

# **Summative Assessment of the Sustainable Energy in Public Buildings Project**

**ERDF Project Ref: 36R16P00208**

**Herefordshire Council**

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**European Union**

European Regional  
Development Fund



**Sustainable Energy  
in Public Buildings**



## Contents

<b>1:</b>	<b>Executive Summary.....</b>	<b>3</b>
<b>2:</b>	<b>Introduction and Project Background.....</b>	<b>6</b>
<b>3:</b>	<b>Strategic Contexts.....</b>	<b>10</b>
<b>4:</b>	<b>Methodology and Summative Assessment approach.....</b>	<b>14</b>
<b>5:</b>	<b>Project Performance and Progress.....</b>	<b>18</b>
<b>6:</b>	<b>Qualitative Views on the Project.....</b>	<b>26</b>
<b>7:</b>	<b>Cross Cutting Themes.....</b>	<b>29</b>
<b>8:</b>	<b>Value for Money.....</b>	<b>30</b>
<b>9:</b>	<b>Conclusions and Lessons Learnt.....</b>	<b>33</b>

## 1 Executive Summary

- 1.1 Every European Regional Development Fund (ERDF) Grant Funding Agreement places a requirement on all grant recipients to undertake a Summative Assessment. Herefordshire Council have commissioned this evaluation and Summative Assessment to review the impacts of the Sustainable Energy in Public Buildings project across a range of environmental, economic and social outcomes and impacts.
- 1.2 This report provides:
- An overview of the Summative Assessment process
  - An assessment of final project performance and milestones
  - An assessment of potential greenhouse gas reductions from the project
  - Stakeholder views on the effectiveness and relevance of the project
  - A review of value for money
  - Lessons learnt, conclusions and recommendations
- 1.3 The Sustainable Energy in Public Buildings project has operated across the Marches and has been led by Herefordshire Council, working in partnership with Shropshire Council and Telford and Wrekin Council. The project was developed as a grant fund to assess and install a range of low carbon and energy efficiency technologies to public buildings across the Marches Local Enterprise Partnership area.
- 1.4 The project had an initial start date of March 2017 and a Practical and Financial Completion Date of 28<sup>th</sup> February 2020. The project was subsequently extended to the end of June 2023. The overall project budget was £2,942,303, including £1,657,608 European Regional Development Fund.
- 1.5 To the end of March 2023, there has been a total of 31 individual projects completed on 26 public buildings that include Theatres, Libraries, Leisure Centres and Council Offices across the three Local Authority areas.
- 1.6 The total investments in these projects means that, at the end of March 2023 when the penultimate ERDF claim was submitted, the project had defrayed £1,500,865 of capital expenditure and £381,084 of revenue expenditure (totalling £1,881,944). As shown below, this represents a total of 63.6% of the proposed £2,942,303 budget.

**Table 1.1 Project Expenditure**

Capital/Revenue	Defrayed Claim 25	Budget	Variance
<b>Capital</b>	<b>£1,500,865</b>	<b>£2,358,720</b>	<b>-36.4%</b>
More Developed	£341,104	£864,000	-60.5%
Transitional	£1,159,761	£1,494,720	-22.4%
<b>Revenue</b>	<b>£381,084</b>	<b>£583,583</b>	<b>-34.7%</b>
More Developed	£135,898	£213,730	-36.4%
Transitional	£245,186	£369,583	-33.6%
<b>Total</b>	<b>£1,881,949</b>	<b>£2,942,303</b>	<b>-36%</b>

- 1.7 As the project draws to a close, there are still a number of projects that are expected to complete. Should all of these projects complete and defray all of the proposed expenditure it would result in a total project capital expenditure of £1,786,216 which would represent a total of 75.7% of the available capital budget.
- 1.8 Table 1.2 below shows the final performance of the project to the end of March 2023 (based on ERDF Claim 25). The project has been consistently claiming outputs as individual projects have completed and has now completed installations on 28 individual public buildings within the Marches.

**Table 1.2 Performance Against Outputs**

Output	Target to May 2023	Achieved Claim 25	Projected Performance	Variance
(C32) Decrease in annual primary energy consumption of public buildings (kWh)	2,129,719	1,544,730	1,763,920	-17.2%
More Developed	782,117	313,319	320,056	-59%
Transitional	1,347,602	1,231,411	1,443,864	+7.1%
(C34) Estimated annual decrease of GHG (Tonnes)	621.25	480	527.58	-15.1%
More Developed	218.06	97	98.57	-54.8%
Transitional	403.19	383	429.01	+6.4%

- 1.9 As the project draws to a close, there is one last project that is expected to complete in Herefordshire, which should deliver a small amount of additional outputs. Should all the outstanding projects within the Transitional Area complete, the project will exceed its C32 output by 6.6% and its C34 output by 6.4%. However, overall the project will be 17.2% and 15.1% below these respective outputs.
- 1.10 There are likely to be a number of wider impacts from the Sustainable Energy in Public Buildings project that are realised in both the short and longer term. There is clearly scope for the model to be replicated post-ERDF investment with some of the projects offering significant payback timeframes. There is still the potential for future availability of grants or loans for retrofitting public buildings.
- 1.11 Where LED lighting or building management approaches have been used, it has improved the working environment for a considerable number of public sector staff, which will undoubtedly have a bearing on productivity. It has also helped reduce the costs of heating and lighting many buildings that are used by the public – again providing a better environment. In the case of semi-commercial services offered in part by Local Government, such as leisure facilities or Theatres, it may help to stem the worst of any price increases during a time of higher energy costs.
- 1.12 One of the objectives for the project was to generate a range of supply chain and construction jobs. It is estimated that a total of 21.33 Full Time Equivalent construction jobs were created over the installation cycle of the project.

- 1.13 The Summative Assessment has found that the Sustainable Energy in Public Buildings project has offered very good value for money in line with unit costs against peer projects and that the unit cost may ultimately be lower depending on which projects complete in the final quarter.
- 1.14 The range of technologies used, although now relatively common in the market place, have demonstrated a good payback period to each Local Authority. There is clearly scope to use the lessons and case study of the project to implement other low carbon technology projects in public buildings across the Marches.
- 1.15 The project has been making investments in low carbon technology across public buildings over an extended period of time, during which time the COVID-19 pandemic closed many public buildings and sapped need and demand and then the war in Ukraine spiked energy prices and demand for low carbon technology, which increased costs and restricted available supply. These are all factors that the project could not foresee when originally bidding for ERDF investment.
- 1.16 It has been difficult to coordinate the development and delivery of a pipeline of individual projects and the staff resources within the project at times have been insufficient to progress projects in a timely manner and any future set of projects in this area will need to reflect on this.
- 1.17 Some of the buildings put forward for the project were aged buildings, with a significant number of 1970s prefabricated concrete buildings within portfolios. Ultimately this meant installations were rarely a straightforward process which increased costs and timeframes.
- 1.18 The Sustainable Energy in Public Buildings project should meet most of its revised ERDF targets and is expected to reduce demand for 1.75m kWh of primary energy and reduce Greenhouse Gas emissions by 525 tonnes per annum. These outputs will have been delivered whilst committing most of the project budget.

