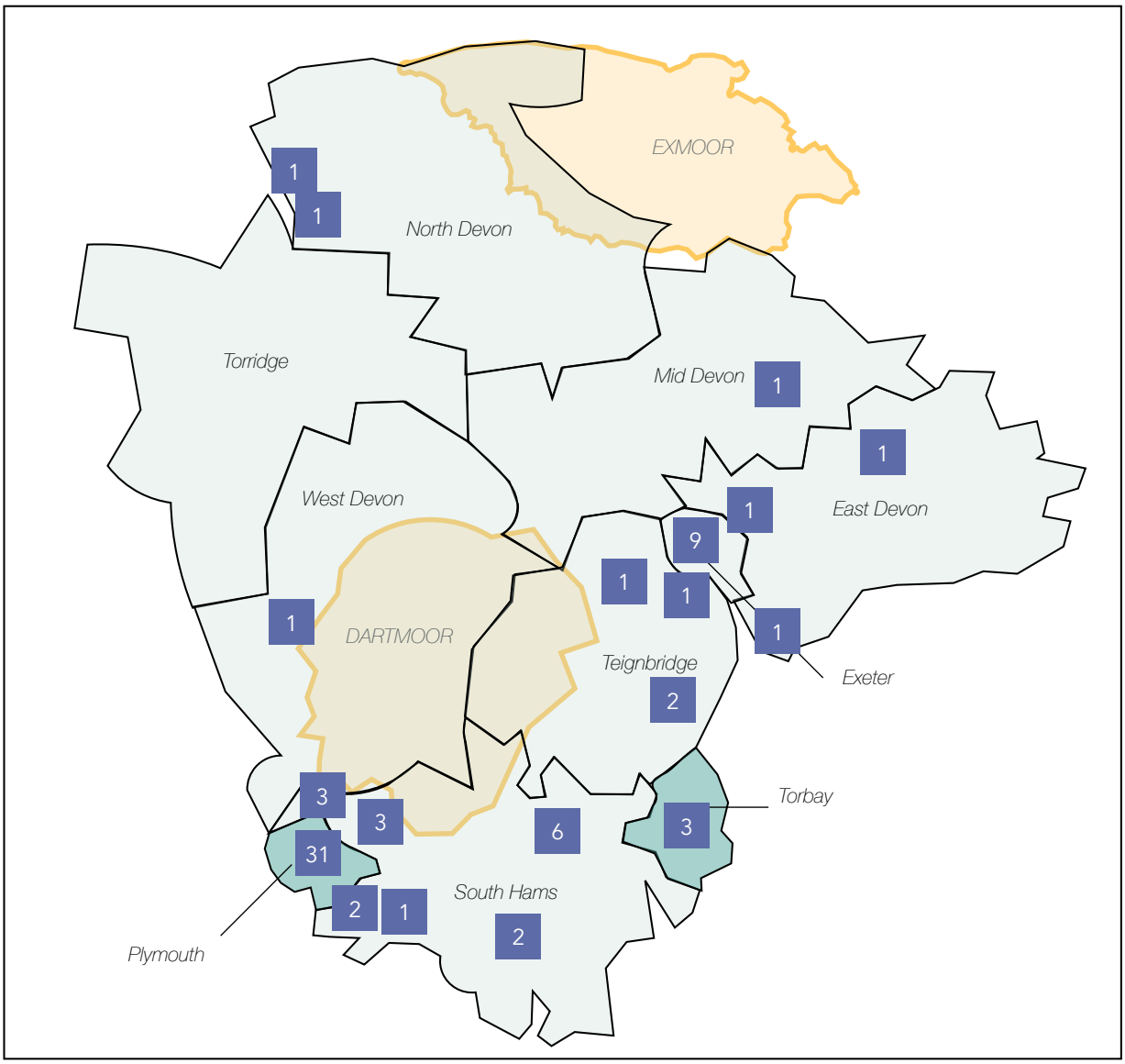
Returning back to the flexibility of approach, as we commented in both interim reports, this flexibility of working may be helpful learning for other similar projects. The approach makes the activity oriented towards the needs of the SME and is leading to a shorter timeframe of research activity - with relatively quick results available for use by SMEs and others via research papers.

There are three further points to briefly make here and which carry forward from the comments made in the initial stages of the evaluation:

- It is not been clear to us clear how and when the collaboration ceases from an LCD perspective. Our discussions have indicated that this is quite an open-ended relationship, and some IRFs and SMEs do comment that further support would be valuable (although

accepting that this would require funding to enable the IRFs to continue providing support). For the future - and learning from the IRF experience - we still think there could be a need for a bit more clarity provided to SMEs at the outset - to scope the LCD time input and communicate this clearly to the SME . As commented previously, this could mean a broad two-stage process where the flexibility is maintained in the early stages of the engagement (helping to develop/formulate the joint working), and then once defined the second stage is more structured, including setting out milestones/deliverables etc.

- We commented in the early evaluation reports that, because IRFs recruited SMEs, it might be useful to undertake basic eligibility checks as soon as possible, to avoid any wasted effort. As a result ,LCD instituted a more streamlined system in January 2022, to carry out early checks before a first meeting with an SME and completing parts of the ONA at the first meeting which can then be checked. This system is kept under review at weekly meetings.
- In terms of the location of SMEs, in the 1st and 2nd Interim Report we commented that LCD was working with SMEs that tended to be quite concentrated around Plymouth and South Devon. We suggested that LCD should consider how it could better extend its reach. This has been discussed extensively with the project team throughout the evaluation process (as commented elsewhere). We present the final mapping of supported (claimed) beneficiaries in the below map, based on their postcode.



This corroborates our view, throughout the evaluation process, that the programme has continued to be concentrated in some areas - as the map illustrates. There have been very few businesses that have been supported in areas such as North Devon and Torridge. We know that the project has tried to focus on marketing and communication activity in these areas but that it has simply been more difficult to gain traction in those more rural areas further from Plymouth. There may be a perception that more distant from the University of Plymouth in terms of location has meant that businesses in those areas have simply not 'connected' to the opportunities provided through the project. This has been one of the more frustrating aspects of the project. We question whether some of the geographical limitations of the project were governed by practical considerations, particularly during the pandemic when working with businesses further afield (from the greater Plymouth area) was more difficult.

We would advocate, given the stage of the programme, this will now need to be addressed in terms of the planned dissemination activity, rather than promoting the project support available.

Quality of delivery

The feedback on the overall experience, and by implication its quality, has been very positive. Of the 16 internees who responded to the online survey across Cohorts 1, 2 and 3 of the internship programme, all have said they would recommend the Low Carbon Devon internship programme to other students/graduates.

In terms of quality of the experience, of fifteen feedback forms from Cohort 1, 2 and 3 interns, five gave it a 10 out of 10 score and seven gave it 9 out of 10. Comments from the interns about possible improvements related to the possibility of holding the Future Shift workshops in non-working hours (given they had a job role to fulfil), the possible use of breakout rooms in the Future Shift workshops to have allowed more opportunity to reflect more deeply on issues, and the advantage of having a clearer work programme at the outset (alongside timelines) for the internee to work towards.

SMEs hosts have also been very positive about the overall experience of hosting an intern and the value they will get for their business. Eight of the sixteen SMEs providing feedback at the end of their internship experience gave the experience 10 out of 10, with the remainder being 5x9, 2x8 and 1x7 – all still positive about their experience. Suggestions made for improvements were mainly very practical, for example:

- Make sure the sustainable leadership workshops are at a time to suit all internees, or even that they could have been held less frequently (this was also raised in our consultations with SMEs)
- Having a checklist about costs involved and how to claim these back (particularly important for new start up SMEs)
- A list of resources/list of contacts with expertise within the UoP that SMEs might be able to utilise during the internship

This positive feedback from SMEs[24] also came through in the SME interviews we have undertaken for the 2nd interim and final evaluations. The feedback we have received with regards to the support provided through the different strands has been positive, with particular positive sentiment coming from those businesses that participated in the internship programme and the IRF collaborations. In terms of the former this very much relates to quality of internees that were able to be secured by businesses and the focus on project-based work (as illustrated by some of the

[24] *SMEs involved in either DNZIF projects or collaborations with IRFs.*

case studies across this report). In terms of the latter, this has tended to be associated with the relationships that had been established with the respective IRFs and the 'collaborative/flexible/ iterative' approach taken.

In terms of DNZIF, again the feedback from those businesses we spoke to has been positive – although it is useful to highlight that the relationships in some cases tend to be slightly more 'hands off'.

Beneficiary and stakeholder perceptions of project activities

As discussed in the preceding section, the feedback to date from internships, DNZIF projects and IRF/ SME collaborations has been positive, with supported SMEs all commenting on the potential for positive impact for their business from the activities undertaken[25].

SMEs undertaking internships in Cohorts 1, 2 and 3 were asked to articulate their experience in three words on their feedback forms – as shown below.

All sixteen SME hosts from Cohorts 1,2 and 3 (who provided feedback – noting this does not encapsulate all 39 internship hosts) would recommend the internship programme to other businesses. Similarly, all fifteen internees who provided feedback from Cohorts 1, 2 and 3 would recommend it to other students/graduates.

There are also a number of other perceived benefits of participation in Low Carbon Devon that SMEs, interns and academics have identified in our discussions/through feedback forms and surveys. These discussions responded to one of the project specific evaluation questions as defined in the ITT, which was that of perceived benefits to participants in the project – enterprises, academics, students and graduates. We have integrated responses into this report where it has been appropriate to do so.

However, this does not cover the full range of benefits that have been cited. Annex 2 therefore summarises other benefits that have been identified and which we felt valuable to draw out.

Integration of the horizontal principles and effect on delivery

Equality and Diversity

We recommended the inclusion of an E&D focused question in the ONA monitoring as part of our initial early observations work, allowing the project to better understand whether supported SMEs have an equal opportunities and non-discrimination policies in place, or, if not, to signpost/ encourage their development. This was actioned by Low Carbon Devon (November 2021).

[25] *Recognising that, for the one DNZIF SME interviewed, the R&D work was still in progress at the time of interview so final results were not known.*

Sustainable development/environmental sustainability

Clearly, promoting sustainable development and environmental sustainability is core to the objectives of the LCD project. There is significant potential to contribute to this horizontal principle. Additionally, we also recommended the ONA to include a question regarding what environmental sustainability policies are in place. This has also been actioned by the project (November 2021).

Conclusions

For this section, the key should be read as: green = strong performance, amber = adequate performance/work in progress, red = poor performance

Management and delivery – the overall structure	Our view has consistently been that the project has put in place robust management and governance structures, both internally within the UoP and external oversight through the establishment of the LCD Steering Group. The project has been professionally and diligently managed. The Steering Group has a wide spread of skills and expertise which could be beneficial to the project, particularly in terms of making linkages to the myriad of other low carbon focus activity currently taking place in Devon. The Steering Group also provides the opportunity to make linkages and learn best practice beyond the target programme area. We now rate this as green – given some of the changes implemented regarding the role and focus of the Steering Group.
Management at the team level	Our view remains that the project is tightly managed, with a clear focus on delivering against contractual targets, but also importantly providing a quality service to supported SMEs. Regular team meetings play a useful role in ensuring that delivery remains on track. There appears close working across team members, when the need arises. We have previously noted some observations in terms of risks to delivery, notably the amount of work that flows through the KE Officer role, but the project team are aware of this risk and monitor any pinch points. Overall, we do not have any concerns regarding the management of the project.
Communications	Our review of the communications material produced by the project is that it is of a high quality and has a significant reach. The volume of comms activity is high, sometimes focused specifically on LCD and sometimes focused on the wider low carbon agenda. Being part of the UoP and the Sustainable Earth Institute has benefited LCD in terms of reach. Communication and publicising the project also takes soft form – with on-the-ground engagement by team members playing an integral role, particularly with engaging with potential SMEs. As part of this, the LCD events also play an important role in promoting the project. The shift in focus onto messaging around the legacy of the project has been helpful and illustrative of the proactive approach that the whole project team (and influenced by marketing and comms input) has had in terms of knowledge exchange and dissemination. We feel the shift in emphasis to a Low Carbon Devon from the Low Carbon Devon project is illustrative of this proactive and holistic approach to messaging.

