

LEPs and local energy

Executive summary

This report explores the role that local enterprise partnerships (LEPs) can play in supporting local energy and makes the case for greater LEP engagement in order to realise the economic, social and environmental benefits of local energy activities.

The report showcases a range of successful and innovative projects and can help LEPs develop their own approach to this important agenda. This report has six sections:

Section 1: About the report

Section 2: An introduction to local energy

Section 3: A survey of the scope of and challenges faced by local energy projects

Section 4: Potential roles for LEPs in local energy

Section 5: Case studies illustrating a wide range of local energy projects

Section 6: Conclusions

For the purpose of this report, local energy is considered to encompass energy projects that are led by local actors for local benefit. The report establishes that businesses, the public sector, communities in the third sector and the knowledge economy all have a stake and can all make a contribution.

The range of local energy projects that are being delivered or proposed is broad; for example, they include raising awareness and changing behaviour, improving energy efficiency in buildings, generating and distributing power or heat, implementing smart energy and storage technologies, encouraging uptake of low carbon vehicles, enabling business resource efficiency, promoting innovation in technology deployment and growth in the low carbon economy, and establishing business models or services such as local energy supply companies.

The energy market is undergoing a period of transition that is being accompanied by an intense burst of innovation and creativity. New technology, new business models and new ways of approaching old problems will lead to significant investment in the coming years. Increased community awareness, local energy matching and collective energy purchasing, for instance, are creating new opportunities. Decentralisation will be a growing feature of the UK energy system as opportunities arise for consumers, communities and whole towns and cities to invest in energy generation, transmission and supply. Billions of pounds of investment will flow into the reworking of our national utilities infrastructure into smarter and more sustainable networks.

By engaging in the local energy agenda, LEPs can help to bring investment to infrastructure projects in their regions.

The local energy agenda is a bottom-up approach that is about harnessing the ambition of individuals and institutions to play their part in mitigating and adapting to the impacts of climate change: by finding new financial models to reward efficient use of energy and by helping to make smaller-scale renewable generation technologies competitive with fossil fuels and centralised alternatives. A locally balanced and decarbonised energy system will be more resilient and adaptive to future challenges.

LEPs' primary aim is to stimulate the growth of local economies. Local energy activities can produce a wide range of benefits of direct interest to LEPs, including job creation, skills development and business productivity. They will want to support other outcomes such as reductions in fuel poverty and improved community cohesion. LEPs have a clear mandate for engaging in local energy. When first establishing its local growth agenda, the government highlighted 10 roles that LEPs could play. Supporting energy projects was included among them.

“LEPs should take on a diverse range of roles, such as exploring opportunities for developing financial and non-financial incentives on renewable energy projects and Green Deal”.

- The role of the LEP from 'Local Growth: Realising Every Place's Potential' (2010)

LEPs might choose to support local energy activities in a number of ways. They can first influence the agenda at the strategic level by integrating some or all of a range of local energy themes into plans, programmes, funding requirements and discussions with partners.

Most obviously, if LEPs are convinced that there are opportunities to grow the number of jobs in key sub-sectors of the economy, they can bring resources to the promotion of local supply chains. There are good examples of sector-focused approaches being taken by LEPs that have had a significant impact. LEPs can view local energy from the perspective of productivity. Reductions in energy costs achieved through system efficiencies translate directly into gross value added (GVA) for businesses.

LEPs can also facilitate the delivery of significant energy infrastructure projects, particularly during the initial scoping and development stages. This report has identified a range of ways that LEPs are already supporting business, municipal and community energy activities, from mentoring and funding to promotion of opportunities and successes.

Energy infrastructure improvement and decarbonisation do not currently have a natural home within the mandates of local institutions. The agenda is a broad one. It is important to recognise its 'cross-cutting' nature. Local leadership on energy must engage with aspects of the agenda within housing, health, transport, the public realm, waste and civic institutions, in terms of behaviour, buildings, connective infrastructure, major developments, regulation and national policy.

