

North East

Local Enterprise Partnership



European Union
European Regional
Development Fund

Low Carbon & Climate Change



Low Carbon economy and Climate Change

“We aspire to become Europe’s premier location for low carbon, sustainable, private-sector led growth making the most of our extensive assets and distinct strengths to drive growth which is both resilient and sustainable”



With key successes in offshore wind technologies and electric vehicles, the North East has been at the forefront of the move towards low carbon economic growth. With a track-record of innovation in energy and manufacturing technologies, a strong academic base and valuable natural assets, our strategy is not only to enhance and commercialise existing strengths but also to bring the next opportunities to market and enable long-term sustainable and resilient growth.

Growing Low Carbon Sectors

We have significant and growing opportunities in low carbon technologies, processes and applications

Our low carbon, environmental goods and services sector supports around 20,000 jobs and has underpinned significant employment growth and attracted major investment. We are particularly strong in energy, heat and transport with high proportions of the national employment in offshore wind, geothermal, hydroelectric, and biomass energy, alternative fuels, heat networks and electric vehicles present in the North East.

The low carbon economy also links strongly to our innovation base, with overlap with areas of smart specialisation in vehicle manufacture, offshore and marine technologies and data and software. We also have natural assets in our marine environment, coast and upland areas and forests as well as untapped geothermal potential.

Our strengths are not only in a strong business base but also world-class research, testing and demonstration sites.

This includes part of the National Offshore Renewable Energy Catapult in Blyth, Zero Carbon Future, NOF Energy and engagement in the Energi Coast and CORE initiatives. These complement the academic strengths of our four universities with offshore wind, energy and energy storage.

Achieving Sustainable Growth

Investment in enhancing the sustainability and resilience of our businesses will support long-term competitiveness

Although the North East represents a relatively resilient location business growth in environmental terms, investment will enable us to capitalise and protect this advantage.

Businesses in the North East have reported challenges around energy and resource efficiency and issues regarding flooding as being significant. This is supported by a Climate North East study, which estimated that without interventions there is a potential cost to the North East of England of £600m per year by 2050.

UK climate projections also indicate heat risk may be an issue towards the end of the century.

Our diverse landscape, including urban and rural dimensions, and coastal, upland and river valley areas create significant opportunities as well as some challenges. These natural sites and space available for development, provides opportunities for more sustainable and innovative solutions to support long-term sustainable development.

To achieve this change and capitalise on our opportunities we will have identified key areas for activity

- Growing the low carbon sector (including capitalisation on innovative technologies and enhancing supply chains.
- Renewable and low carbon energy generation, distribution and storage.
- Energy efficiency in processes, properties and technologies for public, private and voluntary and community sectors.
- Supporting smart places and future city initiatives bring together innovative, integrated solutions across buildings and places.
- Making sustainable places improving resilience through green and blue infrastructure solutions.

The North East LEP area also faces Low Carbon challenges



HIGH LEVELS OF FUEL POVERTY

In 2003 and 2013, the NE region had the lowest variation across LAs in terms of fuel poverty, however, it had the highest rate of fuel poverty in England in 2003, and the second highest in 2013.