## 2 Introduction and Project Background

- 2.1 Every European Regional Development Fund (ERDF) Grant Funding Agreement places a requirement on all grant recipients to undertake a Summative Assessment. Herefordshire Council have commissioned this evaluation and Summative Assessment to review the impacts of the Sustainable Energy in Public Buildings project across a range of environmental, economic and social outcomes and impacts.
- 2.2 This Summative Assessment complements the monitoring process undertaken by the project and draws from the project's Logic Model (explained further within the Methodology section). The Summative Assessment has been co-ordinated by S4W Ltd, drawing on a range of performance data (including the approaches to calculate CO<sup>2</sup> equivalent reductions), along with a range of financial and qualitative data.
- 2.3 This report provides:
- An overview of the Summative Assessment process
  - An assessment of final project performance and milestones
  - An assessment of potential greenhouse gas reductions from the project
  - Stakeholder views on the effectiveness and relevance of the project
  - A review of value for money
  - Lessons learnt, conclusions and recommendations

### *Overview of the Sustainable Energy in Public Buildings Project*

- 2.4 The Sustainable Energy in Public Buildings project has operated across the Marches and has been led by Herefordshire Council, working in partnership with Shropshire Council and Telford and Wrekin Council. The project was developed as a grant fund to assess and install a range of low carbon and energy efficiency technologies to public buildings across the Marches Local Enterprise Partnership area.
- 2.5 The Local Authority submitted an application to the Marches ERDF programme for £916,380 of ERDF funding under ERDF Investment Priority 4C towards a total project cost of £1.62m:
- “Supporting energy efficiency, smart energy management and renewable energy use in public infrastructure, including in public buildings and in the housing sector.”*
- 2.6 The project has been funded through the Marches ERDF allocation. The Marches covers two different categories of region for the purposes of administration of ERDF. Shropshire and Telford and Wrekin are Transition areas<sup>1</sup>, which allows a 60% intervention rate for individual projects and Herefordshire is a More Developed area, which can receive a maximum intervention rate of 50%.

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<sup>1</sup> A Transition area is a region of the European Union where per capita Gross Domestic Product is between 75% and 90% of the EU average. A More Developed region is an area where Gross Domestic Product per capita is in excess of 90% of the EU average.

Table 2.1 ERDF Project Budget

Investment Source	Original Budget	Extended Budget (PCR)
<b>Capital</b>	<b>£1,296,000</b>	<b>£2,358,720</b>
More Developed	£432,000	£864,000
Transitional	£864,000	£1,494,720
<b>Revenue</b>	<b>£321,143</b>	<b>£583,583</b>
More Developed	107,048	£213,730
Transitional	214,095	£369,583
<b>Total</b>	<b>£1,617,143</b>	<b>£2,942,303</b>
ERDF Grant - More Developed	£269,524	£538,865
ERDF Grant – Transitional	£646,857	£1,118,743

- 2.7 Within the Full Application, project matched funding came from each individual Local Authorities, who committed a pooled budget to support individual projects. On an operational basis, the commitment of matched funding was more piecemeal across each Local Authority and came from a range of different budgets. The matched funding commitments were:

Herefordshire Council – Phase 1 - **£329,120**, Phase 2 Total - **£618,244**

Shropshire Council – Phase 1 - **£186,570**, Phase 2 Total - **£265,515**

Telford and Wrekin Council – Phase 1 - **£186,570**, Phase 2 Total - **£400,936**

- 2.8 The project had an initial start date of March 2017 and a Practical and Financial Completion Date of 28<sup>th</sup> February 2020. The project was subsequently extended to the end of June 2023.
- 2.9 The Marches is a predominately rural area and many of the public buildings are in semi-rural locations. The costs of delivering public services in the Marches is already relatively expensive compared to urban areas so investment from ERDF to reduce energy costs is a welcome input – especially if it can inform future business cases to invest in additional public buildings.
- 2.10 This lack of stimulus and opportunity for a private sector led or commercial adoption of low carbon technology has created the need for a public sector led project to demonstrate how low carbon technology can be implemented and retrofitted on a ‘whole building’ approach. This will provide visibility to some of the solutions that are being rolled out elsewhere across the UK, with ERDF being the driver behind locally based adoption of low carbon technology and using external resources to cover the funding gap.

2.11 Overall the programme will:

- Identifying suitable potential buildings with each Local Authority partner;
- Engaging building users to develop options and an investment business case;
- Applying for grant funding through ERDF and other potential routes such as Salix;
- Procure contractors to install measures;
- Confirm works have been completed and the required outcomes delivered.

2.12 ERDF has part funded a Project Team across all the partners including a Full Time Equivalent Manager, a Full Time Equivalent Project Officer and a grants team made up of 2.4 Full Time Equivalent posts.

#### *Project Deliverables*

2.13 The project application consisted of the likely utilisation of the following technologies:

- **Solar Voltaic Arrays:** Both roof mounted and ground mounted
- **LED Lighting and Controls:**
- **Solar-thermal Water Heating:** Including solar collectors and ground bore holes
- **Air Source Heat Pumps:**
- **Other relevant measures:**

2.14 The project's Full Application committed to delivering the outputs specified in Table 2.2 below, reducing almost a million kWh of primary energy consumption and reducing annual emissions of Greenhouse Gases (measured through CO<sup>2</sup> equivalent) by 340 tonnes. A subsequent project change request was submitted that extended the project and more than doubled the kWh reduction target and increased the Greenhouse Gas reduction target by over 80%.

Table 2.2 ERDF Project Outputs

Output	Target Full Application	Target PCR February 2020
(C32) Decrease of annual primary energy consumption in public buildings (kWh)	996,718	2,129,718
(C34) Estimated annual decrease of GHG (tonnes)	340	621.25

#### *Project Governance*

2.15 The day to day management and administration for the project has been undertaken by the Project Team at Herefordshire Council, which consists of a Project Manager and a Project Officer. The project process includes assessing potential buildings, providing energy reports, appraising applications and overseeing the administration of grant offers, monitoring and claims and payments. During the first phase of the project, staff members at Shropshire Council and Telford and Wrekin Council that worked on the project were claimed as costs based on timesheets.



- 2.16 The project is overseen by a Project Board, which oversees the project at a strategic level and oversees the risk and financial management of project. The Project Board is made up of relevant senior officers from across the three Authorities. The more day-to-day co-ordination of the project was undertaken by a Project Steering Group. The Project Steering Group was more focussed on developing and managing the project pipeline and working through any operational blockages. Both the Project Board and Project Steering Group had an operational terms of reference agreed by partners.
- 2.17 The team at Herefordshire Council are also responsible for the delivery of projects within Herefordshire, whilst there is a team within both Shropshire Council and Telford and Wrekin Council. The local teams identify suitable public buildings within their areas, prepare an Expression of Interest to submit to the central Project Team for eligibility checks, appraisal and scoring. The project then co-ordinate the completion of A Non Domestic Energy Assessment<sup>2</sup>.
- 2.18 In order to apply for a grant via a Full Application, first a procurement exercise needs to take place in advance of starting any project measures – which the outcome informing budgets, timelines and specifics in terms of grant conditions. The project is then passed to the Steering Group for approval.
- 2.19 Successful applications are then contracted, with payment made in arrears on successful completion of the project.

### *Project Change Requests*

- 2.20 A first Project Change Request (PCR) was submitted in November 2017 to reprofile some of the salary budget into a consultancy budget as recruitment of the Project Team had been delayed. A further PCR was submitted in March 2019 to further reprofile underspends.
- 2.21 A third PCR was submitted in January 2020 to extend the project by three months to allow an additional tranche of grants to defray their expenditure and allow an accurate assessment of the likely outputs from these grants.
- 2.22 The project submitted a PCR in February 2020 to extend the project's Practical and Financial Completion Dates to 31<sup>st</sup> May 2023, an extension of a further 3 years. To support the extension, the project's budget was increased by over 82% from £1,617,143 to £2,942,303. The extended project increased the project outputs as identified in Table 2.2. A final PCR extended the completion date further to 30<sup>th</sup> June 2023.

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<sup>2</sup> The methodology for NDEAs utilises BRE's Simplified Building Energy Methodology software (SBEM) and allows an assessment and recommendation report to be generated on which a grant application and subsequent offer may be based

### 3 Strategic Contexts

#### *UK Clean Growth Strategy*

3.1 The UK Clean Growth Strategy was the primary sustainable economic plan in place at the time the project was developed. The strategy demonstrates how the UK economy can transition towards ensuring future economic growth whilst meeting the challenge of reducing carbon emissions by 80% by 2050. The strategy centres upon increasing efficiency, delivering energy securing and lowering energy costs for consumers and businesses.

3.2 Heating in buildings and industry creates around 32% of total UK emissions, although the public sector overall account for only 2% of all UK carbon emissions<sup>3</sup>. The strategy notes the role the public sector, both nationally and locally, must play to drive carbon reduction.