A survey of projects and programmes from across England demonstrates that different types of institutions are taking the leadership role in different places. A challenge for energy projects of all kinds is delivering reductions on energy costs while retaining a proportion of revenues for future works. Many of the most successful examples of local energy activity involve the creation of a partnership of institutions that then becomes a 'cost centre' for further investment. There are several examples of initial programmes that have become revenue generators for municipalities and communities. Where governance structures are properly established and supported by wider leadership, local partnerships on energy can then be an attractor, forming a 'coalition of the willing', which can go forward to develop robust investment cases, attract funding and deliver projects of increasing scale.

Devolved budgets for transport, skills and housing within Local Growth Deals, as well as the devolution settlements being agreed for some areas in England, create an opportunity for governing authorities to better co-ordinate action by formalising working partnerships. A hybrid approach to local energy would be one in which an umbrella body develops an overall strategy and consolidates core policy and operational functions, while ensuring that delivery institutions have the resources and mandate to act. This is analogous with the way that transport authorities function. In keeping with the localism agenda, the way this is implemented can be flexible and make the most of local strengths.

LEPs are in a unique position to facilitate the translation of national policy into local goals and initiatives. LEPs can provide evidence and advocate on behalf of industry. They can use their funding, networks and influence with local authorities to maximise opportunities for local energy and local growth. LEPs can ensure that devolved funding is evaluated for energy and low carbon outcomes. LEPs can support the development of an integrated local energy strategy by helping stakeholders to identify their respective roles and support the formation and expansion of catalyst energy schemes.

Local delivery of energy and low carbon outcomes has been happening in practice alongside the national agenda for many years. Local energy could now emerge more explicitly as a way for LEP subregional areas to empower local agencies and have a two-way discussion with government on the direction of UK energy policy. LEP regions that can align the efforts of active stakeholders will realise a substantial dividend from local energy.

The findings of this report include a set of recommendations as to how LEPs can promote local energy activities. These are considered on the following pages and can be summarised as follows:

- 1. Recognise the breadth of activities encompassed by local energy**
- 2. Encourage private businesses to engage with local energy**
- 3. Work with public sector partners and develop municipal energy projects**
- 4. Promote community energy activities and recognise that LEPs have shared objectives**
- 5. Harness local research and innovation**
- 6. Work as a conduit between government and local stakeholders**
- 7. Provide support to local energy projects**
- 8. Review funding streams that might be aligned to local energy outcomes**
- 9. Grow LEP capacity to promote local energy activities**

How can LEPs support the local energy agenda?

1. Recognise the breadth of activities encompassed by local energy

Local energy encompasses a wide range of activities. In any given region, the focus of effort will be on actions that have local relevance and where there is an opportunity to make a real impact.

Actions to promote the local energy agenda could include the following:

- survey the range of local energy activity in a LEP area and identify priorities
- acknowledge the links between investment in energy infrastructure and supply chains and the growth of the economy
- understand local energy as a cross-cutting theme that can involve a wide range of potential stakeholders across all sectors of the economy.

Appendix 2 of this report considers in detail a range of local energy 'themes' that will be of potential interest to LEPs. These 'infrastructure' and 'strategic' themes are summarised in the table overleaf.

2. Encourage private businesses to engage with local energy

The regional economic approach of LEPs and their relationship with business mean they are in a unique position to help new local energy projects succeed and to amplify the effect of existing ones. Businesses can also benefit from decentralised energy through reduced energy bills while also potentially engaging with their local communities and meeting their own CSR objectives. Actions could include the following:

- work with local business to identify properties where renewable energy could be installed, such as industrial buildings or logistics warehouses, or where businesses would benefit from energy efficiency measures
- promote the involvement of communities in commercial energy projects and consider how existing community energy groups can be supported to deliver valued community benefits
- engage clusters of businesses in the opportunity for shared decentralised energy infrastructure such as heat networks; attract new business to locations with low energy costs
- enable networking of businesses and customers in the supply chain for local energy projects and promote opportunities in the low carbon economy.