Knowledge Exchange management and delivery	As above, the knowledge exchange activity undertaken by the project is extensive and done through both the KE Officer and the IRFs – with the former role playing a central role. Team members use a variety of networks to identify and engage with potential SME Partners. The event programmes have acted as a developing channel for disseminating learning, with this primarily being online due to the pandemic. The one query that we had (and as raised in the 1st and 2nd interim reports) was the role that the capital investments have played in the knowledge exchange activity. The project team have outlined several activities where KE activity relating to the capital installations has now occurred. This includes offering tours to interested organisations and obviously hosted various events from different groups in the Sustainability Hub. Tours also formed part of the agenda of the showcasing event held in November 2022, similar to activity provided to networks such as the PNZP. Overall the quality of the knowledge exchange activity has been high.
Engaging and selecting beneficiaries; and beneficiary and stakeholder perceptions of project activities	There is a significant amount of activity that takes place to identify and engage with potential beneficiaries. This is done through a variety of channels – both from a central project perspective as well as through key roles – notable the KE Officer and IRFs. We feel this activity is quite comprehensive and there are interesting collaborations which have arisen. The one concern that we continued to note through the evaluation process related to geographical coverage. Having mapped supported enterprises we do feel that there has clearly been a concentration of activity in Plymouth and the wider South Devon area (including Exeter). The project appears to have been less successful in supporting SMEs in the more rural parts of the programme area – although noting the marketing and comms activity that has been targeted at those areas – particularly since the 1st interim report.
Horizontal principles – integration into delivery	Clearly the project has the significant potential to address the environmental sustainability horizontal principle through its core objectives and activities. As part of its overall delivery progress, it is making good progress on this aspect. Given the project has now implemented some of the previous recommendations regarding E&D policies for the supported SMEs we now give this as a green rating.

Trimplants Wholesale Nursery *have worked with Low Carbon Devon's Dr Thomas Murphy to develop and evidence the functionality of Biochar, a compost supplement made from local waste material, a product which enables increased carbon sequestration in the soil.*

Trimplants are wholesale growers of hardy nursery stock liners and young plants. They supply growers locally in Devon and throughout the UK and having supplied plants for Green Walls were interested in developing this side of their business.

The Low Carbon Devon project, working alongside the team at Trimplants, developed and tested the biochar products as a peat free compost alternative, and the results will have enabled Trimplants to market the sale of biochar towards green infrastructure providers who want to maximise the thermal performance and plant health benefits of their installations to achieving carbon net zero.

As a result of the partnership with Low Carbon Devon, Trimplants acquired funding to buy two Dartmoor Dragon retorts to increase the production of biochar. Trimplants have run workshops and presented to local farmers, soil specialists, gardening groups and climate emergency centres across the UK about how they're using biochar and its potential in sequestering carbon, reducing methane from rotting wood, enhancing microbial networks and soil regeneration.

Recent discussions have also taken place with local authorities and specialists dealing with polluted rivers contaminated land. Recommendations have been made to local towns to include biochar in their town planting schemes to ensure resilient plants in hotter drier climates.

TRIM
PLANTS

6. Outcomes and impacts

This section reviews progress towards outcomes set out in the project's logic model. We reviewed the logic model when developing the Evaluation Framework. This helped to clarify what some outcomes and impacts referred to, and to agree their interpretation for the purposes of evaluation.

At this final evaluation stage, we focus on outcomes and impacts.

Progress towards outcomes

Each outcome is discussed separately in this final Summative Assessment report. We pull out findings from the feedback from internships (internees and SME Hosts), from IRF SME collaborations and from DNZIFs (academics and SMEs). Threaded through the discussion we also address project specific evaluation questions:

- What are the perceived benefits to the participants in the project (enterprises, academics, students and graduates)?
- What were the short and long-term impacts of the project's activities on enterprises, the local economy and others (e.g. interns, academics)?

Outcome 1: A more informed sector about market opportunities related to low carbon and energy and an increase in enterprises taking advantage of these opportunities.

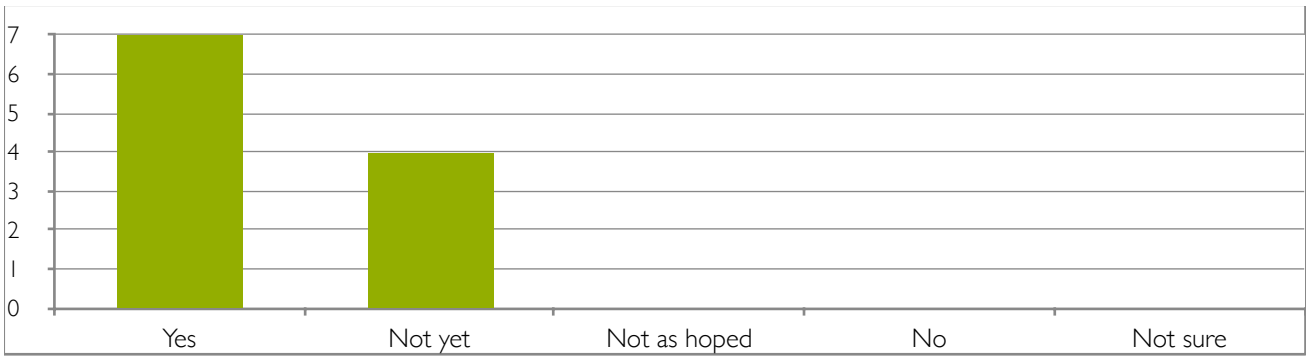
The logic model identifies the indicator for this as the number of SMEs engaging with University through Knowledge Exchange events and dissemination activity. Low Carbon Devon has now hosted many events through the project – as shown in Annex A. The 90 events that have been provided through the project have attracted c4,600 attendees. This should be seen as a considerable achievement by the project, reflecting the success in developing its reach.

We have also explored this outcome in the context of the types of activities supported through the internship, IRF and DNZIF strands. DNZIF applicant SMEs and SMEs collaborating with Low Carbon Devon Research Fellows have most directly focused on market opportunities:

Of the SMEs interviewed, for some the support is leading to the development of a new to firm/ market product or service, whilst for others this was either part of a longer-term process or (as was more the case in the internships) supporting wider low carbon ambitions for the business

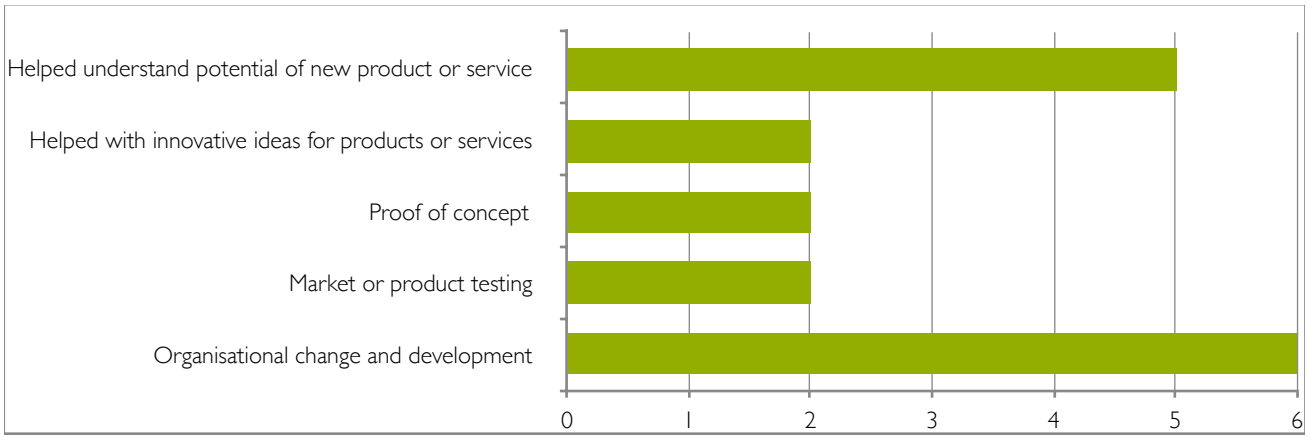
Most businesses we spoke with felt that good progress has been made, with positive outcomes that have either already been acted on or were planned to. For example, we previously highlighted the launch of the Green Makers Initiative by MAKE southwest, and other examples such as the product development/launch by Ecomotus, Sage Medical Tech, Prestige Packaging etc.).

Chart 1: (SME hosts of internships) Has your involvement in the internship programme had positive benefits for your business? (n=11)



Feedback from Cohort 1, 2 and 3 SME Internship hosts as part of a six-monthly follow up survey also indicated that - out of eleven respondents to that question – five felt their internship had helped them to understand market opportunities more clearly, whilst other benefits were spread across other factors – as shown in Chart 2.

Chart 2: Has the internship helped your business with any of the following? (n=11)



Outcome 2: A more informed sector about low carbon deployment opportunities and an increase in enterprises deploying low carbon installations

The logic model also identifies the indicator for this as the number of SMEs engaging with University through Knowledge Exchange events and dissemination activity.

Over Summer 2022 the project hosted a workshop aimed at low carbon consultancy companies, helping them showcase their work to a network of businesses. This seems to fit with this outcome objective of being a more informed sector. We interpret low carbon 'installations' quite widely in this context. We are aware that some of the internees have explored the potential of carbon footprint measuring with their host business, and others have focused on sustainability/ environmental certification (as demonstrated in some of the case studies highlighted). Others have explored issues such as energy usage and efficiency and circular production. Whilst these may not all be installations as such, they all relate to ways in which lower carbon emissions could be achieved. Feedback from SMEs (see Outcome 3) is that the results from internships are mostly already in use by SMEs.

It is also useful to note that internees are also becoming much more informed. They are very positive that their internship experience will have a longer-term impact on their career development. The following table gives feedback from 15 internees across Cohorts 1, 2 and 3.

COHORT 1, 2 AND 3 INTERNEES (15)	STRONGLY AGREE	AGREE	NEITHER	DISAGREE	STRONGLY DISAGREE
The programme has improved my job / career prospects	11	4	-	-	-
The programme has provided leadership development and enhanced my transferable skills	8	7	-	-	-

"I found the internship experience to be beneficial for future job prospects as it allows to use your academic knowledge in real world application"

One particular aspect of the internship strand is the Future Shift sustainable leadership element. The feedback from Cohorts 1, 2 and 3 has been very positive about the value that element of the internship experience provided. This should help contribute to a wider and more informed view about the sector and the wider concepts around sustainable development goals.

Feedback from the internships indicates some positive outcomes - with some SMEs employing their interns for some further work; planning a further internship with their SME host; and several internees seeking a job in the sustainability/environmental sector.

Outcome 3: An increase in low carbon / energy products, services and commercialisation in Devon

The logic model has an indicator of 'data from project support activities with SMEs' for this outcome. Our evaluation has essentially looked at this in two ways:

- The extent of progress on the RD&I journey made by the SME, including when commercialisation is likely to be achieved (in the short or longer term)
- The likelihood of future product/service developments emerging from SME engagement with Low Carbon Devon

Extent of RD&I travel

In terms of progress of the RD&I journey, we explored with internship SME hosts whether their internship has directly led to action as yet or not. Sixteen of the SME hosts across Cohorts 1, 2 and 3 provided feedback on this. Respondents were able to choose more than one option. The feedback does indicate that SMEs were all either using, or intending to use, the outcome of the internship. The majority indicated that this would be within a relatively short timeframe, with others indicating that it might be used over the longer-term. One business indicated that it was already being used. In our view this could reflect that the internship activities have been well scoped – tending to be quite specific and relating to the businesses' immediate needs.

THE RD&I JOURNEY	TOTAL **23**
I have already used the information obtained	13
I plan to do so within the next six months	5
I plan to do so in 6 - 12 months	3
I plan to do so in 12 months or more	2
I am uncertain what to do next	-
I will not be using the information obtained	-

This feedback is confirmed in the six-month follow up survey with SME internship hosts. Of the twelve businesses who responded to the online survey, ten indicated that they had already acted on the outcomes of their internships, whether that be fully or partially. The other two businesses that responded appeared to have some dependencies which meant that they had not yet acted on the outcome of the internship e.g. unsuccessful funding application.

The feedback from IRF SME collaborations and particularly, the DNZIF SMEs has tended to be more mixed, perhaps reflecting the more in-depth nature of the RD&I. In a couple of instances, the business is quite clearly on an extensive RD&I journey where the DNZIF work is providing a specific input into wider RD&I activity that is ongoing with a view to creating a new product. Given the scale of the DNZIF project, this forms one component of a much longer-term activity.

However, our consultations have highlighted that activity has led to the successful launch of a new product/service (and as evidenced by the project). In some cases, such as the work undertaken by the IRF, it has supported new product/service provision which the SME indicates could still benefit from further support or development beyond the collaborative project. This illustrates that RD&I is often a long journey. The implication for Low Carbon Devon is that the new products/services - and their subsequent commercialisation – is likely to be beyond the timeframe of project.