% of fuel poor households –
11.8% in 2013 for NE vs. 10.4% England

LACK OF BUSINESS READINESS FOR CLIMATE CHANGE & LOW AWARENESS OF OPPORTUNITIES TO IMPROVE ENERGY EFFICIENCY

RIVER, COASTAL AND SURFACE WATER FLOODING A RISK, AND PROJECTED TO INCREASE



CONGESTION AND TRANSPORT RELATED CARBON EMISSIONS ARE INCREASING NEW SUSTAINABLE TRANSPORT SOLUTIONS ARE NEEDED



LOW CARBON ECONOMY

Durham

£9.9m¹

Tyne and Wear Northumberland

£38.9m¹



4A PROMOTING THE PRODUCTION & DISTRIBUTION OF RENEWABLE ENERGY

The Need

- Renewable and low carbon energy already represents over 6,000 jobs in the North East. In comparison to the overall size of the economy there are particular concentrations in areas related to biomass, offshore wind, hydroelectricity, geothermal and heat pumps.
- There is scope to capitalise on natural assets and renewable sources of energy present. The large supply of biomass includes the largest softwood resource in England in Kielder Forest. The presence of the Stublick Fault providing unrivalled access to geothermal sources of energy. The location on the North Sea coast also provides natural connection to marine energy sources including proximity to Dogger Bank and other offshore wind sites in the North East and the operational testing site at Blyth.
- Strong interest in community energy schemes to target roll out of smaller-scale, local generation schemes with potential across a wide range of renewable sources of energy.
- Smart specialisation capacity recognised in this area drawing on research capacity including in the Durham Energy Institute and Sir Joseph Swan Centre for Energy research at Newcastle, local businesses, the National Offshore Renewable Energy Catapult and engagement in CORE and Energi Coast sites; however continued support and certainty is needed to embed the industries and demonstrate viability of renewable energy projects.

Actions Supported

- Enhancing access to, and take-up of, low carbon and renewable energy through investment to support demonstration and roll out of small-scale renewable energy. This includes biomass, waste to energy, community owned renewables, solar pv, micro-hydro, offshore and marine energy and geothermal.
- Measures to support increased production of renewable fuels and energy, in particular wind energy, solar and biomass;
 - Support to build capability and capacity for supply chains in renewable energy;
 - Demonstration and deployment of renewable energy technologies;
 - Measures to support the wider deployment of renewable heat, including micro-generation, geothermal, renewable heat networks or district heating, ground source and air source heat pumps, and biomass systems with associated heat off-take and heat distribution networks along with recycling processing reprocessing and remanufacturing facilities; and
 - Anaerobic digestion plants and other biomass or landfill gas schemes.

Outputs

C1	Number of enterprises receiving support	102
C5	Number of new enterprises receiving support	22
C30	Additional capacity of renewable energy	13
C34	Estimated GHG reduction	8,185 Tonnes of CO ₂ eq

¹ Throughout the strategy we have referred to our proposed figures, rather than the initial indicative allocations proposed by the Managing Authorities: DCLG and DWP; see page 9 of the Executive Summary

4B PROMOTING ENERGY EFFICIENCY & RENEWABLE ENERGY USE IN ENTERPRISES

The Focus of ERDF Funding

The Need

- Businesses continue to report a need to reduce energy and resource costs as a significant element in business resilience. This is particularly relevant for manufacturing and engineering businesses which are relatively energy intensive.
- Investment in advice, guidance and audits is valuable but the greatest need, especially for SMEs is around ensuring the resulting interventions are affordable and the business case for investment is clear.
- SMEs and particularly micro businesses have been found to struggle in implementing energy efficiency requirements due to cost and difficulty as well as lack of comprehensive information.
- Energy efficiency and advisory services provide nearly 4,000 jobs in the North East.
- Scope for investment in renewable energy generation and use for businesses to support resilience.

Actions Supported

- Support a programme of advice to businesses to improve energy efficiency and resilience through enhanced processes and enable the resulting required retrofit, capacity and equipment investment.
- Enhanced advice, support, information and action to promote innovation in businesses and how they operate, in order to deliver best practice in energy management. This will include innovation in energy efficiency and energy cost reduction to improve businesses' competitiveness and resilience;
 - Support to businesses to undertake 'green' diagnostics or audits of energy efficiency and potential for renewable generation and energy use, which will be followed by provision of energy efficiency information and guidance, tailored energy action plans and of support to implement the resulting activities.
 - Investing in energy efficiency measures, processes and renewable generation capacity to improve a business' or building's environmental performance or its resilience to the impacts of climate change;
 - Investing in measures to stimulate cost-effective deep renovations of buildings, including staged deep renovations;
 - Supporting an increase in energy efficiency in enterprises including an emphasis on "whole place" especially through improving industrial processes, designing out waste, recovery of "waste" heat energy and CHP;
 - Supporting increased SME access to national and local government procured contracts for energy efficient goods and services;
 - Developing low carbon innovation in relation to energy efficiency within enterprises, including through technologies and engagement practices;
 - Building retrofit and energy efficiency measures, especially whole building solutions to exemplify, and support the commercialisation of, next phase technologies which are near to market and low carbon construction techniques to improve the energy efficiency of buildings.