*“Since 1990, the public sector – including central and local government, health, education and emergency services – has reduced its emissions by 40 per cent.”*<sup>4</sup>

3.3 The delivery of the Net Zero target by 2050 means buildings and activities across the public sector will need to achieve Net Zero. The strategy highlights the role of the public sector as a leader in driving carbon emissions, whilst also being able to reap the benefits of reducing energy bills – something which has come much more to prominence in recent times. This includes stimulating demand for low carbon products and innovation.

*“The public sector...has a key role to play in demonstrating best practice, promoting transparency over emissions reporting and catalysing markets in energy efficiency by implementing measures at scale”*<sup>5</sup>.

3.4 The strategy notes the falling costs of many low carbon technologies globally, coupled with accelerating momentum in the deployment of these technologies to reduce emissions. This has been particularly visible in the solar power sector, where investment is now possible without significant government support. Government want to see more people invest in in solar without government support.

3.5 There is a strong need for the UK to innovate in these areas as local renewable electricity production is a disruptive technology for the established grid system – with a small number of concentrated producers to a scenario where there are many thousands, including production from a large number of industrial and domestic sites.

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<sup>3</sup> Clean Growth Strategy (2017) Department for Business, Energy and Industrial Strategy, p9

<sup>4</sup> Clean Growth Strategy (2017) Department for Business, Energy and Industrial Strategy, p113

<sup>5</sup> Clean Growth Strategy (2017) Department for Business, Energy and Industrial Strategy, p115

### *Wider UK Strategic Context*

- 3.6 The Sustainable Energy in Public Buildings project was developed in the context of the UK Industrial Strategy, which has subsequently taken a policy back seat as focus switched to the Levelling Up agenda.
- 3.7 The UK Industrial Strategy set out a long-term plan to boost the productivity and earning power of people throughout the UK. It aims to help industry create higher-paying jobs in every part of the UK through investment in the skills, industries and infrastructure of the future. The White paper published in November 2017 highlights the importance of the ability to innovate – to develop new ideas and deploy them.
- 3.8 Within the Industrial Strategy are a number of ‘Grand Challenges’ facing the UK economy, one of which is ensuring future long term clean growth – overseeing a growth in productivity and green jobs whilst transitioning away from fossil fuel and non-renewable resource driven growth. The transition to clean growth is seen as a major opportunity for the UK to secure long term economic growth.

*“The UK’s clean economy could **grow at four times the rate of GDP**<sup>6</sup>”*

- 3.9 The driver for clean growth was seen as accelerating the adoption of low carbon technologies, at the heart of the Low Carbon Barrow project. The drive to develop a market for retrofitting and making more efficient commercial and residential buildings is a key strategic objective – which the demonstration projects of the Low Carbon Barrow project are showcasing a range of suitable technology and its results.
- 3.10 The Build Back Better policy statement of March 2021 sets out a path to economic and social recovery after the COVID-19 pandemic and saw the UK’s economic policy move on from the Industrial Strategy. The statement reaffirmed the UK’s commitment to meet its climate change commitments, including the commitment to achieve net zero in electricity production by 2035 and achieve overall net zero emissions by 2050. The statement aims to ensure:

*“The UK will continue to be at the forefront of tackling climate change and is already a world leader in clean growth. We will take action to fulfil our commitment to be the first generation to leave the natural environment in a better condition than we found it.”<sup>7</sup>*

- 3.11 The project is also taking place during a change in the regional growth agenda, with EU investment and policy no longer the main driver for local action. The **Levelling Up** agenda sets out the vision for overcoming a range of geographical imbalances and inequalities across the UK, set out in the White Paper of February 2022. The plan aspires to ensure that socio-economic opportunity is spread across all corners of the country.

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<sup>6</sup> UK Industrial Strategy: Building a Britain Fit for the Future (2017) BEIS, p144

<sup>7</sup> Build Back Better: Our Plan for Growth (2021) HM Government, p27

- 3.12 The Levelling Up White Paper reflects on the fundamental economic change the now legal requirement to achieve Net Zero by 2050 will have on the UK and the opportunities and threats this will pose to regional economies. The greatest opportunities will be for areas to build on existing strengths.
- 3.13 The project was developed in advance of the COP26 ***UN Climate Change Conference*** in Glasgow but has partly been delivered in its shadow, especially the final stages of delivery. COP26 expressed a series of desirable outcomes to enable deeper cuts in greenhouse gas emissions to ensure global temperature rises do not exceed 1.5 degrees. Those with relevance to this project include encouraging investment in renewables and adapting to protect communities and habitats from climate change.
- 3.14 The COP26 outcomes are reflected in ***the UK Government's Net Zero Strategy*** of December 2021 (Build Back Greener). The strategy is a further step on the way to the UK become Net Zero for carbon emissions by 2050, whilst also supporting sustainable economic growth.
- 3.15 The Strategy is planned over a relatively long-term time horizon, in some cases decades, and will be delivered through a 10-point plan. Planned investment and regulation through the Strategy aim to create 440,000 green jobs by the end of 2030.
- 3.16 Key actions within the 10-point plan including decarbonising the electricity grid by 2035, transitioning from natural gas to other fuel sources (including increasing the use of hydrogen), transitioning to zero emissions vehicles and lower carbon forms of sea and air travel, supporting lower emissions buildings and protecting the natural environment.

### ***Sub-Regional Context***

- 3.17 The Marches Local Enterprise Partnership (LEP) area refreshed its Strategic Economic Plan (SEP) in 2019. The ambition is to increase GVA to 23.8bn and create 58,700 new jobs by 2038. The plan specifically aims to create 1,000 new jobs in the Low Carbon sector by 2030, reduce carbon emissions by 57% by 2032 and move to 50% renewable energy generation by 2030<sup>8</sup>. The Marches LEP Energy Strategy also identified significant opportunities to generate renewable energy across the Marches area and relieve pressure on the local energy grid.
- 3.18 The Marches EU Structural and Investment Funds Strategy 2014-20 (ESIF) echoes the Strategic Economic Plan and confirms the need to increase the use of renewable energy, decrease energy use and promote smart energy systems as part of the Marches ESIF Strategic Activity 'Supporting the Shift to a Low Carbon Economy' (Priority Axis 4).

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<sup>8</sup> The Marches Strategic Economic Plan (2019) Marches LEP p19

### *Market Failure Context and recent events*

- 3.19 Within the full application and the project's Logic Model the project identified a series of market failures that the project has aimed to help overcome. Firstly, all of the individual projects within the Sustainable Energy for Public Buildings project are non-economic and therefore cannot, at the scale proposed, attract significant private investment or generate commercial scale returns. They are also effectively upgrades to buildings and therefore not simply part of any ongoing maintenance function.
- 3.20 The Local Authority is the main organisation that can take the risk on part investing in the technology and then demonstrate and disseminate any benefits to the wider community – which a private business or even other organisation may be less inclined to do or not have the infrastructure to do so. This means the Local Authority needs to take a leadership role in this area.
- 3.21 Although occurring nearer the practical completion of the project than the start date, the COP26 conference and the current energy crisis caused by the war in Ukraine have had a bearing on the latter delivery of the project. Significant energy price spikes have skewed the focus of businesses onto reducing energy use and costs and have resulted in significant demand for low carbon technology. These two events have made the findings and legacy of this project all the more important.

## 4 Methodology and Summative Assessment approach

*“...Summative Assessments are intended to provide insights into project performance to enhance their implementation, reliable evidence of their efficiency, effectiveness and value for money, as well as insights into what and why interventions work (or not) and lessons for the future.”<sup>9</sup>*

- 4.1 This Summative Assessment report is the end of a process that began early in the project delivery cycle to understand the impacts on carbon reduction across the sub-region and lessons learnt from the Sustainable Energy in Public Buildings project.
- 4.2 The Summative Assessment study is being undertaken as the project is beginning to wind down its activity and draws from a range of monitoring data from across the strands of delivery where this data is information. Performance of the project has been analysed to the end of March 2023 (Claim 25) and has been extrapolated to the end of May 2023.
- 4.3 A Summative Assessment process is based around three phases, which are:

**Stage 1** - Summative Assessment planning including the completion of a logic model and the summative assessment plan using templates provided by the managing authority. This process has been completed.