Nevertheless, our discussions in the final evaluation have illustrated that positive impacts have begun to materialise before the end of the project, and that these will continue.

New Products and Services

Across the SMEs that we have received feedback from – either through interviews or online survey – there is a mix between those businesses that are developing new products/services, and others which are more focused on other issues such as new processes, which are often linked to wider organisational changes.

- **New products and services:** as discussed previously, several of the businesses we have received feedback expect that new products/services will come out of their engagement with Low Carbon Devon – either already happened or will do so in the near-future. This can either be as a self-standing activity, or the support has been part of larger RD&I activity that is also being supported through other means.
- **New processes:** the feedback we have received indicates that supporting the development of new processes has also been important e.g. that of carbon foot printing noted earlier. This may include a review of supply chains practices, the creation of new resources or new policies for the SME, and achievement of accreditations. For example, within the internship strand, the internee had sometimes contributed to the process of gaining ISO1400 or BCorp status. The six-month follow-up online survey with SME internship hosts also appeared to corroborate this. Six of eleven SMEs who responded indicated their internship had contributed to wider organisational changes and development (as shown in Chart 2).

As such, the evidence is that the project is directly contributing to creation of new products, services and processes.

Outcome 4: Diversification of enterprises into the low carbon and energy sector

The logic model indicator for this is as for Outcome 3. Through this evaluation process we have approached this outcome from the perspective of whether:

- SMEs are diversifying into new products, processes and services associated with the low carbon sector - if they were previously focused in other sectors
- SMEs already in the low carbon sector are extending and diversifying their offer

Whilst not all businesses who have worked with the Low Carbon Devon project could be classified as 'low carbon' as such, the vast majority are clear about their net zero or similar intentions and have strong low carbon credentials. Others are focused on wider environmental/sustainability issues such as the circular economy. From the businesses we have spoken to through the evaluation process it is clear that many businesses were operating in differing sectors, but all had the intention

to either offer low carbon products/services, or to reduce their own carbon/energy impact. Some of the different examples of the sectoral mix can be seen through the case studies included in this report.

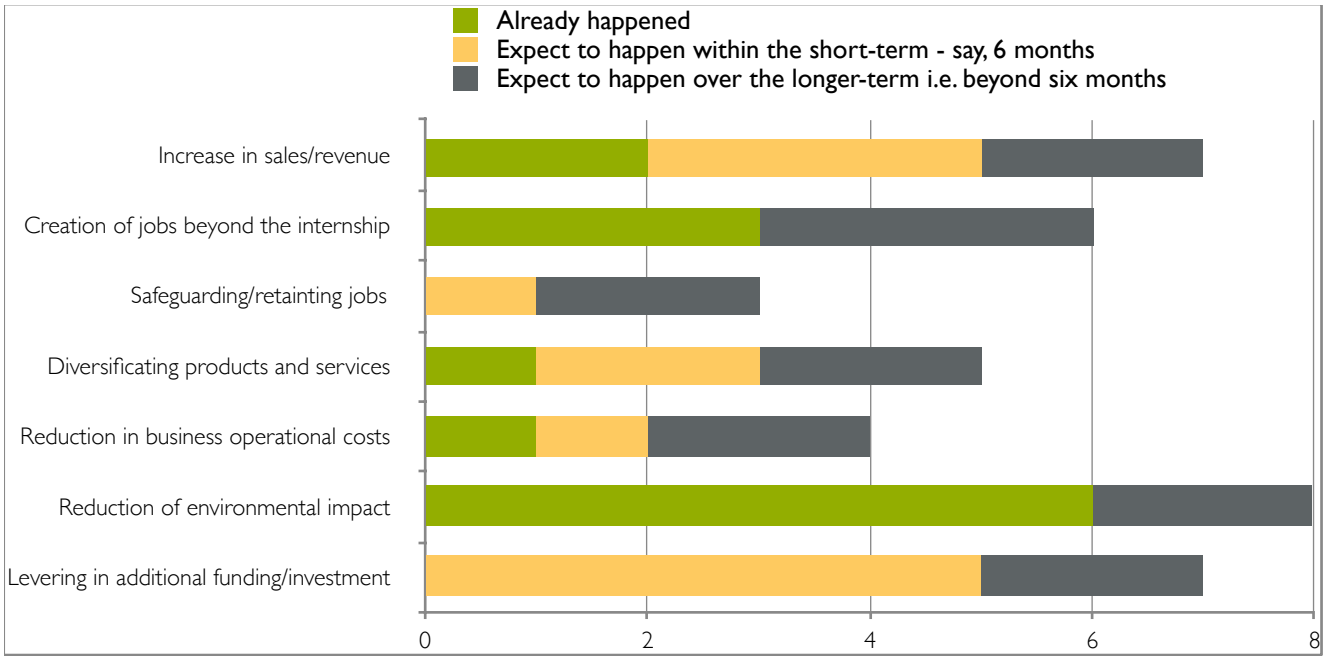
For the majority of SMEs, their engagement with Low Carbon Devon has been focused on bringing low carbon elements into their business - either through new product/service development or, quite commonly, process improvement – or enhancing their low carbon credentials.

Outcome 5: An increase in jobs and turnover for the Devon low carbon and energy sector (or those enterprises that have applied low carbon solutions)

The logic model indicator for this is as for Outcome 3. The project did not have any output targets relating to either jobs and/or turnover/Gross Value Added.

In terms of the internships there already have been some jobs benefits from the internships strand we have explored economic (and other) benefits more broadly, in the six-month follow-up survey with SME internship hosts. The graph indicates that across the eleven businesses that responded, there was some expectation of a positive impact on turnover (increase in sales/revenue) and job creation.

Chart 3: Exploring the positive impacts a little further, has the internship helped lead to any of the following (only tick those that may apply)? (n=11)



Outcome 6: Relationships between the University and Devon enterprises and community groups

Our discussions with a range of supported businesses has highlighted that they had come from different starting positions in terms of their relationship with the University of Plymouth. In many cases, the Low Carbon Devon project had been the first time they had worked with the University, and that the project had served as a helpful introduction to the capabilities within the University. In other cases, the LCD activity was an extension of previous involvement. On balance, our view would be that most businesses had not previously engaged with the University prior to the LCD project. Therefore, our independent view is that the project has had a positive role in enhancing relationships between the University of Plymouth and the wider business community, and in some cases this relationship has developed into something else (as discussed below).

Outcome 7: Development of KTPs between the University and Devon enterprises

We have held discussions with the Business Engagement Officer within the Enterprise Solutions team with regards to whether/how some of the relationships that had been established through LCD had continued into longer-term collaborations with the University. The feedback from the Enterprise Solutions team (who act as a gateway into the University for businesses) is that ongoing discussions are being held with several LCD businesses in terms of next steps and how the university can continue to collaborate beyond Low Carbon Devon.

The Business Engagement Officer was involved in the DNZIF process and was part of the assessment panel, with a focus on long-term sustainability beyond the DNZIF project. This can be through a variety of channels/vehicles within the university, such as Knowledge Transfer Partnerships (KTPs), through joint bids into Innovate UK, further internship or industrial placement opportunities, or through the University's own R&D Solutions Fund. In terms of the latter, at least one business has been successful in being awarded a further £20,000 funding for industrial collaboration with the university.

Therefore, there is evidence of KTP opportunities being developed as the next step beyond LCD. The discussions between the university and businesses also tend to quite iterative (being led by the needs of the business), and there may be potential for further KTPs and/or collaboration to develop further in the future.

Outcome 8: Development of further research projects between the University and Devon enterprises

As discussed above, there have been several instances of LCD collaborations now extending/developing into further research opportunities. Our discussions with DNZIF academics have also highlighted that in some instances they have continued exploring future joint-working opportunities with the DNZIF business. In other cases, this may be less clear. Feedback from the university's Enterprise Solutions team also corroborate that further research opportunities are being explored.

In quantitative terms, the logic model indicators for this were to be informed by the external evaluation (6), the University's own records (7) and number of collaborations (8). We consider these three outcomes jointly. This has primarily been informed by a discussion with the University's Business Engagement Officer. This has indicated that these targets are achievable, although they may not have reached those levels quite yet. However, there is the potential to do so – particularly if future further internships and/or industrial placements are included.

Additionally, there were two specific evaluation questions included in the ITT that linked to these outcomes:

- *What will happen to participants when the project ends? Will LCD involvement result in a continued relationship with the UoP?*
- *To what extent will the benefits accrued by the project be maintained in the future?*

We have looked at this in three ways:

1. In relation to longer-term sustainability beyond the immediate collaboration with LCD, and whether this requires further support
2. More broadly, how SMEs see the sustainability of their relationship with LCD (or the University) following this specific interaction
3. How other participants in LCD (academics, IRFs and interns) see the longer-term sustainability of the activities they have been engaged in

1. Our discussions with SMEs indicate a mix of expectations. Some are now working with the University (as discussed above) and many would be happy to work with the University of Plymouth. This would be dependent on finding the right expertise and also funding opportunities. Most businesses that were supported by IRFs would like to continue the relationship with their respective IRF.

   It is useful to highlight that as part of the DNZIF process there is a standing 'next steps' item as part of the penultimate/final progress meeting with the academic and business. The project is therefore aiming to proactively talk about and encourage a continued relationship between the University of Plymouth and the supported business. Our discussion with the university's Enterprise Solutions team has confirmed that these discussions have taken place across several LCD businesses (beyond just the DNZIF), and that in some instances this is resulting in longer-term relationships and collaborative opportunities. This certainly won't be the case for all LCD supported businesses, but the potential for a cohort to extend their relationship with the university beyond LCD provides added value beyond the contractual scope of the project.

   Again, it is clear that the businesses are at different stages of their development with regards to the projects that they collaborated with Low Carbon Devon. Some expect to continue research through their own means, some are continuing to find out more about the LCD research area, whilst others have identified a new 'research question' which they would like to explore – with some initial discussions already taking place within the UoP. Discussions with the DNZIF academic indicated that ongoing work with the SME is likely, although this relies on appropriate funding opportunities to arise to allow them to continue to work with the business. In other instances, referrals have been made to other programmes such as the SWMAS Net Zero programme.

   All the SMEs interviewed, and the survey feedback from the SME internship hosts have been positive and enthusiastic about their experience of working with LCD, and specifically their researchers. Several of the SMEs we interviewed and those that responded to the six-month follow-up online survey would welcome the opportunity to host a second intern given the experience.

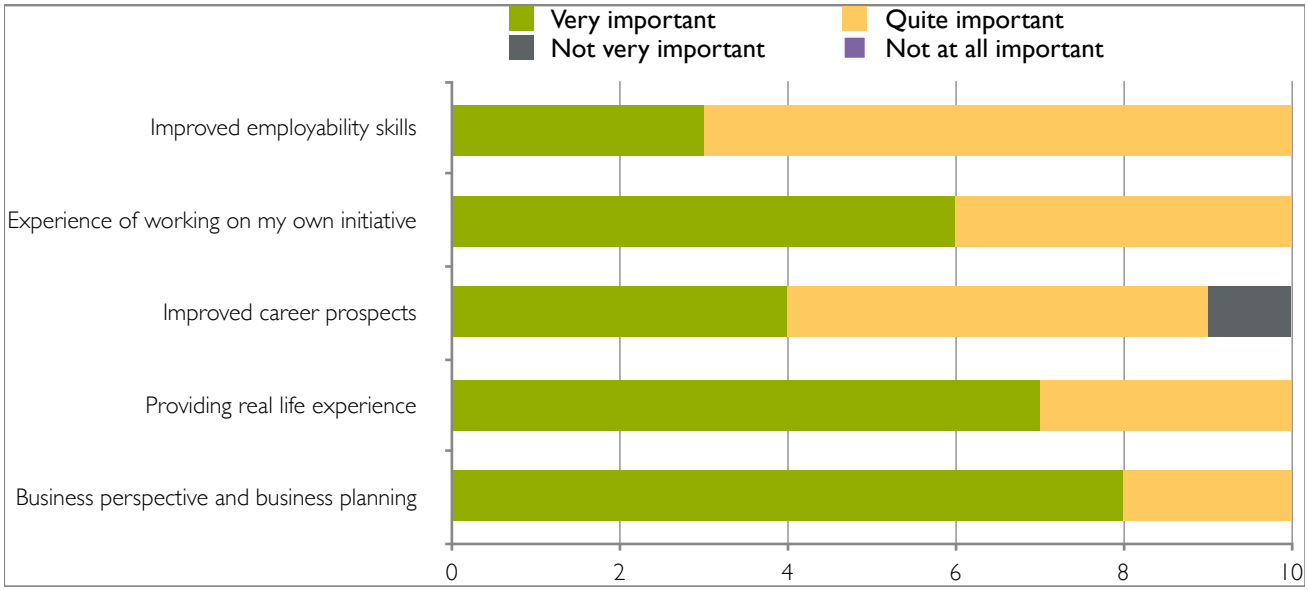
2. On the question of sustainability of activities post LCD, SMEs interviewed were generally positive (although a couple of DNZIF businesses were still waiting for the final research results to fully understand potential for continuation). There appears to be a strong legacy from the LCD support. The six-month internship follow-up survey also asked if SMEs were planning further low carbon related activities post the internship. Of the ten respondents, six said they had already done this, three planned to do so in the short-term and one over the longer-term. This would indicate that the benefits associated with the LCD collaborations will be sustained and developed over the longer-term.