3. Work with public sector partners and develop municipal energy projects

Municipal energy is investment in energy assets by the public sector. Local authorities are increasingly stepping into this space. Local authorities and other public sector bodies (e.g. NHS trusts, universities, colleges, etc.) share similar energy objectives and will also benefit from the success of local energy projects. Partnering between local stakeholders can increase the impact of support and funding initiatives. LEPs can have an important role as intermediaries facilitating conversations between central government and local government stakeholders. Actions could include the following:

- support municipal energy initiatives through shared resources and expertise, strategic guidance and policy frameworks, and align objectives across multiple local authorities
- work with local authorities to leverage their statutory role (Home Energy Conservation Act) and power of procurement to achieve low carbon outcomes
- help to promote local energy supply companies where there is an opportunity for businesses and public sector partners to benefit as customers
- invest in energy projects directly as a LEP or through an appropriate investment vehicle such as a joint venture.

Local energy themes

Appendix 2 of this report looks in detail at a range of thematic areas that might be considered to fall within the scope of the local energy agenda. This summary table is intended to promote initial thinking by LEPs on the issues that are most relevant to them.

Local energy themes	Potential role for LEPs
Business energy efficiency: large undertakings and SMEs	LEPs are sponsors of business hubs or similar networks, and these might be a conduit for programmes that encourage local businesses to consider energy use.
Links to industrial strategy , job creation, retention and GVA growth	LEPs are well placed to understand the energy requirements of local industry and have a conversation with government on elements of industrial strategy.
Public sector energy management , civic buildings and public realm	LEPs can support the public sector in their subregions to reduce energy costs as part of an efficiency programme.
Housing energy efficiency: future policy on flexible delivery of ECO	There is scope for each LEP to signpost local stakeholders to national policy on energy in housing as it evolves.
Microgeneration: construction jobs, local skills agenda, scaling up	LEPs have a role in supporting jobs in local supply chains for building-integrated renewable technologies.
Decentralised energy: heat, power, cooling	LEPs have the stakeholder relationships to support major projects such as district heating schemes.
Smart energy grids: managing grid constraints, resilience and energy storage	The transformation of the power grid into a smarter system is of strategic importance to business growth.
Transport energy: low-emission vehicles, walking and cycling	LEPs support transport infrastructure to unlock economic growth. Transport funding can promote low-emission-vehicle infrastructure and cycling.
Clustering activity: targeting investment at infrastructure pinch points	LEPs are often the sponsors of regeneration and new development sites and can co-ordinate investment.
Spatial planning: promoting low carbon energy infrastructure	Depending on a particular LEP's scope of activity, it may have scope to inform spatial planning and guidance.
Low carbon supply chain: investment, innovation and R&D	LEPs have a key role in supporting local stakeholders to direct investment into local supply chains and R&D.
Inward investment , energy supply requirements, green business parks	LEPs play a key role in engaging with companies proposing to expand or relocate to an area.
Innovation and the knowledge economy	LEPs identify funding requirements for universities and other specialist research facilities.
Skills for the low carbon economy	LEPs have a strategic role in supporting the devolved skills funding agenda.
Circular economy , diverting waste and industrial by-products into local use	Where local stakeholders are collecting and converting waste to energy at scale, there may be an opportunity for LEPs to engage.
Municipal and community energy: public and third sector ownership	Investment in energy assets by the public sector could target activities that improve local competitiveness and reduce business consumer costs. LEPs can support these outcomes.
Actions to improve air quality and mitigate environmental impact	Local energy is part of a wider environmental sustainability agenda. Where major projects have environmental impact, the LEP should support processes that enable the full impact to be evaluated.
Rural energy , agricultural resources for reuse and into energy, heat for growing	LEPs can promote low carbon energy in the rural economy and develop supply chains.
Local energy markets: enabling local contracts and energy supply	Enabling local consumers to purchase output from local generators or local energy companies.
Devolved funding , Local Growth Funds and EU funding	LEPs' role as a mediator between local bodies and devolved national funding may sometimes have a low carbon focus.

4. Promote community energy activities and recognise that LEPs and community groups have shared objectives

Community energy is investment in energy assets by the third sector, charities, co-ops and social enterprises. LEPs and community energy groups share many objectives. LEPs can encourage local growth and further their core goals by becoming more actively involved in energy policy and projects. Outcomes of community projects can include lower energy costs, a boost to business productivity, inward investment and new jobs. Actions could include the following:

- assess the local appetite for community energy and understand the needs of existing groups
- consider developing community energy policies, guidance or strategies
- develop and distribute promotional materials; use public events to promote engagement with the local community; facilitate local community groups to come together and share knowledge and experience, working with local authorities and other intermediaries
- raise awareness of community energy groups with local businesses to increase their profile and help share the outcomes of positive initiatives with a wider audience
- encourage local businesses to support relevant community energy projects, e.g. through funding, volunteering by staff, or collaborating to enable projects to be delivered, e.g. by making roof space available for a community solar project and purchasing the output.