**Stage 2** – Data collection and reporting on the ERDF programme’s monitoring requirements and to support the final Summative Assessment. This process is ongoing until the practical completion date.

**Stage 3** - The completion of the Summative Assessment and its summary template provided by the Managing Authority.

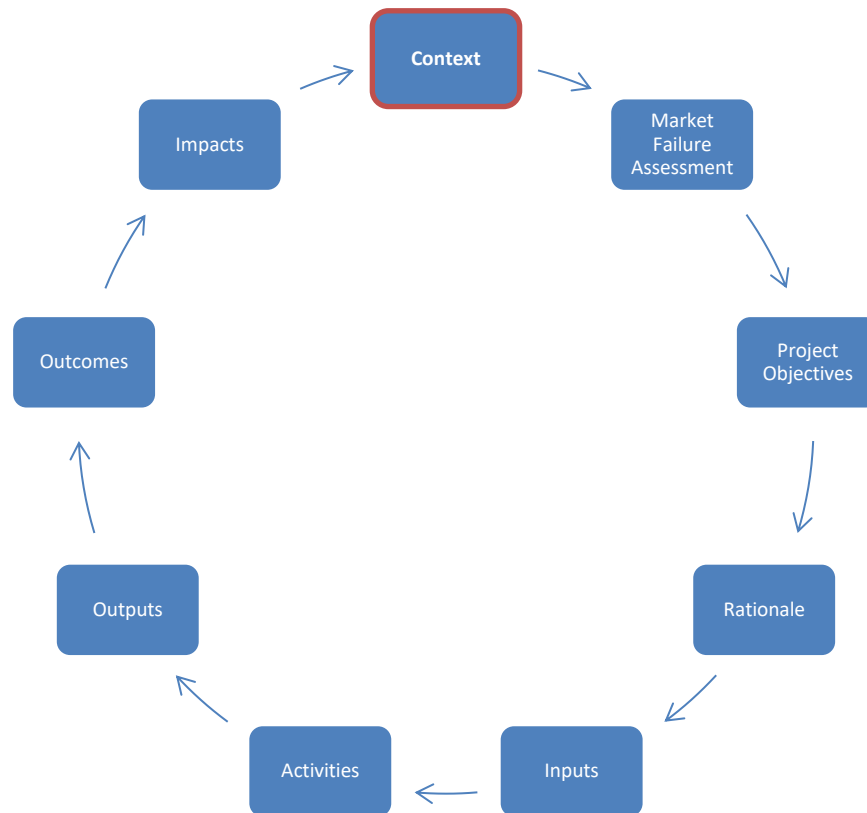
- 4.4 The process has drawn heavily from the latest (July 2020) ERDF Summative Assessment Guidance, assessing the following key components:
- The progress of the project against contractual budget and targets for ERDF
  - The experience of delivering and managing the project
  - The impact of the project on ERDF cross cutting themes
  - The cost-effectiveness of the project and its value for money.
  - Key lessons learnt for future carbon reduction projects

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<sup>9</sup> Summative Assessment Guidance (August 2017) MHCLG page 3

- 4.5 The Summative Assessment process also draws from an underpinning logic model for the project, which encourages projects to consider in project design, delivery and implementation how activity within the project can be measured and what type of outcomes and impacts the project will deliver.

Diagram 4.1 Summative Assessment Logic Model



Source: MHCLG – Summative Assessment Logic Model

- 4.6 Diagram 4.1 identifies the ‘theory of change’ driven logic model for the project development, delivery and final Summative Assessment. The Logic Model involves understanding the context within which the project will operate and the market failure(s) it will try and address. From these contexts, a set of objectives have been set for the Summative Assessment to identify how planning and implementation are clearly linked to achieving a set of outputs, outcomes and impacts.
- 4.7 The logic model is a key mechanism for ensuring learning and feedback is constantly incorporated into the delivery of the programme, how it effectively engages and supports beneficiaries, the quality of services it delivers and how it measures impact.
- 4.8 The Logic Model is included as an appendix, but the rationale behind the project was to develop a ‘whole building’ approach to retrofitting a series of demonstration projects within public buildings. The aim of the project is to provide and demonstrate that investment in low carbon energy solutions can be deployed in public sector buildings and are a cost effective approach to reducing carbon emissions across the Marches area.

### *Calculating Greenhouse Gas Emissions Reduction*

- 4.9 The outputs related to the Sustainable Energy in Public Buildings project are based on calculating the kWh of energy that is likely to be generated from renewable resources or reduced through utilising energy efficient technology. In most of the projects this has been based on the technical specifications within the technology installed.
- 4.10 The more complex output is the calculation of Greenhouse Gas emissions, or the C34 ERDF output. This requires across all elements of the project (including individual grant awards) a calculation of a baseline CO<sub>2</sub> equivalent emissions and the resulting reduction after the intervention. ERDF guidance states this needs to be undertaken in line with the carbon calculation tools in BEIS Conversion Factors.

#### **BEIS Conversion Factors**

The Department for Business, Energy and Industrial Strategy produces an annual **Conversion Factors**, a range of data via a spreadsheet that provides an average estimation of the Greenhouse Gas emissions related with a range of activities including distance travelled, litres of fuel types used and tonnes of waste disposed of. The amount of Greenhouse Gas emissions per activity changes on an annual basis. This is partly because areas such as the electricity grid becomes more dependent on renewables or new technology makes vehicles more efficient.

### *Stakeholder Engagement*

- 4.11 As part of the Summative Assessment process, a number of project staff at Herefordshire Council, Shropshire Council and Telford and Wrekin Council were interviewed during April 2023. The aim of the interviews was to understand whether the management and governance were effective, to understand wider impacts, to gauge potential opportunities and barriers to expanding low carbon technology across the sub-region and to understand any lessons learnt from the project. These interviews also identified a number of buildings for use as case studies.

### *Impact Calculations*

- 4.12 One of the key elements of a Summative Assessment is to understand the range of economic impacts of ERDF investment. The key ERDF impact are net increases in Jobs and Gross Value Added as a direct result of the project intervention. Understanding the economic impacts is a relatively difficult process for the project as the beneficiaries are either non-economic entities or are not being supported to deliver economic outcomes. Any economic impacts are of an anecdotal nature and have been incorporated into sections five and six.



### *Data Collection and Analysis*

4.13 The methodology has worked within the parameters of the UK General Data Protection Regulation, recognising the study will require direct feedback from businesses and case studies and interrogation of the management information systems of project partners. The research has been undertaken drawing on the GDPR principles of:

- Processing data in a lawful, fair and transparent manner
- Data is collected for a specific, explicit and legitimate purpose
- Is accurate and up-to-date
- Is processed in a manner that ensures security of the personal data
- Is based on consent of the data subject

## 5 Project Performance and Progress

- 5.1 At the point of completing the Summative Assessment the project has only one final claim to submit for the period 1<sup>st</sup> April to 30<sup>th</sup> June 2023. At this point the project will have been operational for over six years.
- 5.2 To the end of March 2023, there has been a total of 31 individual projects completed on 26 public buildings that include Theatres, Libraries, Leisure Centres and Council Offices across the three Local Authority areas.
- 5.3 Table 5.1 below shows the list of projects that have been approved and completed across Herefordshire. There has been a total of 9 projects completed on 8 buildings across the County. Blueschool House has been the recipient of two grant projects.

**Table 5.1 Claimed Projects in Herefordshire**

Property	Total Project Cost	kWh savings	GHG Emissions Reduction
HARC	£53,533.29	48,697	17.00
Blueschool House (2 phases)	£78,319.33	60,466	19
Leominster MAO	£16,950.00	28,625	10.06
Hereford Crematorium	£14,002.00	5,949	2.10
Hereford MRLC	£18,873.00	20,868	7.30
8 St Owen Street	£75,688.78	55,276	12.10
Widemarsh Childrens Centre	£58,374.50	66,927	23.50
Courtyard Theatre	£24,362.72	26,511	6.20
<b>Total</b>	<b>£341,103.62</b>	<b>313,319</b>	<b>97.26</b>

- 5.4 An example of the type of projects supported in the county include the ***Herefordshire Archives and Record Centre*** (HARC), a new building that opened to the public in 2015. The building holds the county's archive, archaeology unit, historic environment records and biological records. The project supported the installation of 180 solar panels on 294m<sup>2</sup> of roof space. The payback period to the Local Authority is estimated to be around 5 years.



