

Borderlands Energy Investment Strategy 2023

Version 1.2 - FINAL

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This document was approved by the Borderlands Partnership Board in December 2023 in line with government policy at that time.

1. Foreword

- 1.1 We, the Borderlands Partnership, are increasing our commitment to supporting and accelerating emissions' management and the low carbon economy across the Borderlands. We work within our own operational estates and collaboratively with UK Government, Scottish Government, and other public and private sector partners to deliver the benefits of Borderlands Inclusive Growth Deal and establish the foundations for sustainable and inclusive growth over the long term.
- 1.2 Our Vision is to be at the heart of the UKs Green Revolution, capitalising on the opportunities on our journey to achieving Net Zero in our rural area.
- 1.3 The Borderlands Energy Programme presents an exciting opportunity to create high value jobs supported by developing green skills that lead to reductions in our carbon energy use and impact of key sectors. We will link opportunities and need in a meaningful way, to secure the benefits for our communities, treating inclusive growth on a par with our economic growth aspirations.
- 1.4 To reduce our carbon emissions, we will invest in our community assets and infrastructure to support the economic resilience of our places making them a more attractive place to live, work and visit.

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Jack Stopforth MBE Chair of the Borderlands Economic Forum

2. Introduction

- 2.1 Climate Change is a global challenge requiring wide-ranging responses to how we live and work. This shift requires significant investment bringing new opportunities stemming from changes to how our communities and businesses operate. To prosper as a region in the medium and long- term we need to adapt to the challenges and make the most of these new opportunities. Our approach to energy generation, use and storage lies at the heart of this transition and is fundamental to our long-term resilience.
- 2.2 The Borderlands region is already home to a range of energy generating assets across the nuclear and renewables sector. Our homes and businesses draw heavily on energy to heat and power our activity. Due to the nature of our economy and predominantly rural location there are challenges in ensuring this is affordable and resilient as well as a low carbon. For us to meet our aspirations of growing the working age population, business opportunities and productivity and achieve inclusive growth, affordable, resilient, and low carbon energy is critical.
- 2.3 This is not just a Borderlands ambition. In November 2020, the UK Government published the Ten Point Plan for a Green Industrial Revolution. The Plan proposes support for offshore wind, low-carbon hydrogen, zero emission vehicles, green travel, green ships, greener buildings, carbon capture and energy storage, natural environment protection, green finance and innovation, and new and advanced nuclear power.
- 2.4 Parliament passed legislation requiring the government to make the UK a net zero carbon country by 2050. This was done by amending the Climate Change Act (2008) target from 80% to a 100% reduction in greenhouse gas emissions (GHG) by 2050, compared to the 1990 baseline. The aim is to end contributions to global warming, keeping warming to 1.5°C below the 2°C limit as set out in the Paris Agreement, signed in 2015.
 - **2050 Target:** Net zero emissions from greenhouse gas emissions. Any emissions to be balanced by schemes to offset an equivalent amount of greenhouse gases from the atmosphere.
 - **Carbon Budget:** 78% reduction in UK territorial emissions between 1990 and 2035, as set out in the Sixth Carbon Budget as a path to Net Zero and contribution to tacking climate change.
- 2.5 The Scottish Parliament has set a target date for net zero emissions of greenhouse gases by 2045. In 2019, the Scottish Parliament passed the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, amending the Climate Change (Scotland) Act 2009. The Climate Change (Scotland) Act 2019 presents interim targets of 75% and 90% reductions by 2030 and 2040 respectively. The commitments are translated into the SG Infrastructure Investment Plan which sets out the core principles around which Scottish Government will be supporting infrastructure investment over the period 2021-22 to 2025-26, including enabling the transition to net zero emissions and environmental sustainability.
- 2.6 The Borderlands partners are committed to becoming a carbon neutral region, contributing to the UK's net zero targets. Through our Energy Programme we intend to invest in low

carbon energy at a building and community level which coupled with our plans to maximise the benefit from our outstanding natural resources will lead to a vibrant economy driven by clean energy. We aim to lead the way for community driven decarbonisation across the Borderlands region, so our rural areas are not left behind.