5. Harness local research and innovation

A local economy can be substantially boosted if it can incubate innovative industries or play host to the new headquarters of an emerging market player attracted from overseas, for example.

The technologies to decouple the growth of the economy and fossil fuel energy use are not yet all in place. Some technologies such as wind and solar are market ready, but with space to innovate in efficiency and consumer adoption. For other technology categories, there are whole new markets to be created in energy storage, carbon capture, hydrogen and fuel cells, anaerobic digestion, marine energy, ultra-low-emission vehicles and many others besides. Actions could include the following:

- support local industry to access innovation funds relevant to the energy, infrastructure and low carbon sectors
- brief universities and colleges on the local energy agenda and key issues, so that researchers and students can be recruited to consider local issues
- co-ordinate local stakeholders with sector-leading specialisms to advocate for knowledge clusters, Catapults and other innovation centres
- strengthen the links between research, innovation, business and the public sector; identify opportunities for test beds, demonstrations and 'living labs' as ways to pilot the commercialisation of new technologies and services.

6. Work as a conduit between government and local stakeholders to establish the scope of local energy within the LEP subregion

National policy frameworks and regulation help shape the scope of activities that are undertaken in the energy and low carbon sector. Devolution and other localism trends are creating a body of local knowledge and specialisms in particular subregions. There is a role for organisations such as LEPs to act as conduits between central and subregional agencies on the state of the art and the direction of energy policy. Actions could include the following:

- understand aspects of the low carbon agenda that are determined by national policy and regulatory mechanisms; engage with national debate and consultation where there is evidence that this would benefit local economies
- identify other LEP regions with similar agendas and collaborate on projects to achieve scale
- dedicate some resources to engaging with national contact points on topics of local importance; the BEIS Local Energy team and other organisations involved in networking and best-practice sharing, such as the LEP Network, can help to identify shared interests and facilitate discussion between interested LEPs.

Local energy case studies

Chapter 4 of the report presents **16 case studies**. These help illustrate a range of local energy projects and different types of energy solutions.

The case studies have been referred to throughout the report >>>

The case studies highlight examples of local energy projects that are addressing a specific local need. They demonstrate what projects can achieve and in some cases illustrate how a LEP or other regional body can benefit from supporting groups in their area.

Case study		Scope and relevance
1	LIVERPOOL CITY REGION COMMUNITY ENERGY GUIDE	LEP promotion of community energy; networking with stakeholders; signposting to relevant information
2	HUMBER LEP	Low carbon supply chain; business clusters; local procurement; inward investment
3	ROBIN HOOD ENERGY	Municipal energy supply companies; municipal energy; energy purchase; fuel poverty; community benefits
4	CHESHIRE – ASHTON HAYES	Low carbon place-making; community group success in energy efficiency, energy management and energy generation projects
5	LIVERPOOL CITY REGION EMPLOYMENT AND SKILLS	Skills for the Future; energy management of public estate; engaging students and community
6	BRISTOL ENERGY TREE	Public engagement; 'light-touch' information approach for local community; additional social benefits
7	BEDMINSTER ENERGY GROUP	Housing energy efficiency; local voluntary group; local groups working together
8	PIXIE ENERGY	Local energy markets; contracts matching energy generators with nearby consumers
9	GATESHEAD ENERGY NETWORK	Energy service companies; infrastructure design, construction and management
10	SPARSHOLT GREEN GASMILL	Rural energy projects; green energy supply company; energy from agricultural by-products
11	THRIVE COMMUNITY ENERGY	Community benefit funds; larger energy projects providing funding for smaller-scale local energy improvements
12	MERSEYSIDE COLLECTIVE SWITCH	Energy purchase; community bulk buying; fuel poverty benefits
13	LIVEWIRE COMMUNITY ENERGY LIMITED	Community group as BenCom; established with support of local council; solar and wind power generation
14	OXFORDSHIRE LOW CARBON HUB	Regional low carbon network; public and third sector involvement in a social enterprise
15	CHESHIRE AND WARRINGTON LEP	Innovation projects; Local Growth Funds
16	LIVERPOOL UTILITIES MASTERPLANNING	Energy infrastructure planning; working with distribution network operator, grid constraints, future projections, data