3. Whilst this discussion has focused on SMEs, we also recognise there are other legacy and sustainability implications for wider participants in LCD. Interns view LCD as having had a positive impact on their career choices, giving them valuable skills and experience for the future. Ten respondents to a six month follow up survey indicated its influence as below (respondents were able to choose more than one option).

It has influenced the modules I have chosen to take in my studies	-
It has given me new career ideas to consider	4
It has confirmed to me that I would like to work in the low carbon sector	4
It has made me consider research possibilities related to low carbon	6

On a scale of 1 to 10 (10 = very strong influence), the average of the ten respondents was 7. The ten interns who responded felt the sustainable leadership workshops during the internship had given them valuable skills. Some interns specifically commented that without the intern experience, he would not have secured the job he now holds.

Chart 4: How valuable have the sustainable leadership workshops been?



"Low Carbon Devon provided me with applied skills in a branch of environmental science that is hiring a lot. It also gave me an idea of what sort of businesses are out there and what is possible to do in a small business setting."

"The combined leadership workshops and professional experience came at the perfect time between the completion of my postgraduate studies to the start of my research practice and employment."

"I am very grateful for the opportunity and experience given to me through the internship programme. I found the leadership workshops insightful and filled with information/knowledge that isn't otherwise taught or mentioned in my previous education. This part of the internship programme was extremely memorable for me."

"I felt that the internship provided a good way into the practices of the real working environment within the low carbon sector. Academic studies can only get you so far regarding the information and knowledge of the sector."

"I wouldn't have been able to get my current job in sustainability without the experience from the internship."

"It was an eye-opening experience, it helped me understand the theory from the academic world put into practice, whilst also gaining hands-on experience"

- **Academics:** Discussion with academics suggests there are practical benefits for them/UoP from the collaborations undertaken with SMEs, including increasing awareness of their research activity within the SME community and positive benefits to University of Plymouth activity e.g. involvement of student-led projects on the sustainable packaging designs. It has also enabled academics to test/apply their research in a practical applied environment, as well as helping them illustrate the benefits of the research to wider non-technical audiences.
- **IRFs:** All four IRFs have also been carrying out research alongside their research collaborations with SMEs:
  - The power electronics IRF is seeking to replicate UoP's energy monitoring system through using an open-source software to create energy dashboards which SMEs could easily use, as well as a widely accessible cloud store for environmental data.
  - The Green Walls IRF has published a research paper (2022 – and with more planned) which shows that green walls can provide significant thermal improvements to buildings. Other research has included testing growth mediums and plant choices for thermal savings and in different environments.
  - The energy efficiency and behavioural change IRF used the UoP's own buildings to produce papers on energy performance improvements. She also worked on other research, including the use of blinds and lights within primary schools that can optimise visual comfort and reduce energy consumption.
  - The creative industries IRF research encompassed a literature review, survey and interviews with creative industry SMEs to explore their ongoing needs. As funding emerged as a key issue for many, she explored other funding opportunities beyond LCD, establishing the Plymouth Green Minds opportunity with Plymouth City Council.

Progress towards Impacts

Impact 1: Increase in the number of companies locating and/or diversifying into the low carbon sector in Devon

Impact 2: Increased investment in R&D to develop new products and processes which will open up new market opportunities and drive economic growth in Devon

Impact 3: Increased productivity, jobs growth and new market opportunities for local enterprises

Impact 4: Increase in multi-disciplinary research outputs and regional HEI reputation and collaboration

The above impacts were defined in the project's logic model. However, it is our view that these should be considered 'macro' indicators and very difficult/impossible to determine any change in those indicators attributable to the activities of the Low Carbon Devon project. The scale of the project in the context of the whole Devon-wide economy – noting that they do not solely relate to low carbon-oriented activity but a rather wider definition (certainly Impacts 2 and 3) – is such that it could not be expected to affect these macro indicators, In addition, it is likely all will have been affected by external factors during the course of the project – not least by Covid and the associated economic fallout of the pandemic.

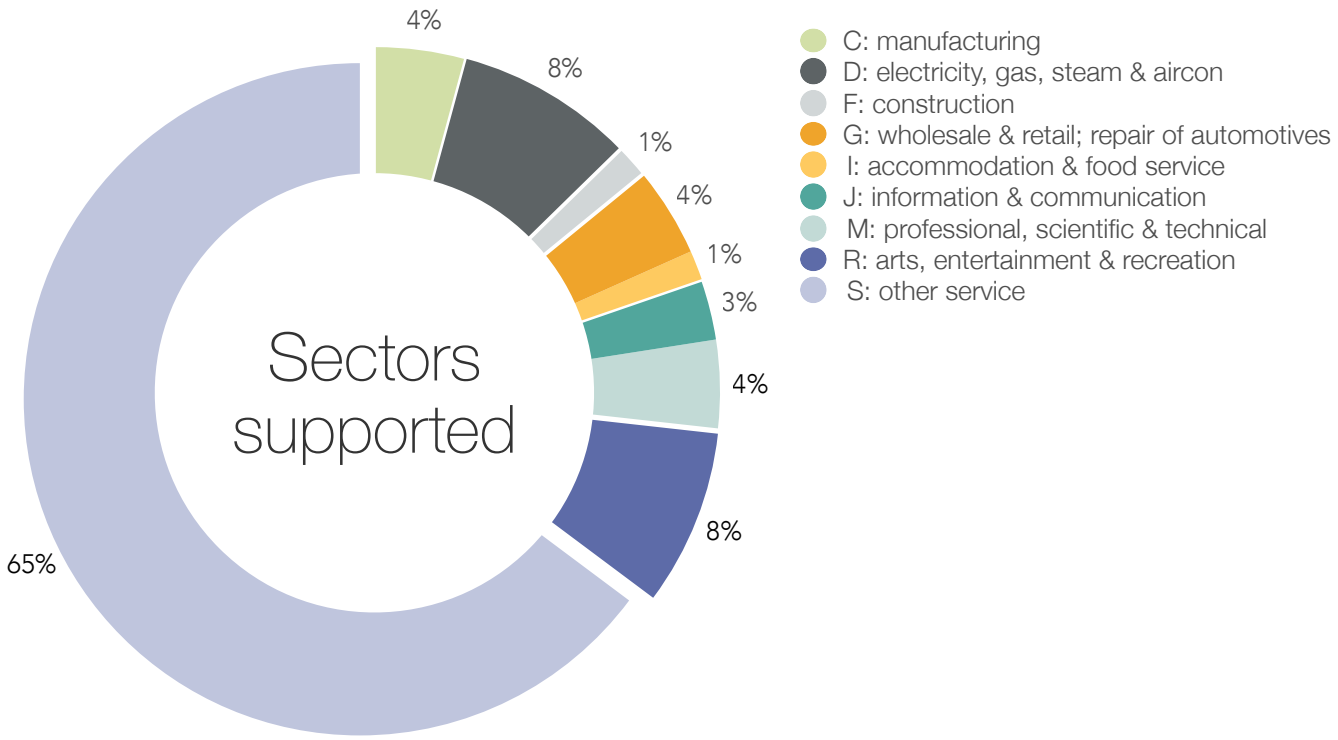
We have not therefore attempted to analyse any changes in these indicators, and do not consider it to be a worthwhile exercise in the specific context of the evaluation of Low Carbon Devon. The learning from this may be that having targets relating to wider impacts (here, these were defined at a ERDF programme level) can only be useful if there is a reasonable link/logic to the activities of a given project, and that they are at an appropriate (influenceable) scale.

We have made some qualitative comments on these, based on our SMEs consultations.

Impact 1: *Increase in the number of companies locating and/or diversifying into the low carbon sector in Devon*: We cannot comment on the point about location into Devon. Clearly, from the LCD perspective, all businesses it has supported have been in Devon (to be eligible for support from the project).

From the perspective of the second part of the Impact (diversifying into low carbon sector), we have reviewed the different sectors that LCD SME participants have come from, as Chart 5 indicates. This shows 'Other Services' to be a majority but with several other sectors also covered. What it indicates is that the majority of SMEs supported are not in a sector that one might associate with low carbon e.g. renewable energy producers. What LCD has been successful in achieving, is the integration of low carbon thinking as a cross cutting process in a range of different sectors. What is also relevant to note is that our consultations also indicate a good level of additionality associated with LCD. Table 1 in this section indicates this. There is therefore good evidence to suggest that LCD has been a catalyst to prompt this low carbon thinking and action into SMEs. Again, there is always a qualification to this statement, for several other businesses we spoke to, they already had clear low carbon ambitions in place, with activity already started, and Low Carbon Devon enabled them to enhance or quicken their intentions.

Chart 5: Broad Sectors of SMEs supported by LCDImpact 2: *Increased investment in R&D to develop new products and processes which will open up new market opportunities and drive*



economic growth in Devon. The number of new products and services claimed by LCD has been relatively small, although that is expected to increase as the project draws to a close. Our discussions with supported SMEs indicate that, in practice, progress on new products and processes is, and will be, much larger than reflected in the ERDF claim. As yet significant levels of R&D investment are quite limited. SMEs are at early stages of taking forward actions from their R&D collaborations through LCD. However, there is reasonable confidence that this will happen for several. As always, this impact will tend to occur over the longer term.

Impact 3: *Increased productivity, jobs growth and new market opportunities for local enterprises.* Like the previous Impact , this tends to occur over the longer term. Again, our evidence from consultations is that there is potential for this to be achieved - as Chart 3 earlier indicated. In some of our consultations, the business indicated that advancing their low carbon credentials was expected to feed through to positive commercial benefits.

Impact 4: *Increase in multi-disciplinary research outputs and regional HEI reputation and collaboration.* LCD has worked with the four IRFs in its team but has also drawn in other academic expertise from the wider university i.e. through the DNZIF. It has therefore facilitated engagement from different parts of the university. We cannot comment on whether LCD has (directly or indirectly) led to an enhanced reputation for the university. However, it is clear from our discussions with IRFs and other academics that some very interesting connections have been made. For example the creative industries IRF has also been working in a Net Zero Visions project and on a Creative Commissions project - separate initiatives but ones where the IRF has facilitated links and developed linked/complementary activity. Overall, our impression is that LCD has sought to engage different academic interests in the project so that its research activities could be quite diverse. In many senses, this is illustrated by the spread of projects supported through the IRF and DNZIF projects. We are aware that IRFs have already published research papers based on their research activities within LCD, with more to follow. In our view, and if the SEI can build on the LCD activities and findings, then there is good potential to develop progress towards this impact beyond the end of LCD.

Gross and net additional economic, social and environmental benefits

Assessment of the additionality of support

In the initial Interim evaluation report we discussed the question of attribution and distinguishing between attribution specifically to LCD or to SEI more broadly. We have discussed this with the LCD core team and comment further on it in the subsection below on strategic added value.

One particular aspect of additionality that we have explored has been the capital investments at UoP that have been part-funded by the LCD project. This was matched against the UoP's previously secured funding from the Salix Fund. UoP is on a journey to achieve net zero on Scope 1 and 2 by 2025 and on Scope 3 by 2030[26] - and the Public Sector Decarbonisation Scheme (Salix Fund) has been an important support mechanism to advance those net zero aspirations more quickly. LCD is providing added value to this investment:

- Through using the investments to explore other methods of improving energy efficiency, the potential impacts in terms of behavioural change, and to disseminate the knowledge gained more widely. However, we are aware of the complications presented by Covid-19 and the difficulties in evidencing the baseline in terms of 'business as usual' usage.
- Through testing of different alternatives as part of the capital investments. An example has been testing the relative performance of horizontal or vertical solar panels. The intention was that the 'plug and play' testing facility would also play a role.
- Through other linked research e.g. recreation of the energy use monitoring system that UoP uses in a form that could be easily and affordably accessible by SMEs

The above are all examples of where the LCD capital investment aimed to add value to the Salix funding that was already in place and helping to bring forward some of the installations that have occurred through the campus.