2.7 This Strategy sets out the Vision for the Borderlands Energy Programme and the supporting Strategic Objectives and Investment Objectives. Borderlands funding will be invested in projects that best demonstrate fit with this Strategy and the wider local and national policy context. A wider Borderlands Energy Opportunities Prospectus will also be developed to set out the wider opportunities for significant investment that our region offers.

3. Borderlands Energy Programme

- 3.1 The Borderlands Energy Programme sits within the Encouraging Green Growth theme of the Deal and aims to capitalise on the green credentials of the Borderlands region and to facilitate decarbonisation and the creation of new high value jobs supporting low carbon energy generation and carbon reduction schemes. To inform the Borderlands Energy Programme an overarching the Borderlands Strategic Low Carbon Energy Masterplan (the Masterplan) has been developed.
- 3.2 The Masterplan is at the heart of our approach based on the translation of the national Future Energy Scenarios created by National Grid. It provides a platform for the Deal and region to accelerate the transition to net zero carbon and capture the economic benefits of that transition and is the evidence base that has been used to develop this investment strategy.
- 3.3 The Masterplan and its socio-economic study set out both the evidence base for the energy systems pathways to net zero and quantifies the scale of the socio-economic return that the necessary investment could deliver. It identified a shortlist of potential Investment Areas and Interventions. However, recognising that Deal funding cannot directly support all the interventions and implementation activities that are required for the complete energy transition, a series of workshops have been held to identify interventions that provide the greatest benefits to the region.
- 3.4 The Borderlands Energy Programme presents an exciting opportunity to accelerate the regions transition to net zero by investing strategically in projects that are replicable in other areas of the Borderlands region and support local jobs, businesses and skills development.

4. Vision & Strategic Objectives

4.1 Our Vision is to be at the heart of the UKs Green Revolution, capitalising on the opportunities on our journey to achieving Net Zero in our rural area. We will create well paid jobs and improve skills through the adoption of low carbon and low-cost energy solutions making the Borderlands a more attractive place to live, work and visit in a sustainable way.

- 4.2 We see the Borderlands region playing a major role in the UKs Green Revolution and transition to Net Zero. For example, the South of Scotland accounts for more than a fifth (21%) of Scotland's total installed onshore wind capacity (11% of the UKs onshore generation capacity) amounting to circa 9.6Gigawatts (GW) of wind generated power in Scotland. With Scottish Government's ambitions for 20GW of onshore wind power to be installed by 2030 there is enormous potential to enhance the region's renewables contribution from wind.
- 4.3 Following consultation with the Energy Programme Board, the Strategic Objectives outlined in the Masterplan have been revised to better address our challenges and to achieve our vision. The revised Strategic Objectives for the Borderlands Energy Programme are as follows:

Figure 4-1 Borderlands Energy Programme Strategic Objectives



5. Delivering our Vision

- 5.1 The Masterplan identified that the focus of investment should be on big impact activities and coordinated action rather than niche or bespoke investment areas which are not scalable and replicable throughout the region. Big impact activities can include multiple smaller interventions which are similar in technology and typology and replicated throughout the UK.
- 5.2 The Deal and corresponding Masterplan cannot directly support all the interventions and implementation activities that are required for the complete energy transition. However, the priority investment areas can act as catalyst for change or as pilot projects to kick start the process and provide a strong evidence base to all stakeholders to radically increase green economic growth throughout the region.
- 5.3 There are opportunities to build on existing and emerging policy and investments such as Local Heat and Energy Efficiency Strategies (LHEES) in Scotland and the Energy Hubs in England, but we won't duplicate existing public funding schemes available from both UK

Government and Scottish Government. In addition, the Deal can act with partners to stimulate energy investment to support the wider transition and deliver inclusive growth.