7. Provide support to local energy projects

LEPs can provide support directly to energy projects, particularly during the initial scoping and development stages when the challenges they face are most acute, including advice, mentoring and funding. For example, a local authority or community group could benefit from support in identifying opportunities, understanding strategic fit with local policy and priorities, navigating regulatory approvals, making contact with local business and identifying proposals that are likely to gain planning consent. Actions could include the following:

- track changes in energy policy and in energy markets and disseminate information on new funding mechanisms or energy sector developments to local stakeholders
- provide advice and ad hoc support to energy projects to help them overcome challenges
- support partner organisations to bid for national funding programmes aligned with the local energy agenda, for example innovation, or Local Growth Funds
- understand the role that could be played by the creation of local energy markets, which could be a mechanism for balancing energy supply and demand
- direct funding towards energy projects; this could include working with the local authority to help provide low-cost loans and grants
- understand that energy projects can also have environmental impacts as well as benefits and ensure that these are accounted for in the terms of reference for funding.

8. Review current and potential future funding streams that might be aligned to local energy outcomes

LEPs have an evolving and expanding role in identifying strategic activities that can promote local business growth and in working with partners to find funding for key projects. LEPs can consider whether their strategic frameworks can accommodate local energy themes and can seek to bring funding to projects. Actions could include the following:

- consider existing funding mechanisms such as the European Regional Development Fund (ERDF) as mechanisms to support local energy plans where there is an identified need
- seek to align local activities with industrial strategy, the Emissions Reduction Plan, EU transnational funds and future – post-Brexit – funding mechanisms
- consider the benefits of community and municipal energy activities and refer to these in strategic guidance to local partners
- join with local partners in considering local energy as part of a devolution agenda; LEPs can facilitate between local partners on the scope of any devolution deal.

9. Grow LEP capacity to promote local energy activities

Developing an energy plan for a LEP region would enable local stakeholders to co-ordinate cross-cutting activities, ranging from interventions on business growth and innovation to focused infrastructure investment at strategic locations that supports the growth of the local economy.

Allocating personnel to lead local energy activities at the LEP to provide a focal point for queries, new opportunities and knowledge exchange, both within the LEP and across community groups and local businesses. This role could provide technical support paired with local understanding. It could allow a local network to be maintained, facilitating the sharing of best practice among stakeholders. It would enhance regional collaboration and serve to pump-prime activities in support of local energy, including funding. Actions could include the following:

- develop an energy plan for the LEP area that sets out a strategy for local energy
- encourage the local planning authority to consider decentralised, municipal and community energy in its strategic and spatial planning policy; this could include support for energy projects via the neighbourhood planning process
- appoint a person with responsibility for local energy policy and initiatives, even if this is only a part-time role; provide leadership and become an advocate for local energy, representing local energy groups at the local and national levels.

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Appendices

Appendix 1: Glossary

Appendix 2: Survey of local energy themes

1 Introduction

This report explores the role that local enterprise partnerships (LEPs) can play in supporting local energy and makes the case for greater LEP engagement in order to realise the economic, social and environmental benefits of local energy activities.

LEPs' primary aim is to stimulate the growth of local economies. Local energy activities can produce a wide range of benefits, from the investment and jobs they create to local skills and increased community cohesion.

The report showcases a range of successful and innovative projects and can help LEPs develop their own approach to supporting this important agenda.

1.1 About this report

This report has been prepared by the Liverpool City Region LEP, supported by Ricardo Energy & Environment and Liverpool city council.

In **Section 2**, this report establishes a connection between LEPs' primary role in stimulating the growth of the local economy and local energy objectives, such as increasing the deployment of decentralised energy generation; integrating energy infrastructure into local power networks; and localising the ownership of energy assets by industry, private enterprise, municipalities and communities.