Solar Panels on the roof of HARC



PV Panels at the Leominster Multi Agency Centre

5.5 The **Leominster Multi Agency Centre** is used as an office and meeting space for Local Authority staff and also hosts the local Children's Centre. The Sustainable Energy in Public Buildings project invested a total of £16,950 in 88 Photo Voltaic panels across 171m<sup>2</sup> of roof coverage. It is anticipated the investment will save £3,800 per annum and has a payback period to the Local Authority of 2.3 years.

- 5.6 **Blueschool House** is a joint office between Herefordshire Council and the Department of Work and Pensions located in Hereford. The Sustainable Energy in Public Buildings project invested in a series of energy saving measures including LED Lighting Controls and a Building Management System to link the heating and cooling systems. The payback period to Herefordshire Council is estimated to be 17.5 years.
- 5.7 Table 5.2 below shows the list of projects that have been approved and have now been completed across Shropshire. There have been a total of 11 projects completed across a range of 10 buildings.

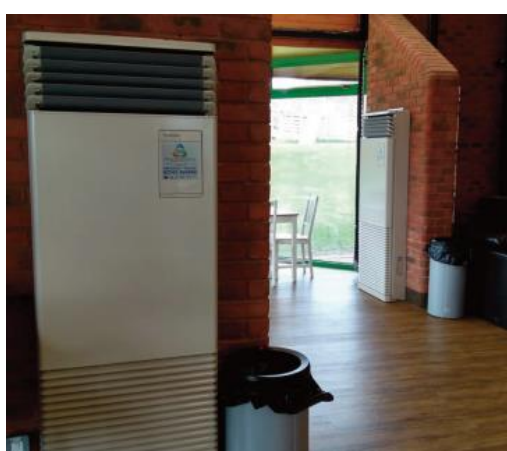
Table 5.2 Claimed Projects in Shropshire

Property	Total Project Cost	kWh savings	GHG Emissions Reduction
Shrewsbury Market Hall	£41,433.09	44,318	15.60
Greenacres Farm	£47,350.00	46,660	16.40
Bridgenorth Library	£13,943.04	10,841	3.81
Theatre Severn (two phases)	£78,244.68	104,487	33.78
Severn Valley Country Park	£18,227.14	16,034	5.60
Shropshire Archives	£41,955.45	15,011	5.28
Church Stretton Swimming Pool	£8,437.00	4,756	1.10
Ludlow Library	£66,059.30	63,077	14.70
Shrewsbury Library	£84,887.50	37,414	8.72
Bishop's Castle Leisure Centre	£50,600.00	33,682	7.85
<b>Total</b>	<b>£451,137.20</b>	<b>376,280</b>	<b>112.84</b>

- 5.8 The **Theatre Severn** building in Shrewsbury is the town's main theatre with a capacity audience of 950. Located on the river bank, the theatre is operated by the Local Authority. The project supported the installation of LED lighting across the premises and a control system was also installed to make better use of natural daylight. The investment has a very short 2.2 year payback period.



LED Lighting at Theatre Severn



Heat/Chill Emitter at Severn Valley Country Park Visitor Centre

- 5.9 Located near Alveley, the **Severn Valley Country Park Visitor Centre** sits at the heart of a 126 acre country park and a former coal mine. The centre received LED lighting and control system to reduce lighting costs and make use of natural daylight. The investment also paid for an Air Source Heat Pump, featuring 5 vertical heat/chill emitters around the building. The payback period to the Authority is forecast to be 3.8 years.

- 5.10 Table 5.3 below shows the list of projects that have been approved and have now been completed across Shropshire. There have been a total of 11 projects completed across a range of 8 buildings.

Table 5.3 Projects Delivered in Telford and Wrekin

Property	Total Project Cost	kWh savings	GHG Emissions Reduction
Darby House	£87,840	81,318	28.4
Telford Ice Rink (2 phases)	£173,574	212,861	74.82
Wellington Leisure Centre (2 phases)	£252,286	307,332	81.65
Oakengates Tennis Centre (2 phases)	£66,938	103,082	36.3
Newport Pool	£20,204	18,766	6.6
Horsehay Golf Club	£25,530	34,052	7.94
Oakengates Theatre	£24,538	32,086	11.3
Oakengates Leisure Centre	£57,715	65,634	23.1
<b>Total</b>	<b>£708,625.01</b>	<b>855,131</b>	<b>270.11</b>

- 5.11 **Oakengates Leisure Centre** is a popular local facility comprising a swimming pool, gym, studio, sports hall and changing facilities. The Sustainable Energy in Public Buildings project invested in a total of 207 photovoltaic panels on the roof of the building, generating 76.2 kWph. The projected payback period to Telford & Wrekin Council is estimated to be 2.3 years.



Roof based PV panels



LED Lighting at Darby House

- 5.12 Darby House is an office building in central Telford hosting IT Services, Social Services and several other Telford & Wrekin Council services. The project has invested in the replacement of the existing lighting with 872 new LED units, PIR detectors and control systems across all 8 storeys. The payback period is estimated to be 3.3 years.

### ***Project Financial Performance***

- 5.13 The total investments in these projects means that, as of the end of March 2023 when the penultimate ERDF claim (Claim 25) was submitted the project had defrayed a total of £1,500,865 of capital expenditure and £381,084 of revenue expenditure (totalling £1,881,944). As shown in Table 5.4, at the stage this represents a total of 63.6% of the proposed £2,942,303 budget.

**Table 5.4 Project Expenditure**

Capital/Revenue	Defrayed Claim 25	Budget	Variance
<b>Capital</b>	<b>£1,500,865</b>	<b>£2,358,720</b>	<b>-36.4%</b>
More Developed	£341,104	£864,000	-60.5%
Transitional	£1,159,761	£1,494,720	-22.4%
<b>Revenue</b>	<b>£381,084</b>	<b>£583,583</b>	<b>-34.7%</b>
More Developed	£135,898	£213,730	-36.4%
Transitional	£245,186	£369,583	-33.6%
<b>Total</b>	<b>£1,881,949</b>	<b>£2,942,303</b>	<b>-36%</b>

- 5.14 The project still has some way to go and is unlikely to defray its revenue expenditure across both geographies. This has been down to a number of reasons, including a number of vacancies across each Authority over the project period, lower than expected claims from staff that were working on a timesheet basis and for the extended phase of the project, the two Transitional Local Authorities switching to entirely cash match funding, which has effectively been all capital.
- 5.15 In terms of capital expenditure, overall there is just over a third of the budget remaining to claim in the final quarter. Total capital expenditure under Claim 25 (January – end of March 2023) was for £222,160. As with the revenue budget, an underspend will be reported in the final claim.
- 5.16 There remains two months of delivery to complete projects and to generate additional project expenditure and there is still an active pipeline of projects, although most of the projects that might complete within the timeframes are in the Transitional Area as shown in Table 5.5 below. Herefordshire Council have just one more building to complete in the final Quarter, the Ryefield Centre and there are no other projects in the pipeline. Some of these pipeline projects have not started on site – so are far less likely to complete.

**Table 5.5 Project Pipeline**

Property	Local Authority	Project Cost	kWh savings	GHG Emissions Reduction
Horsehay Golf Club (Phase 2)	Telford & Wrekin	£98,460	85,000	19.82
Abraham Darby Leisure Centre	Telford & Wrekin	£80,421	40,682	9.48
Shropshire Archives (Phase 2)	Shropshire	£7,274	14,493	2.7
Church Stretton Library (Lighting)	Shropshire	£15,716	3,672	0.9
Church Stretton Library (Building Management)	Shropshire	£14,251	8,790	1.6
Gobowen Library (Lighting)	Shropshire	£8,555	1,547	0.36
Church Stretton Leisure Swimming Pool (Building Management)	Shropshire	£16,490	50,356	9.3
Shrewsbury Music Hall and Art Gallery	Shropshire	£8,494	7,914	1.85
<b>Transitional Sub-total</b>		<b>£249,661</b>	<b>212,454</b>	<b>46.01</b>
Ryefield Centre	Herefordshire	£35,688	6,737	1.57
<b>More Developed Sub-total</b>		<b>£35,688</b>	<b>6,737</b>	<b>1.57</b>
<b>Total</b>		<b>£285,349</b>	<b>219,191</b>	<b>47.58</b>

- 5.17 Should all of these projects complete and defray all of the proposed expenditure it would result in a total project capital expenditure of £1,786,216 which would represent a total of 75.7% of the available capital budget.