- 5.4 Our Vision and Strategic Objectives will be delivered through two separate routes to maximise the total investment available:
 - Borderlands Energy Prospectus (the Prospectus)
 - Borderlands Energy Investment Programme (the Investment Programme)

6. Borderlands Energy Prospectus

- 6.1 This will set out our ambition and the opportunities for wider investment in significant energy related projects across the Borderlands area. These investment opportunities will be of a scale that exceeds the funds available through the Borderlands Inclusive Growth Deal as detailed in the table above.
- 6.2 The Prospectus will utilise existing key local energy documents to ensure a coherent Borderlands wide offer is made to attract organisations looking to invest in energy related activity across the region.
- 6.3 Using the information in the Masterplan, a shortlist of Intervention Areas have been identified to be taken forward in the Prospectus.

Investment Areas	Interventions
Transport	Preparing the Borderlands Transport system for the future demand and constraints will stimulate significant investment, due to the relatively limited fixed public transport opportunities are expected around new approaches to LGVs, buses, coaches and cars through electrification and alternative power sources such as hydrogen.
Electricity Generation	The Borderlands is home to major opportunities for generation of low and no carbon energy particularly around onshore and offshore wind power, nuclear (England only) and developments around tidal lagoons.
Flexibility and Networks	The new approaches to energy will require more sophisticated networks and management of generation and use. This is particularly important to ensure roll out beyond the main energy grid infrastructure, Investment across smart systems and application of new systems in a domestic and non-domestic setting including opportunities around hydrogen and hybrid systems.

6.4 The Prospectus will be a separate document developed during 2025.

7. Borderlands Energy Investment Programme

Introduction

- 7.1 The Borderlands Energy Investment Programme will draw on the funding available in the Deal to invest in local pilot projects that can be replicated across the Borderlands area. The Investment Programme is designed to build on existing public funding schemes and not duplicate activity.
- 7.2 The Masterplan identified a shortlist of prioritised interventions that would provide the greatest impact. These interventions have been reviewed against the Investment Objectives below (section 7.7) and grouped into priority categories in order to deliver the aspirations of the Investment Programme.

High Priority:

7.3 Intervention areas that are highly likely to contribute to the creation of sustainable inclusive jobs or transition existing jobs to a more sustainable basis and reduce carbon. Projects in this category are also likely to be demonstrator projects and the learning could inform future projects particularly in key local sectors.

Investment Areas	Interventions	Scale
Commercial and Industrialisation:	 <u>Non-domestic heat electrification:</u> The majority of this will be heat pump technology, although some resistive heating will also increase. Including Heat Networks which can be at a multi building scale. 	Building(s)
Energy Efficiency:	 Non-domestic energy efficiency: Focus on fabric improvement and reducing energy demand. Equipment allowing automated demand changes due to factors like price signals. Including Heat Networks which can be at a multi building scale. 	Building(s)
Flexibility and Networks:	 <u>Domestic / Non-domestic smart technology:</u> Smart meters and automated demand changes due to factors like price signals. Includes vehicle to grid. Including Heat Networks which can be at a multi building scale. 	Building(s)

Medium Priority:

7.4 Interventions that are known to reduce carbon emissions and can also provide learning to support development of future projects but are expected to result in a lower level of business or job growth in the near term. The interventions may be considered a higher priority where embedded in a project with strong community, business or place making outcomes.

Investment Areas	Interventions	Scale
Commercial and Industrialisation:	 <u>Non-domestic hybrid/ hydrogen systems:</u> Introduction of mixed or single mode heating systems and heat pumps. Including Heat Networks which can be at a multi building scale. 	Building(s)
Domestic:	 <u>Domestic heat electrification:</u> Switching towards electricity for heat and away from fossil-fuel based systems. Including Heat Networks which can be at a multi building scale. 	Building(s)
Flexibility and Networks:	 <u>Domestic / non-domestic battery storage:</u> Thermal and electrical storage to reduce energy consumption at peak demand times. Including Heat Networks which can be at a multi building scale. 	Building(s)
Flexibility and Networks:	 <u>Utility battery storage:</u> Thermal and electrical storage to reduce energy consumption at peak demand times. 	Local authority, Town
Energy Efficiency	 Domestic retrofit (bundled): Considers deep and light retrofitting to improve fabric and minimise energy demand. NB: Projects must demonstrate how their approach is innovative and can lead to direct job creation. Standalone retrofit activity will not be considered eligible. 	Building (not individual buildings)

Low Priority:

7.5 Interventions that are 'tried and tested' and known to reduce carbon. These interventions are less likely to lead to inclusive and sustainable job creation. Opportunities for new learning from these projects is expected to be low. The interventions may be considered a higher priority where embedded in a project with strong community, business or place making outcomes.