This report explores the need for local agencies to play a role in the local energy agenda.

Section 3 of the report provides an introduction to the development of local energy projects, exploring projects of a range of types. The process by which local and community energy projects come together is considered along with a survey of potential ownership and financial structures. Local energy initiatives face a number of challenges if they are to succeed. This review of the development process for local energy projects informs many of the recommendations that are set out in this report.

LEPs can help partners to overcome barriers holding back local energy projects.

Section 4 explores the role that LEPs and associated local bodies can play in the local energy agenda. It makes the case for greater LEP engagement in order to realise the economic, social and environmental benefits. LEPs will find ideas that can help them develop their own approach to local energy that responds to local priorities.

LEPs have an important role to play in the local energy agenda.

This report showcases successful and innovative community and municipal energy projects and can help LEPs develop their own approaches to supporting local energy. Case studies are referenced throughout the document. These are consolidated in **Section 5**.

Section 6 provides a conclusion to the report. A range of recommendations have been developed as a summary of the report, and these are contained in the executive summary.

Appendix 1 is a glossary of terms.

Appendix 2 of this report is a **Survey of local energy themes**, which considers in more detail the context for local energy and the broad thematic issues identified within the agenda, and it concludes with a summary of the way in which LEPs might engage with those themes and support local energy projects.

1.2 Report sponsor and wider relevance

This report has been sponsored by Liverpool City Region Local Enterprise Partnership. It is anticipated that all 38 English LEPs will be interested in this work to scope out the extent of the local energy agenda. It is also relevant to local authorities and combined authorities.

The Liverpool City Region LEP actively promotes and supports local energy. The LEP works with a range of stakeholders to promote actions to grow the low carbon economy.

Liverpool LEP scale and scope of activities

ACTIVITY SCALE	ACTIVITY SCOPE
Nationally significant infrastructure <ul style="list-style-type: none"> ▪ Marine and tidal energy ▪ Generation, transport and transmission 	Actions to promote the local supply chain
Decentralised energy <ul style="list-style-type: none"> ▪ District heat and power ▪ Solar and wind, energy-from-waste ▪ Circular economy, biofuels ▪ Smart grids and utilities masterplanning 	Actions to make energy infrastructure local, resilient and competitive
Local and community energy <ul style="list-style-type: none"> ▪ Third and public sector ▪ Business energy 	Actions to direct funding towards energy projects
	Actions to engage local stakeholders in the low carbon economy agenda

The work of the Low Carbon Team at the LEP is informed by the views of the LEP Low Carbon Economy Board, a group of public and private sector representatives who promote and support the growth of the sector.

In 2015 the LEP published a guide to community energy for Liverpool City Region.¹ The guide explained some of the benefits of community-led initiatives and aimed to raise awareness of the opportunities while raising the profile of existing community energy projects, including Liverpool Solar One and the creation of several new community energy groups in the City Region.

In 2017 the LEP will support the launch of Liverpool council’s energy supply company, an example of a municipal energy programme, which will supply domestic energy customers with gas and electricity while also promoting social outcomes by addressing fuel poverty.

The Liverpool City Region LEP has prepared this report in order to further their understanding of the role that LEPs might take in supporting the local energy agenda.

During the preparation of this report, all 38 LEPs were asked to share their views of local energy in order to survey the overall level of awareness and to understand the support already being provided.

A majority of LEPs have explicitly supported the low carbon sector and have some role in directing funding towards energy infrastructure, whether from Local Growth Funds or EU or other funding schemes.

Those LEPs that offered detailed views indicated that there are barriers to energy infrastructure funding and agreed that LEPs have a role in overcoming them for a range of stakeholders including community groups.