- 5.18 At the time of completing the interim Summative Assessment, using data up to the end of December 2022, the project had defrayed £1,037,472 against a total project budget of £1,296,000. At this stage the project had defrayed 80% of its then budget, so has largely remained at the same spend ratio from this point forwards.

### *Project Outputs and Outcomes*

- 5.19 Table 5.6 below shows the final performance of the project to the end of March 2023 (based on ERDF Claim 25). The project has been consistently claiming outputs as individual projects have completed and has now completed installations on 26 individual public buildings within the Marches.
- 5.20 As the project draws to a close, there is one last project that is expected to complete in Herefordshire, the Ryefields Centre, which should deliver a small amount of additional outputs. The project is presently behind profile in the More Developed area and will not ultimately reach its target.
- 5.21 The Transitional area still has a number of live projects that may complete by the end of May and therefore there could be additional outputs delivered. At present the Transitional area is within 9% of its target for reducing energy consumption and within around 6% of its target for Greenhouse Gas emissions reductions.
- 5.22 Should all the outstanding projects within the Transitional Area complete, the project will exceed its C32 output by 6.6% and its C34 output by 6.4%. However, overall the project will be 17.2% and 15.1% below these respective outputs.

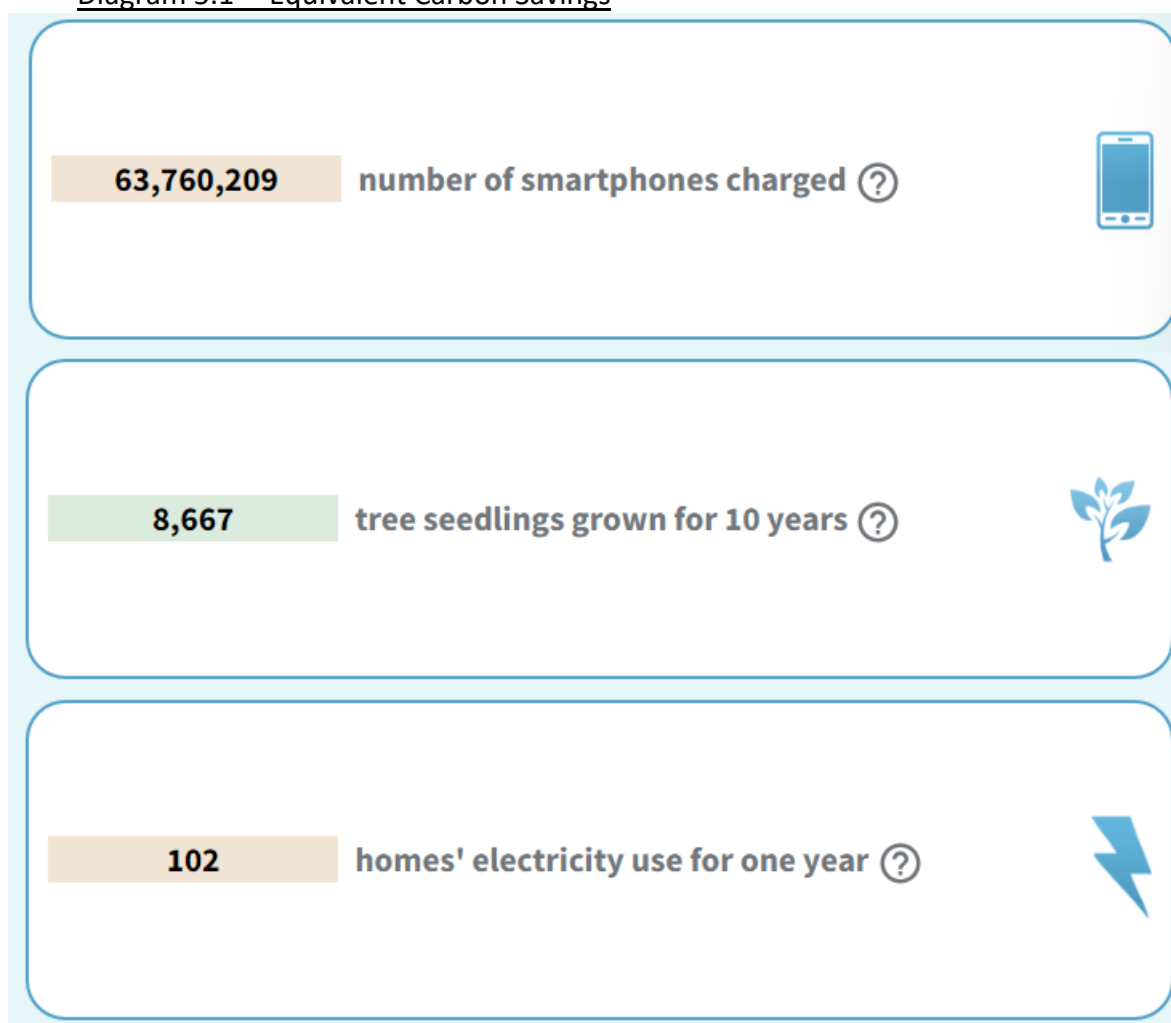
**Table 5.6 Performance Against Outputs**

Output	Target to May 2023	Achieved Claim 25	Projected Performance	Variance
(C32) Decrease in annual primary energy consumption of public buildings (kWh)	2,129,719	1,544,730	1,763,921	-17.2%
More Developed	782,117	313,319	320,056	-59%
Transitional	1,347,602	1,231,411	1,435,951	+6.6%
(C34) Estimated annual decrease of GHG (Tonnes)	621.25	480	527.58	-15.1%
More Developed	218.06	97	98.57	-54.8%
Transitional	403.19	383	429.01	+6.4%

- 5.23 The ongoing effects of COVID-19 have affected the ability of the Local Authorities to deliver projects in a timely manner which has had a knock on impact on the timeframes for expenditure and claiming of outputs and explains why there are still a number of projects still live so close to the project's completion date.
- 5.24 COVID-19 also disrupted supply chains which also had an impact on the process of procuring, securing and deploying contractors to provide low carbon technology solutions. This was exacerbated as demand significantly increased during the latter stages of the project as the war in the Ukraine led to energy spikes.

- 5.25 There were also a number of individual projects that had to withdraw from the project for a variety of reasons. Including the likely timeframes to deliver the works, additional permissions required or capacity issues. There has been one building withdraw from the process in Shropshire (Church Stretton Sports Centre), one in Telford & Wrekin (Short Wood Centre in Wellington) and five in Herefordshire (Hereford Leisure Pool, Ross-on-Wye Swimming Pool, Plough Lane offices, Ledbury Swimming Pool and a school in Michaelcurch Escley).
- 5.26 Also, using BEIS Conversion Factors, every subsequent year the level of carbon emission reductions reduces as the electricity network itself decarbonises – meaning targets set at the inception of the project will become harder to achieve each subsequent year.
- 5.27 As shown in Diagram 5.1 below, it the full CO<sub>2</sub>e savings of the project are realised and are converted into a wider range of more recognisable measures, the project would have saved the equivalent of planting 8,667 saplings over a ten year period, charging almost 64 million smartphones or 102 homes total combined electricity use over a 52 week period.