Investment Areas	Interventions	Scale
Electricity Generation:	Solar PV: Solar PV on rooftops, ground-mounted and carports. 	Local authority, town, building scale

7.6 Appendix A provides a more detailed overview of the Investment Programme Intervention Areas and the Borderlands context in which they sit.

Investment Objectives

- 7.7 The following Investment Objectives (IOs) have been developed by the Borderlands Energy Programme Board and are the key criteria for investment against which projects will be appraised.
 - **IO-1: Creation of Green Jobs.** Investments that create green jobs across the Borderlands region, supporting delivery of the Borderlands principal socio-economic challenges: Narrowing the productivity gap, Increasing the working age population and delivering inclusive growth.
 - **IO-2: Supporting Carbon Reduction.** Investments that adopt or demonstrate the application or approaches and technologies that reduce CO2e throughout the project lifetime.
 - **IO-3: Green skills.** Capital investments that support delivery of green skills enabling delivery of long-term investment plans and maintenance of delivered solutions.
 - **IO-4: Reduce fuel poverty.** Reduce fuel poverty across the region by reducing energy costs for business and residents across the Borderlands region whilst reducing carbon emissions.
 - **IO-5: Enhancing Energy Security & Resilience.** Investment which supports the availability, and reliability of low carbon energy for residents and businesses across the Borderlands region, supporting the transition to net zero.
 - **IO-6: Attract inward investment.** Recognising that Borderlands funding is limited it will target investment that can attract additional funding resources in order maximise impact of the funding.
- 7.8 The Investment Objectives have been selected to ensure projects help us to tackle the three principal socio-economic challenges facing the region outlined in the Borderlands Inclusive Growth Deal:

Narrowing the productivity gap	Increasing the working age population	Delivering inclusive growth
By creating high value jobs green skills across the supporting the shift to low impact of key sectors and attractive to live in, visit and reducing carbon and e resilience and affordability	s supported by developing e Borderlands region, w carbon energy use and I making our places more nd set up a business in by nhancing the security, ty of our energy system.	Linking opportunity and need in a meaningful way, to secure the benefits for our communities, treating inclusive growth on a par with economic growth aspirations. Supporting investment in community assets and infrastructure which supports the economic resilience of our places.

Implementation

- 7.9 The Borderlands Partnership intends to seek applications for funding from a wide range of organisations to deliver projects that help achieve our Vision and Strategic Objectives and align with our Investment Objectives. The proposed mechanism for this starts with an Expression of Interest process.
- 7.10 The Borderlands Partnership encourages organisations to start thinking about types of projects that could come forward for funding and how these could be delivered. We expect to launch the EOI process in 2024, more information will be published on our website and our mailing list which can joined via the Borderlands website.

Stage 1 - Expression of Interest (EOI) Process

- 7.11 The EOI process ensures a fair and transparent way to identify projects for inclusion with the Deal.
- 7.12 The planned EOI process will be supported by a Call for Projects document that sets out the Eligibility Criteria that all EOIs must meet to proceed to the next stage.
- 7.13 The EOI Assessment Criteria will be published at the launch of the EOI process. EOIs will be assessed in line with the EOI Assessment Criteria by the Borderlands PMO, additional specialist support may be bought to undertake assessment of the technical energy aspects of the EOI. A recommendation will be made by the PMO to the Energy Programme Board who will make a recommendation to the Borderlands Partnership Board.
- 7.14 In accordance with the Borderlands Collaboration Agreement, all decision making is undertaken by the Borderlands Partnership Board who will decide which EOIs will proceed to the next stage of development and will allocate an indicative amount of funding to the project.
- 7.15 The Borderlands Partnership Board will adopt a portfolio approach to ensure a diverse range of projects that create inclusive and sustainable jobs as well as reducing carbon emissions are selected.