[26] *These are indicated as being 70% of all carbon emissions and recognised as being by far the harder emissions to make changes on as they relate to upstream and downstream supply chains which are not in an organisation's direct control*

Attribution of impact to the project support (and robustness of this)

We have explored the question of additionality in our SME discussions and from feedback from SME internship hosts and interns. For this final evaluation report our findings are that the eleven SME internship hosts that responded to the six-month follow-on survey illustrated a mixture of responses in terms of whether they would have pursued the low carbon related activity. Broadly the internships have helped them quicken the process – with 6 replying this was the case – see Table 1.

Table 1: How likely is it that you would have undertaken the work you did through the intern, if the internship opportunity was not available?

Definitely would not have happened without the internship support	2
Would have done it anyway i.e. through existing staff resource	1
May have done it in the next 12 months	6
May have done it over the longer term but not sure	2

Of the ten interns that responded to the six-month follow-on survey, five felt they would have possibly pursued a career in low carbon activity irrespective of the internship; and the other five were less sure. All of those might have considered a low carbon career without the internship.

Our discussions with supported businesses also indicate reasonable evidence around additionality from the SME perspective, related to the project helping to bring forward RD&I activity that would have taken place but over a longer timeframe, at a lower scale or reduced quality.

Contribution to achievement of ERDF Priority result indicators

As stated, the project responded to an ERDF Call which focused on Priority 1b. The result indicators associated with this ERDF Priority identified (within the Operational Programme) are:

- Proportion of SMEs that are innovation active
- Increase in R&D tax credits by number and value under the SME scheme (at the UK level)

Again, we make the same comment as in the previous section with regards to the relevance and applicability of these indicators to the specific purpose of this report – the evaluation of the project. Any impact that Low Carbon has had would be lost in any macro data.

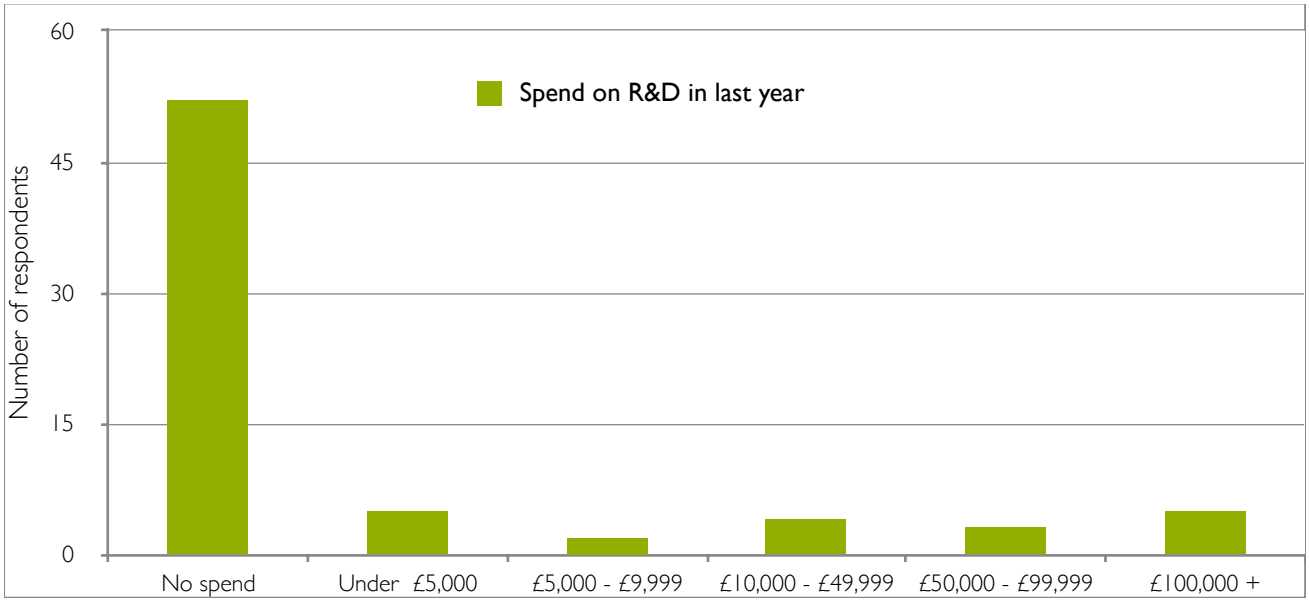
What we can comment on is that the project has helped several businesses become more innovation active, although we do reiterate the earlier point that in some strands – notably the DNZIF – most businesses appeared to have been relatively innovation/R&D active already.

We cannot comment on the increase in R&D tax credits as a result of the project, and it is likely that many of the businesses supported would not be eligible for R&D tax credits anyway ((due to size).

However, reviewing monitoring data for SMEs supported by LCD and a specific question around R&D spend in the preceding year, the large majority had not had any R&D spend as Chart 6 shows. Tax credits from these could therefore be quite unlikely, at least in the short term. It is possible that the DNZIF supported business may seek R&D tax credits but this is beyond the scope of our evaluation. We do not feel this would be extensive.

We have not commented any further on these indicators.

Chart 6: R&D spend of SMEs supported by LCD



Contribution to ERDF Programme result indicators

ERDF has two result indicators – GVA and job creation. We comment on both here although neither are a specific output, outcome or impact of the LCD Programme.

Gross Value Added

The focus of LCD has not been to increase Gross Value Added (GVA). At the early stage of research and development activity that LCD has supported it would be unrealistic to expect all businesses to be fully operational in new lower carbon activities. It is clear from our consultations that SMEs supported are largely still at early stages – but LCD has helped them start or continue that journey. Our consultations have identified one business that is now marketing its new product developed through LCD and others that are market testing. Our view is that the numbers will be relatively honed.

Our evaluation view is that commercial benefits (and the associated GVA) will largely be beyond the LCD timescale. LCD has the potential to improve GVA in the longer term as further R&D is undertaken and this could lead to SMEs reducing costs, increasing turnover and/or profitability. Some new products and services have already been reported and should continue to support additional GVA benefits over the longer term.

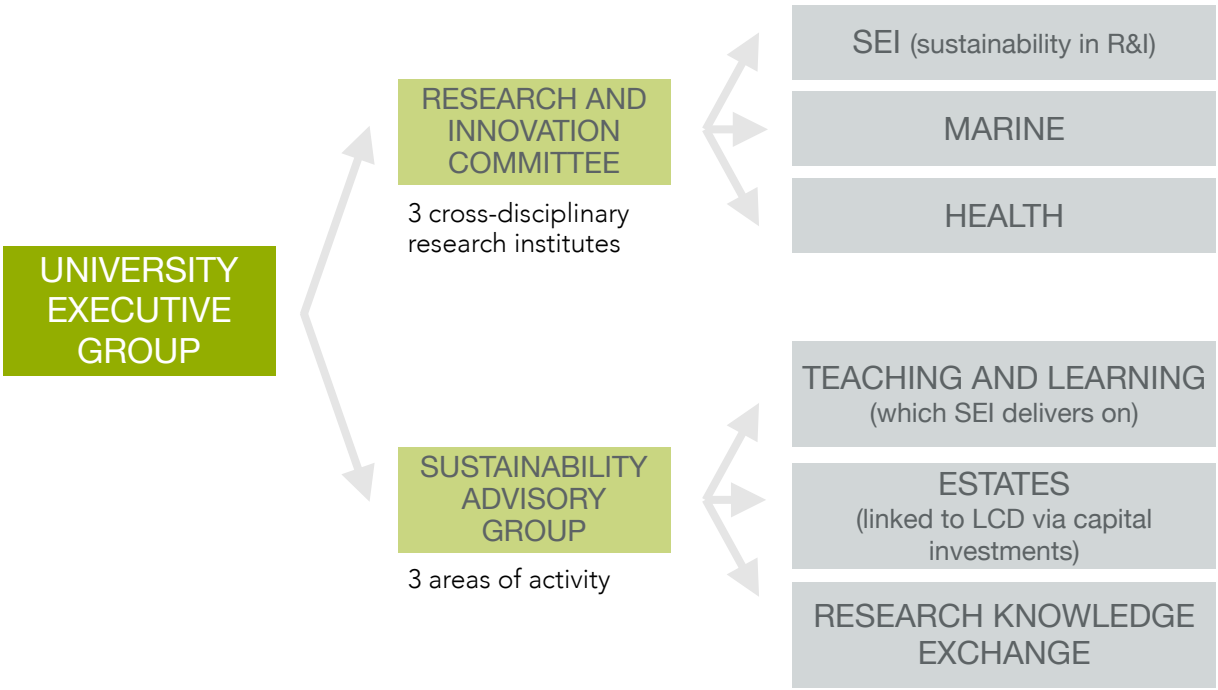
Job Creation

The project does not have any activities, or objectives specifically related to job creation - it is not a consideration in this project. Again, there could be potential for this in the longer term if and when new products and services develop. Our discussions with beneficiaries have identified some employment impacts where interns have subsequently been taken on by their SME hosts either for a further limited period, short term or longer-term basis. The number is very small - but nevertheless a very positive outcome from the internship programme. We note them as a qualitative outcome. The evidence on job creation from the other strands such as the IRF and/or DNZIF is less clear. Our independent view is that job creation – as yet – has not been extensive.

Strategic Added Value (SAV)

Within this final evaluation report, we consider the wider strategic influence of the project. We consider it important to distinguish between the strategic influence that the wider Sustainability Earth Institute has, and the influence of LCD in its own right. We discussed this with the LCD project team at our site visit in March 2022 and feel it important to discuss here.

The SEI is a cross-disciplinary research institute within UoP. The diagram below summarises its reporting links.



It is clear from our discussions that the SEI has extensive external links and is influential through its various partnerships. The SEI lead chairs the Plymouth Net Zero Partnership which brings together several large organisations to share knowledge and good practice and pool resources to address net zero challenges. It is clear from discussions that understandably SEI and LCD are quite interlinked.

There is a view that UoP might not be chairing the Plymouth Net Zero Partnership if LCD had not happened, as LCD has put a stronger focus on locally focused low carbon activities within the SEI. LCD has enabled extra resources to be used within the SEI. The SEI itself has a small core team of permanent staff, which the LCD staff has enhanced - albeit that LCD staff are on fixed-term contracts for the period of the ERDF funded project.

Importantly, given that we assume the SEI will continue to exist beyond the funded LCD period, it could provide an important channel to maintain and develop the legacy from LCD activity. It is apparent from our discussions with the project team that they are already beginning to utilise these channels in terms of the 'legacy' of the project. This partly explains why LCD activities have tended to have been jointly branded alongside the SEI (see earlier comment with regards to the flexibility of the branding).

We are aware from our discussions that LCD has made links with individual SMEs and wider SME networks which may not have materialised without the wider SEI reach. We can understand the rationale for linking the two, particularly in promoting the project and also thinking about the project's legacy.

Ultimately, it is difficult to distinguish between the impact of LCD and SEI. As the evaluation process has developed we have understood much more fully the merits of using the SEI as a means of achieving wider influence, building on the LCD contacts and experience. Equally, however, we have been clear about what activities would simply not have been achieved without the ERDF funding to support the specific activities delivered through Low Carbon Devon. The dedicated resources that have been available have been fundamental, and without these dedicated resources the SEI would simply not have been in the position to deliver in the same way. This is now clear.

The other aspect to highlight is that consultation with academic staff within the university has highlighted the importance of having a vehicle such as Low Carbon Devon which has delivered real on-the-ground support. They have felt this has been very beneficial when linking in with their own networks (some of which have been established through their networking through the project). Being able to be in a forum and offer practical and applied support has been important, allowing them to move from often 'conceptual' discussions. Allowing the university to have a 'delivery channel' within the low carbon context has been important – and cited by some of the academics we have spoken to.

There are other aspects to highlight:

- Notably the role that the project has played in networking between organisations and within the beneficiary community itself. Encouraging networking has been a core focus of the project and many of its events have been oriented towards improving connections within the low carbon community. For example, the project aimed to create a network of environmental/low carbon-focused consultancies - setting up an event to start this process.
- The IRF strand has provided an opportunity for 4x researchers to work within an applied industrial environment, which all hope has helped develop their own career. All have appreciated the opportunity to work within an applied environment, and to directly work with the business community. This opportunity isn't always given in a research context. Whilst some of the IRFs are returning more to research/teaching roles, they have broadly felt it has been beneficial to their subsequent career development.
- There have been some useful examples of where the project has helped to create links between businesses in the same field (beyond the networking benefits highlighted above). A clear example has been the Creative Industries IRF's role in establishing the Green Makers Initiative. Another example has been the development of a small integrated supply chain within the Green Walls context. The three businesses that the Green Walls IRF has supported all focus on slightly different aspects of establishing a Green Wall (biochar, integration into landscape schemes and installers), and linkages have been established across these businesses which may benefit the advancement of the wider Green Walls agenda over the coming years (although recognising that it remains relatively undeveloped across Devon).