Diagram 5.1 Equivalent Carbon Savings



Source: <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>



### *Wider Project Impacts*

- 5.28 There are likely to be a number of wider impacts from the Sustainable Energy in Public Buildings project that are realised in both the short and longer term. This is partly due to the ‘demonstration’ nature of the individual projects and the potential to realise economic savings within the public sector at a time of high energy prices and constrained budgets.
- 5.29 There is clearly scope for the model to be replicated post-ERDF investment with some of the projects offering significant payback timeframes. There is still the potential for future availability of grants or 0% loans for retrofitting public buildings through SALIX and also a range of wider maintenance budgets or prudential borrowing that can be utilised to support further measures in this area.
- 5.30 Particularly where LED lighting or building management approaches have been used, it has improved the working environment for a considerable number of public sector staff, which will undoubtedly have a bearing on the organisation’s productivity. This was stated by all parties, but the impact in this regard on Shropshire Libraries was particularly notable.
- 5.31 It has also helped to reduce the costs of heating and lighting many buildings that are used by the public – again providing a better environment. In the case of some of the semi-commercial services offered in part by Local Government, such as leisure facilities or Theatres, it may help to stem the worst of any price increases during a time of higher energy costs and inflation.
- 5.32 One of the objectives for the project was to generate a range of supply chain and construction jobs. The estimate for construction jobs is based on a methodology developed by the [Scottish Futures Trust](https://www.scottishfuturestrust.org.uk/storage/uploads/constructionjobssupported201920.pdf), which uses data on direct and indirect employment per £1m spend<sup>10</sup>. The methodology draws from data in 2015/16 and utilises an employment deflator to ensure spend is relevant to this baseline year. As the project capital cost are estimated to be around £1.75m, it is estimated that a total of 21.33 Full Time Equivalent construction jobs were created over the installation cycle of the project.

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<sup>10</sup> <https://www.scottishfuturestrust.org.uk/storage/uploads/constructionjobssupported201920.pdf>

## 6 Qualitative Views on the Project

- 6.1 Interviews have taken place with members of the Project Steering Group across Herefordshire Council, Shropshire Council and Telford and Wrekin Council. The interviews focussed on views on the effectiveness of the project, governance and partnership structures, impacts and key lessons learnt.
- 6.2 The project was developed as a key tool to kick start momentum towards the LEP areas ambition to reduce carbon emissions by 57% by 2032. Each individual Local Authority had their own approaches to reducing carbon emissions and reaching Net Zero – so the project was well supported corporately by each Authority.
- 6.3 However, it was stated by a range of partners that the Marches was starting its low carbon journey from a relatively low base. There was a perceived low uptake of a range of low carbon technologies across the area and little history of doing so within the public sector.
- 6.4 The project has been a very complex to deliver given the number of grants that have been awarded, the onset of COVID-19 and the closure over a period of time of many public buildings and a range of wider supply chain issues.
- 6.5 The Project Steering Group have been continually reviewing the project pipeline to ensure there are sufficient premises coming forward with viable and meaningful projects. Sometimes what the Estates Team or Building Manager want to see is not always a viable option or does not deliver the level of perceived savings when the building has been formally assessed.
- 6.6 Much of the workload for developing and implementing the project has fallen on the project teams due to limited capacity elsewhere in the Authorities. Liaison has sometimes been complex as a realistic timeframe to plan, procure and implement a project also has to be planned around causing the least operational disruption.
- 6.7 The process for securing a grant has involved the Local Authority undertaking the procurement process in advance of submitting a full application. In the latter stages of the project, when costs have been rapidly increasing and securing a supplier has become much harder – this process was less effective at setting the budget and reducing risk, with contractors providing only limited timeframes for valid quotes.
- 6.8 Sometimes clarifying and finalising the match funding pot was complex – especially in Herefordshire where the intervention rate was lower. The notion of a single capital pot that each Authority could draw upon did not operate in the manner anticipated at application stage.

- 6.9 Performance of contractors was mixed, as each building had to procure their own individual contractor. To comply with ERDF rules, any contract value over £50,000 had to be advertised as an open tender via the Contract Finder portal. This made it harder to utilise established frameworks to secure contractors. The tight timeframes for projects also made it harder to procure in a market place where there has been limited available supply, particularly for Solar PV installations.
- 6.10 Shropshire Council heavily focussed on the payback of their contribution to the investment pot, especially during the first phase of the project. The project was matched locally against on an 'Invest to Save' model. Based on this model, the financial business case for Shropshire was equally as important as the carbon savings generated and projects that were brought forward generally had shorter payback time than the other Authorities. The second phase of the project was funded more from general budgets.
- 6.11 The other two Authorities used funds that were set aside for energy efficiency and other wider pots of funds – but each partner had a different process for securing match funding which frequently came from different sources that had its own approvals process. It was envisaged at Full Application that the Authorities would be able to utilise Salix Public Sector Decarbonisation Scheme funding, but very little was ultimately secured and utilised.

#### **Salix**

Salix is a Non Departmental Government Body that offers a range of grant and loan funding schemes to support the retrofitting of public buildings through energy efficient and heat decarbonisation. The funding is to enable the public sector to reduce their carbon emissions in line with the ambition to achieve Net Zero by 2050. Although there are presently no open schemes, there may be future funding rounds that local carbon reduction projects can apply for – drawing on the experience of the Sustainable Energy in Public Buildings project.

- 6.12 The Project Team at Herefordshire were highly regarded by the other Local Authority partners and working relationships were always positive. The project team were a highly valued and well informed resource.
- 6.13 Despite best efforts to create a simplified funding process, sometimes the approval process for grants was complex and unwieldy. There was often a lag between the expression of interest phase and submitting a full application with a contractor procured and all relevant approvals and permissions in place. Shropshire in particular had two processes to navigate, the ERDF process and their own internal processes to secure matched funding for each project.
- 6.14 Capacity within the Project Team and the requirement for matched funding made it hard to engage Public Sector partners outside of the three Local Authority partners and only one project came forward that was not directly from these organisations.

- 6.14 The staff resources in both Telford and Wrekin and Shropshire were variable across the project due to staff turnover and vacancies. During the first phase of the project, staff who worked on the project completed timesheets, whereas this process was ceased for the second phase. This sometimes made it harder to allocate scarce staff resources onto the project and both Authorities stated it would have been useful to have some dedicated administration resource attached to the project.
- 6.15 Since COVID-19 it has been harder to facilitate Project Board meetings due to demands on the time of staff, however, decisions have been made consistently by written procedure. Whilst operationally this has not had any major detrimental impact, it has slightly reduced the visibility of the project at a senior level across each of the Authorities.
- 6.16 The project utilised some fairly well established technology in terms of the solutions applied to each project. It was not always easy to utilise cutting edge technology, partly due to the type of buildings coming forward, partly due to longer lead times, cost effectiveness and the need to deliver the project without cross checking with DLUHC if certain technology was eligible.
- 6.17 There were some operational teething issues, especially when the staff on the ground in each building had to manage the disruption of installations, yet saw no direct financial benefit. This was noticeable in areas where lighting controls were in place, which sometimes made buildings look closed if there were low staff numbers or circulation.
- 6.18 Despite this, the level of satisfaction of the measures has been high. It has already been highlighted that the replacement of old lighting systems had a benefit way beyond just the energy savings.
- 6.19 The production of a series of case studies has been a valuable outcome of the project and has demonstrated what has been possible rather than theorising what might work. It has helped spark interest across other public buildings.
- 6.20 Partners highlighted several good examples of where the project had made a significant difference, including cutting energy costs and improving the environment in Bridgnorth Library, replacing a redundant solar thermal system at Wellington Swimming Pool that has allowed the pool to operate at normal temperatures without a spike in energy costs and generating noticeable energy savings at Shrewsbury library.

## 7 Cross Cutting Themes

- 7.1 The incorporation of Equalities and Sustainable Development in the commissioning and delivery all ERDF projects is a mandatory requirement. Within the Full Application, the emphasis for Herefordshire Council was to try and utilise a ‘whole building’ approach to reducing carbon emissions and to deploy projects that could demonstrate the effectiveness of a range of technology that can subsequently be deployed on other premises in the public and other sectors.