Stage 2 - Full Business Case

- 7.16 The second stage of the process is for projects selected at the EOI stage to develop and submit a HM Treasury Green Book compliant Business Case which will be considered in line with existing Deal processes.
- 7.17 Projects proceeding to Stage 2 are not guaranteed to receive funding for the project, this will depend on the approval of a robust FBC demonstrating Value for Money, affordability, and deliverability.

Appendix A: Investment Programme Intervention Areas

Commercial and Industrial

Investment Area Description	Borderlands Dimension
Commercial and industrial (C&I) heat electrification is the shift to use electricity rather than fossil fuels for heating C&I	Local authorities, businesses and industrial sites want to increase their energy efficiency / reduce their carbon footprint as a result of climate legislation and increasing energy prices.
buildings. Large heat pumps (e.g. over 300kW in size) are the main technology of C&I heat electrification.	Emissions of CO2 from Commercial & Industrial uses (excluding very large industrial sites) are on a general downward trajectory in the Borderlands. The majority of emission reductions have occurred from reduction in activity at large industrial installations and the decarbonisation of electricity.
They are not currently a common technology, but they are expected to become increasingly important for heating C&I sites in the future due to the maturity of the technology and comparative efficiency versus direct electric heating.	Manufacturing, mining, quarrying and utilities account for nearly two thirds of commercial and industrial energy consumption in the region. However, due to the region's rural nature with fewer major commercial and industrial employment hubs than other regions, this energy consumption is relatively dispersed. The majority of commercial and industrial emissions arise from small and medium sized businesses in the region, with in the order of just 10% of the region's commercial and industrial emissions arising from the 20 largest individual sites, including Sellafield and Barrow Terminal.

Interventions	Description	Scale	Priority
Non-domestic heat electrification	 The majority of this will be heat pump technology, although some resistive heating will also increase. Including Heat Networks which can be at a multi building scale. 	Building(s)	High
Non-domestic hybrid/ hydrogen systems	 Introduction of mixed or single mode heating systems and heat pumps. Including Heat Networks which can be at a multi building scale. 	Building(s)	Medium

Domestic

Investment Area Description	Borderlands Dimension
Heating buildings accounts for close to a quarter of CO2 emissions in the UK. As a result, the heating sector is looking at cleaner heating solutions. The leading solutions are heat electrification (especially from heat pumps), hydrogen, and biofuels.	The most immediate solution is heat electrification which is already commercially available and a growing market over the next decade. This will undoubtedly make the biggest impact to the Borderlands region if supported appropriately.
Hydrogen is a potential solution in the long term, but unlikely to reach large scale deployment until 2030 or later.	
Biogas does not have the capacity as a national solution but is expected to provide a niche role in specific regions, including the Borderlands region.	

Interventions	Description	Scale	Priority
Domestic heat electrification	 Switching towards electricity for heat and away from fossil-fuel based systems. Including Heat Networks which can be at a multi building scale. 	Building(s)	Medium

Energy Efficiency

Investment Area Description	Borderlands Dimension
Energy efficiency measures include a wide range measure to improve the efficiency of homes. Many measures focus on improving the fabric of the building to help them retain heat better, therefore reducing energy consumption, fuel bills and carbon emissions. Common measures include wall insulation (cavity or solid wall). loft insulation, draught-proofing	The EPC data indicates building stock in Eden and South Lakeland would require the most immediate action (i.e. the highest percentage share of properties with an EPC of E or below). Scottish Borders, Northumberland and Carlisle have the highest current level of energy efficiency based on EPCs. However, in all local authority areas the majority of all EPCs is below C and thus would benefit substantially from improved energy efficiency.
and upgrading glazing to double or triple glazed. Energy efficiency measures can also include measures to improve the efficiency of the heating system, such as better heating or hot water controls, and more efficient lighting or electrical appliances.	Installing measures in homes in the Borderlands region is an important goal. Given the nature of housing stock in the region, it is likely that many homes are considered 'hard to treat' i.e. energy efficiency measures are more complex or expensive to modify. This is particularly true in more rural areas where there is a higher ratio of bespoke and older property.