Conclusions

RAG ratings, should be read as:

Green = Good progress; **Amber** = Some progress – with potential to develop further;
Red = Very limited progress **Grey** = not applicable/appropriate

Achievement of outcomes	Our independent view is that LCD has achieved well in relation to its outcomes. SMEs supported are already acting on knowledge and information gained through LCD, although for some this is a step on a longer term R&D journey and not something which can be immediately actioned for instant benefit. Nevertheless, SMEs have become more informed about low carbon market opportunities or deployment opportunities and anticipate expect some longer-term benefits. LCD has supported the creation of new products, services and processes in participating SMEs. The last of these – processes – has been quite an important aspect as it is clear from discussions that carbon foot printing in particular has been an important process development for a number of SMEs.
Progress towards impacts	It is not possible to comment on impacts in any quantitative manner. We can only comment qualitatively. Our independent view is that LCD has made a good start on working towards the defined impacts, and has acted as a catalyst in getting some SMEs into considering how they can advance their own low carbon ambitions. Given this, the ability of SEI to continue to act on and with LCD findings and experience will be important in enabling LCD's impacts to grow. Whilst we can see that LCD has made progress towards impacts in a qualitative sense, we note a key learning point for future projects - that there needs to be a clear link from outputs and outcomes to impact. At the level at which LCD has operated, it was never realistic to expect it to achieve impact at a macro level (as indicated in the Priority 1 results indicators). We also recognise that these results indicators were outside the influence of the project when the ERDF application was being developed. The impact of the project is difficult to discern in the macro data. We have given this an amber rating as our evaluation view is that there has been qualitative progress, and this should continue post LCD.
Gross and net additional benefits	In terms of the 'additionality' of project support the feedback we have received from supported businesses that we have interviewed is that LCD has certainly quickened work towards their low carbon ambitions, and in several cases it has influenced the scope and scale of that activity. We have good confidence that it has stimulated activity which would not have occurred in the absence of the support provided through LCD.
Contribution towards ERDF Priority and Programme results indicators	These indicators are not specifically monitored by LCD and have not been a specific intention of it, set out in the logic model. Whilst we have sought to explore these in our evaluation work, we have only been able to do this in a qualitative way. We cannot quantify any contribution.
Strategic Added Value	We maintain the view that the project continues to 'punch above its weight' in terms of its strategic influence. It is harnessing and complementing the networks established through the SEI, and there are many examples of where LCD project staff are contributing to advancing wider low carbon/net zero ambitions in partner organisations and networks. The one caveat to our observation here relates to geographical reach. As noted, we are less confident that the project is having the same strategic influence across the whole of the target area – as reflected in the RAG rating.

PLYMOUTH MARINE LABORATORY

Plymouth Marine Laboratory (PML) *(https://pml.ac.uk/) is internationally renowned, undertaking cutting-edge marine research in support of a sustainable Ocean future. Alongside the Marine Biological Society (MBA) and University of Plymouth, PML is part of Marine Research Plymouth, a collaborative group of scientists covering a vast diversity of marine knowledge, capability and research. PML was made aware of a sustainability intern opportunity through its close relationship with the MBA.*

The Laboratory Efficiency Assessment Framework (LEAF) supports scientific organisations to enhance the sustainability of their facilities and science activities. Laboratory managers help to implement improvements with emphasis on reducing single-use plastics, reducing energy consumption and recycling. LEAF is self-certified and laboratories are awarded bronze, silver or gold depending on the improvements made.

PML applied to the Low Carbon Devon internship programme for assistance in implementing the LEAF programme. They received a good standard of applications, and were impressed with the enthusiasm and motivation of all candidates. In 3 months, the successful intern allowed PML to roll out the bronze LEAF criteria to all science facilities within PML. The internship programme allowed LEAF to be launched throughout PML at a much faster rate than expected and the intern far exceeded PML's expectations.

The continued success of the LEAF programme at PML was also a key contributing factor to PML's successful ISO14001 accreditation for Environmental Management in 2022. PML has a strong commitment to achieving net zero carbon for its activities by 2040, and the Low Carbon Devon Internship Programme has supported these efforts.

PML was impressed with the Low Carbon Devon Internship programme. It was well managed, the intern was well-supported throughout and would highly recommend it to other organisations wishing to enhance sustainability in an area of their business.

7. Value for Money

This section looks at value for money (vfm) in both a quantitative and qualitative sense.

Quantitative Value for Money

Value for Money (VFM) is normally assessed with reference to project outputs, benchmarked against other similar interventions. This section of the report endeavours to provide appropriate benchmarks against which to assess Low Carbon Devon's VFM and also contextualises the assessment with reference to wider evidence.

VFM is normally assessed with reference to project outputs and impacts, benchmarked against other similar interventions. Value for money is normally assessed against total public sector cost. However, in this work we have used the revenue project cost as the figure in these value-for-money calculations. Given our approach (below) is based on output delivery, we feel this is appropriate/ defensible, given that the main outputs we assess vfm against are only delivered through the revenue element of the project i.e. the capital investment is not necessarily delivering ERDF outputs (withstanding the C30, C32 and C34 outputs). Therefore, we have used the figure of £1,276,252 (projected £1,518,791 – which we set against the projected outputs) – representing total public investment. Again, this is not always a completely accurate or informative exercise because interventions tend to differ. Therefore, some care needs to be taken in the interpretation of the figures.

There is one benchmark that we do use for reference. This is:

- National research conducted by Regeneris Consulting on behalf of DCLG (as was) which developed a series of benchmarks for the proposed 2014-2020 programme, based on DCLG data from the 2007 to 2014 programme[27]. It is important to recognise that this resource as a comparator is now beginning to be quite dated.

It is important to note that the below table includes an assessment based on outputs delivered to the end of Dec 2022 – and projected performance at project closure (shown in brackets). We have only included a small number of 'principle' ERDF outputs in the table. The below table shows that unit costs of the output delivery are expected to decrease further before the project is completed. It is also important to note that the benchmark cost per outputs are based on historical prices, whereas the cost per output for Low Carbon Devon is shown in current prices. Therefore, they are not directly comparable due to price differentials (although we have made some adjustments to these ourselves – assuming that the benchmark figures are equivalent to 2010 prices given it was a midway point in the programme being evaluated (2007-2014)[28]. They do provide an indication of cost effectiveness.

There are several important points which need to be recognised when interpreting the below table:

- Primarily, the fact that the LCD has delivered a wide range of outputs through the ERDF funding. This means that no single output should be considered in isolation and to do so would be misleading. For example, a single business assist (C1) may have delivered a new product (C29) – the cost of providing support to that business will have delivered all of these outputs.

[27] *England ERDF programme 2014-2020: Output Unit Costs and Definitions. A final report by Regeneris Consulting*

[28] *We have estimated this to constant prices by adopting the average UK GDP deflator over the period 2010-2021 and applying it to the benchmark figures – rounded to the nearest 100.*

- Also, the LCD model was based on a relatively 'deeper and intensive form of engagement and support', particularly for those collaborative activities. Therefore, these estimates should not be compared to other business support programmes which may have been based on a lighter form of support and engagement.

Table 4: LCD Value for Money Assessment

Indicator	Actual (Projected) Performance as Dec 2022 (June 23)		Regeneris Research (based on DCLG database of projects funded through the 2007-2014 programmes)	Conclusion
	No.	Unit cost		
C1: Number of enterprises supported	72 (78)	£17,726 (£19,471)	The mean cost was £34,000 (£42,500 in 2022 prices) The median cost was £10,200 (£12,700 in 2022 prices) The lower quartile was £4,700 (£5,900 in 2022 prices) Regeneris suggest a range of £2,500 to £4,700 (£3,100-£5,900 in 2022 prices) is used as a starting point.	
C26: Enterprises cooperating with research institutions	58 (60)	£22,004 (£25,313)	The mean cost was £93,000 (£116,200 in 2022 prices) The median cost was £38,000 (£47,500 in 2022 prices) The lower quartile was £16,900 (£21,100 in 2022 prices) Regeneris recommend the use of the median of £38,000 (£47,500 in 2022 prices) for a more intensive project involving a few firms in the collaboration and the average of the lower quartile £11,000 (£13,800 in 2022 prices) for an intervention with a larger number of SMEs involved	
C29: Number of enterprises supported to introduce products new to the firm	10 (19)	£127,624 (£79,936)	The mean cost was £94,000 (£117,500 in 2022 prices) The median cost was £28,000 (£35,000 in 2022 prices) The lower quartile was £15,600 (£19,500 in 2022 prices) Regeneris recognise that this is a complex definition. There was no corresponding ERDF output indicator in the previous ERDF programme – the closest being the results indicator 'business with new or improved products, processes or services'. In this instance a unit cost based on the median total public sector cost per business assisted would reflect an intensive assist to support innovation, the average of the lower quartile would reflect a less intensive lower level of support.	

Using this rather narrow consideration of VFM – based on the delivery of contracted ERDF outputs – Low Carbon Devon appears to have been a relatively cost intensive intervention. Across some of the outputs (remembering the above point that they shouldn't necessarily be viewed in isolation but rather as collective delivery) they have been delivered above the available benchmarks when considered on a 'cost per unit' basis. However, in other cases – notably enterprises supported and, in particular, enterprises cooperating with research institutes (noting this included internships) the cost effectiveness is comparable to benchmarks. This encapsulates both the ERDF and matched funding provided by the university itself i.e. total public cost. Obviously, if just considered on the basis of the ERDF investment only, then VFM would improve – although it is likely that on a cost per unit basis it would largely remain above the benchmark figures.

Obviously, this assessment of VFM does not include wider considerations such as the impact on the beneficiary businesses themselves (as discussed previously), the wider strategic impact of the project (as also discussed previously), and/or that it has helped establish business-research institute relationships beyond the project in some instances.

It is also important to note that the project model – that of relatively intensive interactions with supported businesses (as evidenced by the 58 C26 outputs) – is necessarily more cost-intensive. It is also important to highlight that it was an innovation-focused intervention, and as shown often working with businesses at a relatively early-stage of their product/service development. Therefore, to compare the project on measures such as light-touch support (C1) is slightly misleading in terms of VFM.

It is also important to highlight that the project delivered a range of wider activities – such as the 90+ knowledge exchange/dissemination events – which cannot be reflected through this relatively narrow measure of cost effectiveness. It also does not capture any aspect of the wider strategic impact that the project has had, and commented throughout this report.

Qualitative Value for Money

At a qualitative level, the feedback from SMEs supported is that the time and effort the SMEs have put into their collaborative work with LCD has been very much worth it in terms of benefits. SMEs are very positive that they have got more out of their work with LCD than they have put in. This is both in terms of the actual experience of working with LCD and the relationships developed, as well as the environmental and commercial benefits they have had or hope to have.

From the LCD team and academics perspective, the qualitative view on value for money is also very positive. IRFs point to some major initiatives that have developed as a result of their work such as the Green Makers Initiative. There is also a very positive view about having an action oriented project like LCD in a university setting. It is a practical demonstration applying research into a real life setting. It has enabled academics to go beyond the concepts and put them into action. It also allows SMEs to see the practical purpose of research.

One particular point raised in these discussions was around that of 'failure' and learning from this. Not all research collaborations will work out positively and there have been some within LCD where early stage collaborative work has shown that a market opportunity may not actually be there or a product cannot be developed in a way initially hoped for. In our view this is as valuable and as important learning from the project and an important part of the qualitative value for money. If there are wider lessons to learn from such projects then we see it as important for LCD to pull these out as part of its legacy learning.

Conclusions

This section draws a conclusion in relation to the overall SA question of value for money and cost effectiveness and in the light of intended and unintended outcomes and impacts. For this section, the key should be read as:

red = poor; **amber** = adequate with potential for this to increase in the longer term; **green** = good, with growing opportunity to improve; **grey** = unable to say – not yet sufficient evidence to base an informed judgement.