Outputs

C1	Number of enterprises receiving support	1,291
C34	Estimated GHG reductions	7,044 Tonnes of CO2eq

LOW CARBON ECONOMY

4C SUPPORTING ENERGY EFFICIENCY, SMART ENERGY MANAGEMENT AND RENEWABLE ENERGY USE IN PUBLIC BUILDINGS

<p>The Need</p>	<p>To ensure security and affordability of energy supply in the long-term there is a need to move towards whole building approaches, founded on the intelligent use of data, to reducing energy usage and carbon intensity.</p> <ul style="list-style-type: none"> Public sector buildings provide appropriate demonstration sites to trial new financial and technological solutions to reduce carbon emissions and equivalent Green House Gases levels, and to inspire local areas and partners to adopt them as a practical solution. Public and community buildings face particularly large energy efficiency issues with large scale use and ageing infrastructure. Energy efficiency and advisory services provide nearly 4,000 jobs in the North East. The North East has an ageing and inefficient housing stock, which needs significant intervention to reduce domestic-sector emissions The North East LEP area is at the forefront of technology application of smart systems technology and routes to provide integrated and intelligent approaches to energy generation. 		
<p>Actions Supported</p>	<p>Invest in innovative approaches and technologies to improve the energy efficiency of energy systems, networks and public, and community sector properties.</p> <ul style="list-style-type: none"> Provision of advice and support to increase the use and take up of low carbon technologies, energy efficiency measures, renewable energy technologies and smart energy systems in housing stock and public buildings; Supporting low carbon innovation in relation to the integrated ‘whole place’ energy management approach including energy waste and re-use; Investing in building retrofit, energy efficiency measures, renewable and smart energy systems deployment, especially whole building or place solutions exemplifying next phase technologies which are near to market; Investing in domestic energy efficiency, renewable energy and smart construction techniques; Investment in the development and wider use of Energy Performance Contracting in the public buildings and housing sectors. 		
<p>Outputs</p>	<p>C31 C32 C34</p>	<p>Number of households with improved energy consumption Decrease of annual primary energy consumption of public buildings Estimated GHG reductions</p>	<p>602 580,673 kWh/year 9,606 Tonnes of CO₂eq</p>

4E PROMOTING LOW CARBON STRATEGIES

The Need

- The interconnected nature of carbon emissions activities requires whole place, integrated responses using innovative technologies, which seek to realise the multiple benefits, e.g. cycle lanes that can generate energy, and help channel water to reduce flood risk.
- In comparison to other areas the North East LEP has higher than average CO2 per capita emissions for industry and commercial and domestic outputs (both higher than the UK figure).
- The figure for transport is lower than the national average reflecting lower car ownership, mileage and a relatively strong public transport infrastructure; however car use is rising rapidly and remains the most common mode of transport.
- Journeys on foot and by bike (which are both sustainable and support healthy lives) are less common than other areas and are lower than comparative areas.
- The North East has pioneered integrated systems including combined heat and power systems and district heating. Recent investment has been successfully brought forward in networks and district heating schemes, but more needs to be done, especially in relation to electricity. Challenges also remain over ageing infrastructure, joining up separate schemes, and the age of some of the original examples such as the ground-breaking Byker Wall scheme.

Actions Supported

Investment in integrated, systems approaches to better use data to demonstrate practical solutions for 'whole places' (such as smart grids) which reduce carbon emissions and improve place resilience and sustainability. This will include heat, power and transport systems investment for 'future places'.

- Investments in local/regional smart grid demonstration projects, including validation and solving system integration issues;
- Sustainable energy action plans for urban areas, including public lighting systems, smart metering and distribution through smart grids;
- Investments in combined heat and power from renewable sources;
- Investments to encourage the adoption of renewable technologies.