Interventions	Description	Scale	Priority
Domestic retrofit (bundled)	 Considers deep and light retrofitting to improve fabric and minimise energy demand. NB: Projects must demonstrate how their approach is innovative and can lead to direct job creation. Standalone retrofit activity will not be considered eligible. 	Building (not individual buildings)	Medium
Non-domestic energy efficiency	 Focus on fabric improvement and reducing energy demand. Smart meters and equipment allowing automated demand changes due to factors like price signals. Including Heat Networks which can be at a multi building scale. 	Building(s)	High

Electricity Generation

Investment Area Description	Borderlands Dimension
With national scale projects such as offshore wind and nuclear the broader UK wide energy system decarbonisation is likely to see even greater benefits to the Borderlands beyond those discussed in the Masterplan.	The Borderlands region generates the equivalent of nearly twice as much renewable electricity as all electricity is consumes within a year. This means the region is a net exporter of renewable electricity. With its ample renewable energy resources, this trend is set to continue. With a significant proportion of GB's renewable energy resources, the decarbonisation of GB electricity is partly dependent on the region's renewable electricity generation exports
Onshore wind and large scale solar are not generally considered to need support mechanisms, so outside of community scale schemes which can access different funding streams, such as CEF and CaRES the two largest onshore renewable resources in the Borderlands do not receive specific support. This is a reflection of broader technology maturity.	

Interventions	Description	Scale	Priority
Solar PV	Solar PV on rooftops, ground-mounted and carports.	Local authority, town, building scale	Low

Flexibility and Networks

Investment Area Description	Borderlands Dimension
Battery storage systems are paired with power generation sources to store energy, which can then be used at a later point in time. The energy that is stored can be used later to support the grid during periods with high electricity demand.	Flexibility services will be required from all sectors of the economy in order to facilitate the incorporation of higher levels of intermittent renewable energy technology on to the grid. For example, in the domestic sector, under the 'high flexibility' scenario, over 250,000 homes are predicted to have Vehicle to Grid (V2G) capably EV chargers, enabling the electric vehicle fleets as a whole to be a net exporter of electricity to the grid at times of peak demand.
Smart grid technology, like remote/smart controls and	
smart meters, are technologies that enable appliances	There are a number of important challenges that would need to be overcome in
like heat pumps, boilers or hot water tanks to be	order to achieve this; for example, the installation of technologies such as battery
turned on and off remotely for demand side response	storage, electric vehicle charge points, V2G and smart heating systems and
purposes. Domestic smart grid technologies can be an	appliances can have high consumer costs. Furthermore, in private rented properties,
economically favourable solution for customers in	there is little to no incentive for landlords to invest in these technologies and
countries with low electricity prices, or where Time of	similarly, renters are reluctant to invest in capital measures in properties they do not
Use tariffs are available as the appliances can be	own. The Borderlands currently hosts 60 MVV of utility-scale electricity storage,
turned on during off peak nours, e.g. at night. Domestic	which is expected to increase. Storage is expected to come from a combination of
self-consumption ontimisation	both domestic scale batteries and utility and commercial scale storage.

Interventions	Description	Scale	Priority
Utility battery storage	• Thermal &electrical storage to reduce energy consumption at peak demand times.	Local authority, Town	Medium
Domestic/ non-domestic battery storage	 Thermal & electrical storage to reduce energy consumption at peak demand times. Including Heat Networks which can be at a multi building scale. 	Building(s)	Medium
Domestic / Non- domestic smart technology	 Smart meters and automated demand changes due to factors like price signals. Includes vehicle to grid. Including Heat Networks which can be at a multi building scale. 	Building(s)	High