Quantitative vfm	The review of VFM from the context of cost per output delivery suggests that it has been a relatively cost-intensive form of support when looking through the lens of some outputs – notably new product/service development. In other cases i.e. enterprises supported and collaboration between business and research institutions, it is comparable to benchmarks. Overall, this largely reflects the fact that support has been provided to businesses in a relatively intensive form, particularly through strands such as the IRF work. The iterative and flexible nature of this activity would has meant that the cost is high when compared to available benchmarks (albeit these benchmarks are now dated and also not necessarily closely relevant to the type of support that LCD has provided). However, this has the potential to improve as further outputs are delivered as the project draws to a close. Nevertheless, we do feel it useful – even with the caveats of this form of analysis – to highlight the relative cost intensiveness of the support provided.
Qualitative vfm	Our evaluation view is that value for money of LCD from a qualitative perspective has been good. SME beneficiaries consider that they have got more out in terms of benefits than their effort into their collaboration. So do the researchers and academics participating in LCD.

Our overall independent view remains that **the project is making good progress towards its stated objective. It remains a well-managed project** which has a mix of differing activities to support the development of low carbon activity amongst Devon SMEs. The project has maintained momentum and delivery in what have been difficult circumstances – dealing flexibly and emerging well from the Covid environment. Strands of activity have been flexible enough to adapt to changing circumstances.

Our view remains that **the project continues to 'punch above its weight' in terms of dissemination and strategic influence**. The fact that its range of (90+) events has now attracted c4,500 attendees should be seen as a considerable achievement. It is utilising and complementing wider SEI links well. Links with the SEI has allowed access to significant academic expertise and wider networking opportunities. Having stated that, 'attributing' impact specifically to LCD rather than the wider SEI, is not always feasible and/or realistic. The leveraging of wider networks and existing relationships has been a particular benefit of the symbiotic relationship LCD has with the SEI.

In terms of project context, clearly the project is well-timed in terms of the increasing international, national and local policy objectives of decarbonising the local economy. LCD has been an important vehicle to understanding what interventions will help businesses achieve their own low carbon objectives, as well as develop new technologies and low carbon ideas. Ever-increasing energy prices increases urgency, alongside extreme weather events seen over the last few years.

Progress towards Low Carbon Devon Project Objective

To develop an integrated programme that delivers a sustainability centre of excellence, energy reduction in public buildings, and knowledge transfer between the University of Plymouth and local Devon-based enterprises	Our independent view is that the project has made good progress towards its core objective. It is providing a range of activities that are supporting Devon SMEs. Importantly, there is confidence that this is strongly led by the needs of the SMEs themselves. The knowledge exchange activities continue to be delivered well through a series of events/workshops, with many events now being delivered. The role of the internships has also been a valuable knowledge exchange mechanism. Whilst the LCD project is based within the SEI and this has been a valuable relationship, it has also engaged other academics across UoP in the research collaborations with SMEs. The opportunity remains for LCD to ensure its legacy resources and routes for dissemination of LCD experience take this objective as far as possible, in the remaining few months of the project.

Summative Assessment Conclusions by section

Project Context

The external national and local policy changes have strengthened the rationale and justification for the LCD project and support it has provided. We see the project structure and activities as being very appropriate for the achieving the objective it set itself and consider it has made very good progress towards delivering its objective. There remains potential to develop that progress further in the remaining time period and in working with SEI and others to ensure others can take it forward post LCD.

Progress against contractual targets

We feel that **the output targets should be largely achieved and in some cases exceeded**. There is a dependency here though. This is delivery of the LED lighting installations in the Rolle Building on the UoP campus. The modelling of GHG emission reductions for C34 outputs assumes this will be completed – if so, then the project should achieve 90% of its C34 output target. Even so, we would view this as a good outcome given the challenges of delivery for this aspect of LCD's activities.

On finances, the project has spent c81% of its total budget, with two quarters left to claim. The revenue budget should be near fully achieved. However, given the outstanding capital spend for the LED lighting, **a risk does remain around achieving all capital spend**. We feel appropriate to continue to highlight this risk.

Delivery and Management

LCD has robust management and governance procedures in place. It has been well managed and with valuable oversight from its external Steering Group. The LCD team is well managed with regular team meetings to ensure activities are coordinated and delivery is kept on track. Comms material is of high quality and volume. It has benefitted from linked comms with the SEI in terms of reach. LCD events have also had an important role in promoting the project.

Knowledge exchange has been of good quality and well structured. Events have been a valuable means of disseminating learning. **One concern here has been how the capital investments play out in knowledge exchange and to the SME community,** particularly those in buildings other than the Sustainability Hub. We have expressed this view throughout the evaluation process.

The other concern that we have highlighted through the evaluation process has been the geographical extent/coverage of the project. The project has had a clear geographical focus – in terms of the spread of businesses supported - on Plymouth and South Devon (including Exeter and Torbay). It has not been able to engage/reach businesses as well in more rural and peripheral parts of the target area.

Quality of delivery and activities is perceived by beneficiaries as good. There has been positive feedback from many businesses that the support will lead to positive impacts – either commercially or in terms of achieving its low carbon ambitions. LCD activities address the environmental sustainability theme well – it is central to the project and shapes what it has done. LCD does not directly address E&D activities. However, recommendations we made at interim evaluation about flagging up E&D policy development to supported SMEs has been acted on by LCD.

Outcomes and Impacts

Our view is that LCD has made very positive progress against all its outcomes. SMEs interviewed are already acting on knowledge and information gained, even if it is to continue their R&D journey. It is clear that the business benefits for some SMEs are likely to be over the longer term. Nevertheless, we feel that participating SMEs are now much more informed about low carbon market opportunities and deployment opportunities (which we widely interpret as including energy efficiency, carbon foot printing and other sustainability activities). In this context LCD has contributed to development of new products, services and processes in SMEs, some of which are still developing and by no means all of which are reflected in the claimed/evidenced C29 outputs.

In terms of impacts, **our qualitative view is that progress has been made towards these but not in any way that can be robustly quantified**. Our experience from other Summative Assessments, is that it is quite usual for impacts to be 'work in progress', especially in RD&I projects where SMEs are often still on their R&D journey and the quantifiable benefits are still to develop. This is the

case for Low Carbon Devon. Given the scale of LCD in the context of the wider Devon economy, it is highly unlikely that outputs would ever have been quantifiable at a macro level - which is what the logic model implied. **We would highlight a learning point from this for future projects, to ensure that impacts can be relevant and commensurate to the scale of project activity.**

In terms of strategic added value, LCD has benefitted from its location within the SEI at the University. Similarly, the SEI has benefited from a project that had delivered practical support on-the-ground across the wider business community. In addition, the University of Plymouth has benefited from the project in a similar vein, being able to provide accessible and practical support on a collaborative basis with the SME community. The SEI has quite extensive external networks and partnerships which LCD has been able to capitalise on. In practice the value added provided by LCD is very much interlinked with that of the SEI and it is not possible to specifically isolate LCD in this. Our independent view is that it has been to the benefit of LCD to be based with the SEI. It has enabled it to have a wider reach and have more SAV than might otherwise have been the case. It is also beneficial in that the SEI can take forward LCD knowledge and experience into its wider networks and activities which should add to the SAV that LCD has already achieved.

Finally, **the Future Shift internship programme has been almost wholly well received by everyone we consulted** – including the interns themselves, the SME hosts and internal university staff. It is held up as an exemplar model within the university in terms of how to attract and support good quality candidates. It is our recommendation that the university learns from elements of the approach and embeds this into wider learning around how to deliver a good quality internship experience.

Value for Money

Value for Money assessments of projects like Low Carbon Devon are always difficult to make through standard approaches. In the ERDF context, we have provided an assessment on the basis of 'cost per output delivery', and when viewed in this context it is realistic to recognise that the project has represented a relatively cost-intensive intervention. However, this was obviously known at the point of project development and approval by the Managing Authority, who were reassured that the project did represent a cost-effective intervention, and that the impact of the project cannot purely be viewed through the lens of 'cost per output'.

The very nature of the Low Carbon Devon model was that it was based around relatively intensive forms of support, most notably though the IRF strand. We recognise that comparing the project to more generic business support programmes is misleading, and not wholly accurate exercise. When viewed on the basis of the more intensive/collaborative form of relationship i.e. through the C26 output, which reflects the more collaborative nature of the relationship between the project and the beneficiary businesses, the cost-effectiveness improves markedly.

On a more qualitative basis, the project has clearly delivered a wider strategic impact which cannot be quantified. **Our independent view is that the project has delivered value-for-money, with the multi-faceted aspects of impact and positive benefit lasting beyond the ERDF funded period.**

Learning

The following table summarises our key evaluation learning points from Low Carbon Devon.

Learning from Low Carbon Devon		
University of Plymouth	Those designing / implementing similar interventions	Policy Makers
If possible, take forward the internship model – and its active engagement of both interns and business hosts in sharing knowledge and experience. Its length and inclusion of the Future Shift element have proven to give valuable outcomes for both interns and SME hosts. Take on board the benefits of working with SMEs at quite low levels of R&D activity in order to build UoP's knowledge exchange work and support more R&D in small businesses. LCD has demonstrated the business benefits that can flow from this. If a countywide initiative is to be undertaken again, give early consideration to partners that UoP could work with in order to maximise spread across Devon – as well as make best use of the networks it already has. Matching administrative requirements of ERDF with those of UoP has caused some issues e.g. on procurement. For future projects it would be valuable to discuss how requirements will work at project development stage so that issues later down the delivery line do not cause delays.	Where research fellows are intending to work with businesses within a programme, the model of the IRFs in LCD offers a very flexible model that could be adaptable to other situations. However we would say that, even within a flexible approach, there is a need to be clear about the basic parameters of what might be provided – the minimum and maximum situations The model of the knowledge exchange Systems Shift events programme has proven to be a popular one. Its structure in terms of raising awareness and taking action gives it a solid approach to knowledge exchange which could be replicable elsewhere The internship model has also proven to be very valuable, well structured and productive. This is also a model that could be transferred into other programmes – the active engagement of business host and intern being an important component in this Where using a logic model to scope the project, ensure that impacts are commensurate to proposed activities and, if to be quantifiable, are at a scale and with indicators where demonstrable change can be evidenced.	Encourage flexibility in business/ research collaboration and enable researchers to define the research needs with the business. Businesses are at different starting points in their R&D journeys and a rigid structure for an initiative cannot accommodate this. However, even within a flexible approach, our view is that there is a need to have some clear starting and end points as guidance.

Annex A - Low Carbon Devon events

Quarter	Date	Title	Attendees
Oct - Dec 20	11/4/20	FP2030 - RIBA Plymouth and University of Plymouth Annual Lecture 2020	156
	11/17/20	Mission Possible: Art and Enterprise for a Zero Carbon World	73
	11/18/20	FP2030 - Plymouth & South West Climate Issues	124
	11/30/20	Creative Associates Workshop	67
	12/2/20	FP2030 - Embodied Energy and Whole Life Carbon	57
	12/10/20	Expression of Interest Enterprise Workshop - A Catalyst for your Enterprise	36
	12/16/20	FP2030 - Standards for Better Performing Buildings	48
Jan - Mar 21	1/13/21	FP2030 -Skills –Technology and Innovation	64
	1/20/21	Achieving Net Zero Carbon and improving well-being and productivity	
	1/27/21	FP2030 - Circular Economy	86
	2/10/21	FP2030 - Biodiversity and Carbon Sequestration	107
	2/24/21	FP2030 - Retrofitting and Reuse	56
	2/24/21	FP2030 - Behaviour Change – Education	42
	3/10/21	FP2030 - Behaviour Change - Psychology	48
	3/30/21	High Water event	c100
Apr - Jun 21	4/22/21	Climate Action: the Time is Now	88
	4/21/21	FP2030 - Urban Design in a Post Covid World	49
	5/5/21	FP2030 - Health and Wellbeing	49
	5/19/21	FP2030 - Future Housing for Plymouth	65
	6/9/21	FP2030 - Planning (for the future)	69
	24-25/06/21	Sustainable Earth 2021 Conference	755
Jul - Sep 21	7/7/21	Creative Practices that Tread Lightly on the Earth: Workshop to Develop a Sustainable, Low Carbon Studio	22
	7/15/21	Purposeful Business	37
	9/15/21	B-Corp – Using Business as a Force for Good - workshop series	31
	9/22/21	FAB City Open Day – Hub open to visitors	50
	9/22/21	Take action: Devon Net Zero Innovation Fund	16
	9/25/21	FUTURES21 Voyage of Discovery	n/a
	9/28/21	Creative Commissions Green Minds / Mobility Hubs Workshop	29
	10/5/21	Greenwall Practitioner Help Guide Event	23
	10/6/21	FP2030 - RIBA Plymouth and University of Plymouth Annual Lecture 2020	
	10/12/21	B-Corp – Using Business as a Force for Good - workshop series	13