A strategic approach is particularly important in the area of low carbon transport, whether for sustainable urban mobility, or improving links between urban and rural areas, or connecting dispersed rural communities. Examples of actions include:

- Investments in actions aimed at improving the capacity at local level to develop and implement integrated and sustainable transport strategies and plans (including for example actions related to modelling data collection, integrated transport management, operations and services, public consultation etc) to reduce transport related air pollution, in particular retrofit or replacement programmes for bus fleets, incentive schemes for cleaner transport, improved public transport infrastructure and alternative forms of transport;
- Investments in actions aimed at introducing innovative environmentally-friendly and low-carbon technologies (for example, alternative fuel stations or charging points);
- Investments in actions aimed at developing innovative and multi-modal transport services (for example,

intelligent transport systems for travel information and planning, traffic and demand management, smart ticketing, multimodal integrated datasets or cooperative systems);

- Innovative transport pricing and user charging systems;
- Cycle paths, walkways and waterways only where part of an integrated approach to GHG reductions..

Outputs

C1
C34

Number of enterprises receiving support
Estimated GHG reductions

1,267
11,721 Tonnes of CO2eq

LOW CARBON ECONOMY

The Need

4F PROMOTING RESEARCH AND INNOVATION IN, AND ADOPTION OF, LOW CARBON TECHNOLOGIES

The North East has a strong asset base to draw on in low carbon and sustainable innovation, with significant expertise and infrastructure around low and ultra-low carbon emission vehicles and offshore wind which have benefited from investment during the last programme. A number of other areas however also provide significant opportunities for future innovation-led growth. With the likes of Nissan, Hitachi Rail Europe, Sevcon, Smith Electric and AVID vehicles all based in the North East LEP area there is a strong business base supporting growth in low carbon transport and vehicle technologies. These not only provide significant employment but also bring to market market-leading technologies.

- Investment in related skills around electric vehicles, hydrogen technologies and battery manufacturing through Gateshead College and Zero Carbon Futures and the Skills Academy for Sustainable Manufacturing and Innovation proved low carbon innovation skills.
- Nissan alone through the LEAF development has created 350 jobs and safeguarded a further 1,000.
- The North East has installed over 1,000 charge points as part of the Plugged-in Places programme which has resulted in the strongest charging point network outside of London and highest take up of low carbon vehicles in the UK. However, this is still a small proportion of overall vehicle usage and needs to be broadened and widened significantly to meet carbon budgets.
- The North East has an established sub-sea and marine engineering business base including companies such as GE, BEL valves, A&P, SMD, Teckmar Subsea and Technip Umbilicals. The siting of the Blyth wind blade testing site and the Offshore Renewable Energy Catapult further enhances this support and provides an opportunity to build on successful previous investments.
- Broader energy development building on expertise and natural resources will benefit from the support to overcome the demonstration and roll out gap for new technologies. Similar to those areas supported in previous programme and investment these can provide significant future jobs growth opportunities and source for exports.
- Despite opportunities the need to demonstrate and commercialise ideas remains a challenge and market failure and local businesses fail to fully understand the opportunities presented and routes to entry.

Assist local SMEs to engage with, and enhance the supply chains making the most of opportunities. These will be particularly focused around renewable energy generation, construction and retro-fit and intelligent and integrated system such as smart grids.

Support the development and commercialisation of new and innovative technologies to bring to market and demonstrate responses which reduce carbon emissions and energy use. Particularly targeted at areas of Smart Specialisation and key sectors (Offshore and marine energy; low and ultra-low carbon vehicles and low carbon built environment).

Actions Supported

- R&D, innovation and supply chain work for low carbon technologies and materials, including, wave and wind energy, smart grids, distributed generation, solar and photovoltaics, heat networks, heat pumps and low carbon heat for energy intensive industries;
- Research underpinning carbon capture and storage, taking account of the restrictions laid down in Article 3.3.b of the ERDF Regulation 114;
- Technology centres of excellence and test facilities, including relevant Catapult centres;
- Renewable technologies in the UK renewable energy roadmap;
- Research, development, demonstration and adoption of technologies and systems that support low-energy transport and accelerate the establishment of new technologies such as low emissions vehicles (electric, hybrid and hydrogen);
- Knowledge transfer with Higher Education/Further Education institutions and Businesses;
- Supporting low carbon tech start-ups and greater commercialisation of low carbon products and processes;
- Developing financing methods that encourage the adoption of proven low carbon technologies and generate long-term financial savings;
- Demonstration and deployment of decentralised renewable energy technologies;
- Research, development and innovation and supply chain development for low carbon and resource efficient technologies and materials (including small scale pilot programmes that test the market with new low carbon solutions and the use of secondary materials).