### *Equalities and Diversity*

- 7.2 The requirement to embed equalities and diversity has been passed on to the Sustainable Energy in Public Buildings project in the way it engages businesses, the way the project has delivered its services and the way it has monitored its outcomes and impacts.
- 7.3 Within the Grant Funding Agreement, Herefordshire Council stated the programme would ensure no beneficiaries would be excluded on the basis of their characteristics and a range of needs will be considered during the design of the programme. This was also adhered to by the other Local Authority partners who in turn passed on the requirement through procurement processes to their contractors. All project staff have undertaken compulsory Equalities and Diversity training.
- 7.4 All of the public buildings that the project invested in are open access to the public for various purposes and already meet accessibility requirements. There will be no detrimental impact to any individual or group from the works undertaken as there has been no physical adjustments made to the buildings.

### *Sustainable Development*

- 7.5 The incorporation of Equalities and Sustainable Development in the commissioning and delivery all ERDF projects is a mandatory requirement. Within the Full Application, the emphasis for Herefordshire Council was to try and utilise a ‘whole buildings’ approach to reducing carbon emissions.
- 7.6 The project has had sustainable growth and Net Zero at its heart, but the project has also been an important stepping stone for the Marches on its journey to reducing its carbon emissions by 57% by 2032 and has helped to put in place resources to begin to deliver against this priority.
- 7.7 Clearly the grant fund was entirely focussed on delivering sustainable development outcomes, so much of the subject matter of the entire report covers impacts in this area. However, the project has tried to incorporate sustainable development in the way the project has been managed.
- 7.8 The delivery of the project itself had a positive approach to sustainability as a significant number of meetings took place online, involving no travel over what is a relatively long distance with limited public transport options.

## 8 Value for Money

- 8.1 Ensuring value for money for European Union Structural and Investment Funds is a key component of the current ESIF programme and also of the Summative Assessment guidance.
- 8.2 There is no centralised benchmark for unit costs for Greenhouse Gas Emissions reduction per tonne or kWh of energy saved within the England ERDF Programme: Output Unit Costs and Definitions (2013) by Regeneris Consulting. This document provides a range of unit costs per output across the 2014-20 ERDF programme.
- 8.3 This lack of common benchmarks for low carbon projects is partly due to the detailed output measure not being confirmed by DLUHC before the report was produced and partly due to the constantly changing proportion of fossil fuel production within the energy grid and the rapid speed of change in the capacity of low carbon technology.
- 8.4 Value for money has had to be determined by a review of the project against similar peer projects across the England ERDF programme. To assess value for money we have identified a range of other ERDF projects that plan to invest in low carbon technology and photovoltaic systems in both residential and public buildings.
- 8.5 As of March 2023 the Sustainable Energy in Public Buildings project had defrayed a total of £1,881,949 against a final budget of £2,942,303. The outputs claimed as of March 2023 were a reduction of 480 tonnes of CO<sup>2</sup>e per annum and a 1.54m kWh decrease of primary energy required per annum.
- 8.6 As there is still some uncertainty over the final budget and final outputs, a value for money assessment will be completed at the stage of Claim 25. The claim only includes completed projects that have defrayed all of their expenditure and delivered all their outputs.
- 8.7 The projects overall are likely asset life of 25 years over which period it can support ongoing carbon reduction. However, on annual basis the ongoing decarbonisation of the grid means the rate of carbon reduction reduces every subsequent year. The annual rate of reduction is presently around 9% per annum based on information in the BEIS Conversion Factors. This gives a cumulative Net Present Value of kWh reduction of 15.5m and a cumulative Net Present Value of CO<sup>2</sup>e reduction of 4,828 tonnes over the subsequent 25-year period. Based on the above calculations, this means the project has a unit cost of £389 per tonne of CO<sup>2</sup>e saved and a unit cost of £0.12 per kWh saving.
- 8.8 Coventry City Council have secured a 50% ERDF contribution towards a £1.26m project (Coventry City Council Solar PV Self-Supply) to install roof mounted PV cells on 39 Council buildings. The project aims to provide a reduction of 4,000 tonnes of Greenhouse Gas emissions over 25 years (or 160 tonne reduction per year). Using a similar net present value calculation, the unit cost of 1,609 tonnes of greenhouse gas reductions over the asset lifespan is £783 per tonne.

- 8.9 The Unlocking Clean Energy in Greater Manchester project, delivered by Energy System Catapult, is a £17.2m project to produce 10MW of solar and hydro-electric generation, coupled with battery storage. The project aims to reduced 3,124 tonnes of Greenhouse Gas per annum, or a net present value of 31,426 tonnes over 25 years. This would suggest a unit cost of £547 per tonne of greenhouse gas reduction.
- 8.10 The Marches Renewable Energy Project (MarRE) was a scheme that ran from June 2019 and helped over 50 businesses, community organisations, education institutions and small local councils across Herefordshire, Shropshire and Telford & Wrekin with a 50% grant towards installing renewable energy technologies. The total project budget was 2.2m. The project supported an annual decrease of 563 tonnes of carbon dioxide, with a new present value of 5,663 tonnes. This would suggest a unit cost of £338 per tonne of greenhouse gas reduction.
- 8.11 The Low Carbon Barrow programme has been a £1.66m project to deliver a range of low carbon interventions in Barrow-in-Furness. The focus has been on installing carbon and energy saving measures in public buildings, although the project has also installed residential solar panels and has provided and a grant scheme for businesses. The project is likely to deliver Net Present Value unit cost per tonne of CO<sup>2</sup> equivalent saved of £1,053.
- 8.12 It is clear the Sustainable Energy in Public Buildings project has offered very good value for money in line with its peer projects and that the unit cost may ultimately be lower depending on which projects complete in the final quarter.

## 9 Conclusions and Lessons Learnt

- 9.1 The Sustainable Energy in Public Buildings project should meet most of its revised ERDF targets and is expected to reduce demand for 1.75m kWh of primary energy and reduce Greenhouse Gas emissions by 525 tonnes per annum. These outputs will have been delivered whilst committing most of the project budget.
- 9.2 The range of technologies used, although now relatively common in the market place, have demonstrated a good payback period to each Local Authority. There is clearly scope to use the lessons and case study of the project to implement other low carbon technology projects in public buildings across the Marches.
- 9.3 In the overall delivery of the project, there have been a number of delays, primarily related to COVID-19 and subsequent supply chain issues and more recently due to significant demand after the energy price spike after the Russian invasion of Ukraine. These delays have made a number of projects unviable within the remaining timeframes.
- 9.4 There have been a range of wider impacts of the project, although largely anecdotal in nature. The project will have helped to reduce the costs of heating and lighting many buildings that are used by the public and provided a better working environment for a significant number of Local Authority staff.
- 9.5 It is estimated that the capital investment of the project, estimated to be around £1.75m, will create an estimated 21.33 Full Time Equivalent construction jobs over the installation cycle of the project.

### *Lessons Learnt*

- 9.6 Some of the key lessons learnt of the project relate to the operation of the fund and some of the other processes and confines that partners had to work with. Most of the lessons learnt from the project are positive and the project teams across all the participating Local Authorities saw real value in being part of the project.
- 9.7 The project has been making investments in low carbon technology across public buildings over an extended period of time, during which time the COVID-19 pandemic closed many public buildings and sapped need and demand and then the war in Ukraine spiked energy prices and demand for low carbon technology, which increased costs and restricted available supply. These are all factors that the project could not foresee when originally bidding for ERDF investment.
- 9.8 Managing ongoing governance and operational structures for a long term project that has had peaks and troughs in its delivery has been challenging and there has been staff turnover across all of the Authorities involved. Governance of the project has largely been devolved to the steering group.



- 9.9 It has been difficult to coordinate the development and delivery of a pipeline of individual projects and the staff resources within the project at times have been insufficient to progress projects in a timely manner and any future set of projects in this area will need to reflect on this.
- 9.10 Some of the buildings put forward for the project were aged buildings, with a significant number of 1970s prefabricated concrete buildings within portfolios. Ultimately this meant installations were rarely a straightforward process which increased costs and timeframes.
- 9.11 It would have been easier if each Local Authority could have used their own routes to market and existing framework agreements rather than having to frequently utilise the open tender process.