Oct - Dec 21	10/14/21	South West Innovation Expo	n/a
	10/19/21	Devon Chamber Green Networking Breakfast Event	n/a
	10/20/21	FP2030 - COP conversations: Is adaption the Cinderella of Climate Change?	62
	10/21/21	INSPIRE event - Leadership for the climate crisis / in times of uncertainty	20
	10/26/21	B-Corp – Using Business as a Force for Good - workshop series	13
	01-05/11/2021	Power Electronics Robotics 'Hackathon'	9
	11/1/21	Grey to Green – A Roadmap for Plymouth (The potential multiple benefits of green infrastructure and biophilia)	47
	11/2/21	Net Zero Live Devon Chamber event	n/a
	11/2/21	FP2030 - "2040" film screening	34
	11/9/21	B-Corp – Using Business as a Force for Good - workshop series	13
	11/17/21	FP2030 - Our Community's Response to the Climate Emergency and carbon reduction	32
	11/23/21	B-Corp – Using Business as a Force for Good - workshop series	13
	11/25/21	Sustainable Development Goals	15
	12/1/21	FP2030 - Retrofitting buildings: the Elephant in the Room!	63
	12/7/21	B-Corp – Using Business as a Force for Good - workshop series	13
	12/15/21	FP2030 - Nature Based Solutions and integrating Nature into our Buildings	34
	12/15/21	Intern Showcase Event	30
Jan - Mar 2022	1/12/22	FP2030 - How do young people feel about the Climate Emergency	35
	1/26/22	FP2030 - Structural and Civil Engineering Solutions to the Climate Emergency	53
	1/27/22	Net ZeroVisions launch and workshop	92
	2/16/22	FP2030: Futureproof Housing: Addressing the 'triple bottom line'	30
	2/19/22	Green Maker Initiative event	104
	2/21/22	Net ZeroVisions workshop 2	61
	3/9/22	FP2030 -The Biodiversity Emergency and Biodiversity Net Gain	100
	3/15/22	Meet the Supplier - building a sustainable local supply chain in Plymouth	14
	3/23/22	FP2030: Reduce Reuse Recycle: How are we dealing with our Waste	73
	4/6/22	FP2030: Future Electricity Use and Generation	69
	4/27/22	FP2030: How Could the Planning System better Help Climate Change?	58
	4/28/22	Future Homes Plymouth	120
	5/5/22	Carbon Footprinting event 1	20
	5/11/22	FP2030: Net Zero Carbon Futures from a Creative Perspective	38
	5/12/22	Open Day Cob Bauge building	63
	5/19/22	Carbon Footprinting event 2	12

Apr - Jun 22	5/25/22	FP2030: Resolving Transport issues for a Sustainable Future	45
	5/26/22	Carbon Footprinting event 3	9
	6/8/22	Internship launch event	30
	6/8/22	FP2030: Resolving Transport issues for a Sustainable Future	13
	6/9/22	Devon and Plymouth Chamber of Commerce networking breakfast - Energy Crisis	40
	6/16/22	Enviro consultancy showcase (end of carbon Footprinting series)	54
	24/06/22 27/06/22	SE22	58
Jul - Sept 22	7/7/22	Design of schools in relation to Indoor Environmental Quality	52
	7/18/22	Net Zero Visions Workshop 3	18
	7/19/22	Carbon Footprinting workshops for the interns	8
	7/20/22	Carbon Footprinting workshops for the interns	10
	7/21/22	Carbon Footprinting workshops for the interns	11
	8/24/22	Internship Celebration cohort 3	24
Oct – Dec 22	12/10/22	Cohort 4 internship launch	12
	13/10/22	Carbon footprinting taster for social enterprises	6
	20/10/22	Carbon footprinting event for enterprises - Workshop 1	29
	03/11/22	As above – Workshop 2	106
	10/11/22	As above – Workshop 3	42
	11/11/22	Low Carbon Devon Showcase event	130
	16/11/22	Positive tipping points – climate positive business	41
	17/11/22	Carbon footprinting event for enterprises Workshop 4	19
	07/12/22	Internship celebration Cohort	17
Jan - Mar 23	01/16/23	CobBauge and Sustainability Hub Open Day	121
	01/17/23	As above	
		TOTAL	4626

Annex B: Evaluation Method and Tasks

Evaluation Method

This longitudinal evaluation has taken a theory of change approach. It, starts from the LCD Logic Model and addresses the questions in DLUHC Summative Assessment guidance. This approach is in line with that proposed by UoP in its Summative Assessment Plan. Theory of Change explores the causal links implicit in the LCD Logic Model, about how the project activities are expected to lead to outcomes and impacts, the assumptions inherent in the Logic Model, the external factors which may affect the success of the project and the competing explanations that might lead to some outcomes occurring anyway without the project intervention. The Theory of Change approach also has a wider focus than the Logic Model, allowing for a better understanding of whether/how changes in the wider strategic and policy environment may have affected the ability of a project to deliver against its intended outputs, outcomes and impact.

Tasks undertaken at each evaluation stage

Tasks for the Evaluation Framework

- Reviewed the ERDF application and associated documents to fully understand the project, together with discussions with core project staff
- Scoped data collection methods and tools and how these would be used in ongoing monitoring for the LCD evaluation, particularly in relation to the summative assessments requirements which are summarised within the evaluation framework.
- Developed a programme for the evaluation activity to be covered at each stage of the work: This was then further elaborated in a supplementary document to the evaluation framework, which essentially set out the topic guides for use in all our proposed consultations at different evaluation points.

Tasks for Early Observations Report and 1st Interim Evaluation

- Review of key LCD documents such as the ERDF application, GFA and quarterly reports to DLUHC
- Review of project monitoring information on output and finances, and feedback forms collected by LCD e.g. from internships already completed
- Review of knowledge exchange information and systems, including application documents and processes where appropriate
- Direct consultations – with the LCD Steering Group, core team members and IRFs
- A review of marketing and communications activities, including email newsletters, DNZIF Call, information etc.
- A focused low carbon policy review

Tasks for 2nd Interim Evaluation

- Start meeting held at the Sustainability Hub with presentations from IRFs and KEO and discussion with LCD Team leads (March 2022)
- A review of project monitoring information on output and finances
- A review of the Project Change Request submitted and approved
- A review of feedback forms collected through the LCD internship programme

- A six month impact survey sent to Internship programme internees and SME hosts in Cohorts 1 and 2
- An online survey to those businesses that expressed an interest in applying for the DNZIF but did not progress beyond that initial enquiry stage
- A review of the associated research undertaken within the University of Plymouth in relation to the internship programme (specifically in relation to the Plymouth Compass sustainable leadership programme)
- A review of steering group meeting documentation – agendas, minutes of meetings etc
- A review of the geographical location of supported businesses
- Discussion with a sample of SMEs together with their associated academics/IRFs from LCD

Tasks for the Final Evaluation

- Document review covering project finances and outputs, quarterly progress reports to DLUHC, SA Monitoring Sheets and other lists with SME information, feedback from the Internship programme internees and SME hosts, the wider policy context and benchmarking review
- A six-month impact survey sent to Internship programme internees and SME hosts in Cohort 3. This received 11 responses from interns, and 12 responses from SME hosts (covering cohorts 1-3).
- A review of feedback received from cohorts 1-3. These feedback forms were sent by the Knowledge Exchange Officer to both interns and intern hosts. In total 15 responses were received from interns, and 16 responses from SME hosts.
- One-to-one interviews with 14 SMEs involved in LCD and drawn from internships, IRF collaborations and DNZIF.
- 15 one-to-one interviews with the LCD core team, IRFs, Knowledge Exchange Officer, Communications Officer, and a sample of other academics and staff in UoP involved in LCD
- 3 individual interviews with other stakeholders linked to LCD – Steering Group members

Annex C - Perceived benefits to the participants in the project

One of the project specific evaluation questions that was outlined in the ITT is that of capturing and understanding the perceived benefits to participants in the project – businesses, academics, students and graduates. Whilst we have integrated the benefits to SME businesses into the main report, it has been more difficult to do this for other participants within the context of project outcomes and impacts. We have therefore added this standalone annex to provide further feedback that does not easily fit with the Summative Assessment format of the main report. It is based on feedback from internees in Cohorts 1 and 2 and from academics interviewed.

Reasons for participating

Internees

Feedback from a small sample (4) of internee interviews indicates that the main motivations were filling a knowledge gap and being a good fit with their academic course/degree.

Academics

From the academic perspective of those associated with DNZIF projects, fit against own research activities and interests was a clear motivating factor for two of the four academics interviewed – including the practical application of academic research (a first experience of a business collaboration) and interpreting the findings of research already in progress in a way that would be useful practically to other organisations.

For the other academics interviewed the motivation was less about research and more related to already having a relationship with a specific business and understanding what other practical support they could provide to that business. From our small sample of interviews, most already had a relationship with the business, with just one DNZIF representing a new relationship (to the academic and to UoP).

Benefits gained

Internees

In terms of contribution to career development/employment prospects, of seven internees in Cohort 2 three rated their internship experience as 10 (out of 10), two as 9 and two as 8. This indicates they all considered it to be making a valuable contribution to their career development. All seven also 'agreed' or 'strongly agreed' that their internships had provided them with relevant leadership development and enhanced transferable skills

Discussion with some internees[29] and other feedback provided further qualitative feedback that included:

- An opportunity to explore new ideas and concepts and try them out
- Good mental stimulation
- Good practical real life business experience
- Improvement in communications skills – and learning new skills for specific intern tasks undertaken
- Creating good contacts
- Helps you find out what you like doing – and don't like doing

[29] *Based on the research work undertaken by UoP alongside the internships and the interviews this held with Cohort 1 and 2 internees*

- Doing something useful
- Working with people who share the same sustainability values – leading to more collective environmentally friendly activity
- Seeing how sustainable practices can be applied to all industries
- Making more connections with other graduates and university staff with the same interests
- Using strengths and skills to find ways round problems

From the range of comments made it is clear that internees have built up a multi-faceted range of personal knowledge and skills through their internship, as well as discovering things about themselves in the process. All of them would recommend the internship programme to other students and graduates.

Academics

- Benefits to academics indicated in our discussions have covered:
- Helping to see how research can be explained to a wider audience in a practical way
- Helping to widen the knowledge about the potential outcomes being generated by their research
- Learning more about the potential of a circular economy e.g. using waste products for new product development
- The DNZIF has acted as a useful vehicle to establish a collaborative relationship with local SMEs. Whilst the available funding was relatively small in research income terms, it has acted as a useful introduction for both parties, in some instances now being extended through other means
- The fact that LCD offered real on-the-ground support to businesses has meant that in other wider forums/networks, some academics have been able to highlight the practical support that the university can offer, sometimes moving beyond conceptual discussions

Challenges

Internees

Internees identified some very practical challenges associated with their internship as well as more broader challenges.

At a practical level:

- Starting an internship when a main contact had unexpectedly been unavailable (leave, sickness etc.) and having to pick up the work not knowing how far it had progressed
- Working remotely (given the impact of Covid) – making it harder to obtain information, build up a rapport with team members through virtual meetings, have conversations with work colleagues about difficult subjects like attitudes to change; and the need to be self-motivated and organised
- Understanding the terminologies/systems used internally within a host business

The broader challenge that was highlighted was that the environment and sustainability can (still) be quite a contentious subject. Some interns felt they needed personal resilience and diplomacy to engage in some conversations. Asking the right questions can be hard – as people may not want to tell you about what they are (or are not) doing about a sustainability issue. One comment discussed the need to put yourself in the shoes of the person you want to convince and think what it would

take to change their mind. In this context, the internee learning workshops are clearly seen as valuable as a place to share some of these experiences and get wider views on how best to address these sometimes difficult conversations.

Academics

From the academic perspective one challenge that has been raised is that of resources. At the scale at which DNZIF works – and the funding that is available, it is not necessarily sufficient to bring in additional resources to undertake the work (although one academic had brought in part-time resource to help). It may only work if some resource was already in place or easily accessible (e.g. postgraduate student resource). Two of the three DNZIF project academics interviewed commented on this, one in the context of needing to rejig own working priorities to cover the DNZIF work, and one benefiting from already having some time available from an MSc graduate.

One academic commented on the lack of a pathway from the DNZIF. It is quite a small sum (although useful) but does not necessarily cover all the work needed to fully move the collaborative activity on. There is currently an onus for the academic to find alternative funding if they wish to continue activity.