Outputs

C1	Number of enterprises receiving support	208
C5	Number of new enterprises supported	42
C26	Number of enterprises cooperating with research institutions	20
C29	Number of enterprises supported to introduce new to firm products	33
C34	Estimated GHG reductions	3,138 Tonnes of CO2eq

CLIMATE CHANGE ADAPTION

Durham
£2.4m²

Tyne and Wear Northumberland
£5.8m²



5B PROMOTING INVESTMENT TO ADDRESS SPECIFIC RISKS, ENSURING DISASTER RESILIENCE

The Need

- The diverse landscape of the North East, including coastal, upland and river valley areas with both urban and rural dimensions creates unique opportunities and challenges.
- Significant development opportunities and key employment sites are prone to river and surface flooding. Work around key sites will improve sustainability and businesses resilience for those at risk from flooding.
- This includes at major sites including Team Valley, along the rivers Tyne and Wear as well as the city and town centre locations including Newcastle, Durham, Chester-le-Street and Morpeth.
- The North East has opportunities for more innovative and sustainable solutions to flooding using onsite or up-stream interventions which also enhance the quality of the natural and built environment.
- As well as reducing water flows, the use of Blue and Green infrastructure approaches offer a variety of additional benefits for businesses and their employees. Work by Eftec shows it can also increase rateable values, increase the attractiveness of economic centres, improve energy efficiency, and improve air quality (in turn improving employee productivity)

Actions Supported

Investment in natural flood management and mitigation approaches which reduce flood risk for key employment locations and business development sites. This can be undertaken onsite or upstream and should enhance the quality of the natural environment. Actions which support enhanced green and blue infrastructure development will be particularly welcomed as will those which support improvements across a wider area. Particular actions include:

Fluvial risk management:

- Onsite or upstream attenuation and slowing the flow measures
- Diversion channels;
- Raising strengthening and/or extending river walls and frontages;
- Fixed and temporary barriers and gates;
- Stepped back embankments;
- Resilience measures for business infrastructure, including for example wet or dry flood-proofing;
- River restoration and improved conveyance measures.

Surface water run-off and drainage system:

- Integration, including retrofitting, of surface water and run off management measures into urban and commercial redevelopments;
- Innovative measures in contexts where flood risk and land management relies on pumping and inter-relates with drainage.

² Throughout the strategy we have referred to our proposed figures, rather than the initial indicative allocations proposed by the Managing Authorities: DCLG and DWP; see page 9 of the Executive Summary

OutputsCO23
P6Surface areas of habitats supported to attain a better conservation status
(ha)
Businesses and properties with reduced flood risk4 hectares
4,555

What Will We Achieve?

Through investments made by the European Regional Development Funding we will deliver the following:

	OUTPUT ³	LOW CARBON	CLIMATE CHANGE
C1	Number of enterprises receiving support	2,868	0
C5	Number of new enterprises receiving support	64	0
C26	Number of enterprises cooperating with research institutions	20	0
C29	Number of enterprises supported to introduce new to the firm products	33	0
C30	Additional capacity of renewable energy	13	0
C31	Number of households with improved energy consumption	602	0
C32	Decrease of annual primary energy consumption of public buildings	580,673	0
C34	Estimated GHG reduction	39,695	0
C23	Surface areas of habitats supported to attain a better conservation status	0	4ha
P6	Businesses and properties with reduced flood risk	0	4,555

³ The 'output targets' reflect those prescribed by Government and are under negotiation. The latest definitions can be found at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/462724/ERDF_Output_Indicator_Definitions_Guidance_230915.