Prior work to assess LEPs’ activity in respect of the low carbon economy was prepared by Sustainability West Midlands. ‘Fit for the Future? Local Enterprise Partnerships’ Climate Ready and Low Carbon Economy Good Practice’ was published in January 2016.²

Case Study 1

¹ ‘Community Energy for Liverpool City Region’, Liverpool City Region LEP, www.liverpoollep.org/core-sectors/low-carbon/community-energy/

² ‘Fit for the Future? Local Enterprise Partnerships’ Climate Ready and Low Carbon Economy Good Practice’, Sustainability West Midlands, <http://www.sustainabilitywestmidlands.org.uk/resources/fit-for-the-future-local-enterprise-partnerships-climate-ready-and-low-carbon-economy-good-practice/>

2 Local growth and local energy

2.1 LEPs and the energy agenda

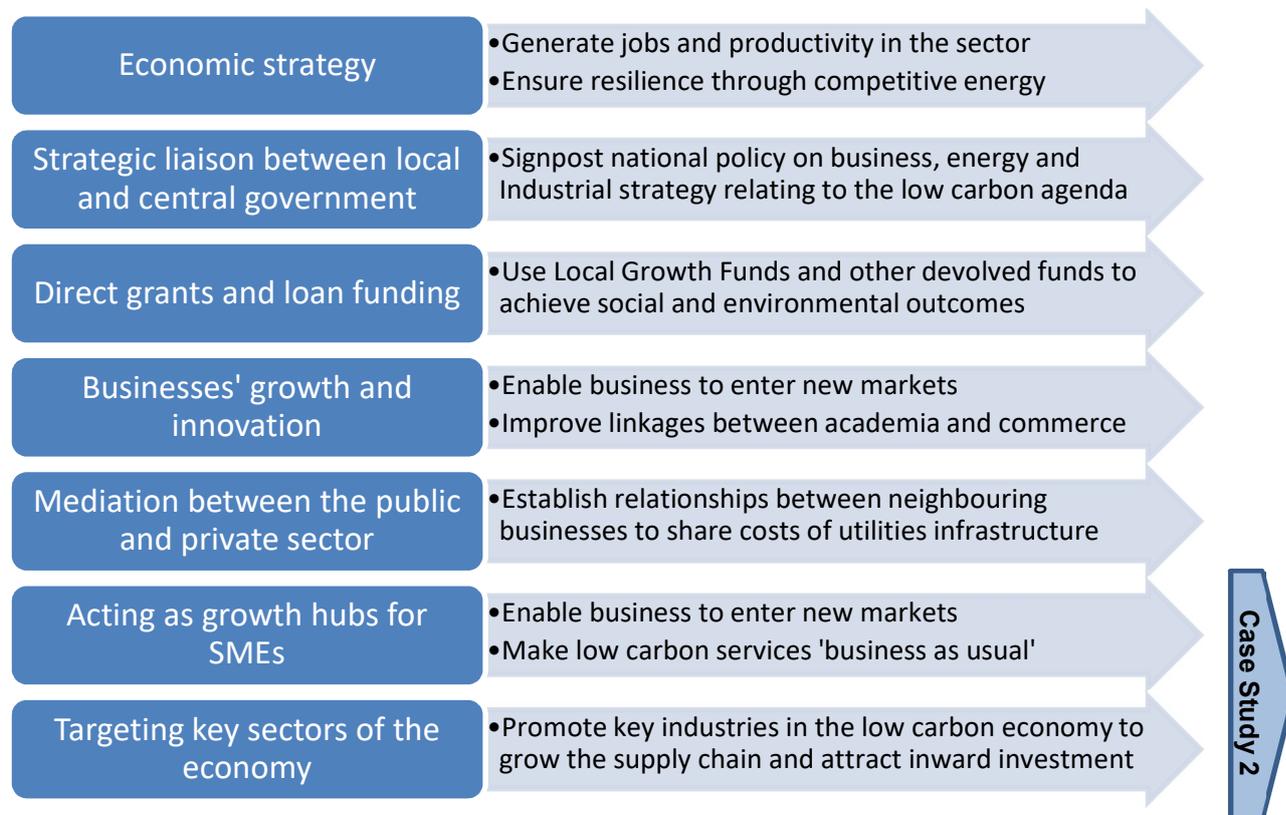
In June 2010, the coalition government invited businesses and councils in England to come together to form LEPs. The geography of these partnerships reflects the natural economic areas of the country. The intention was to shift decision-making and public expenditure to local partnerships that would be more responsive to the needs of local business and people. The overarching objective of LEPs is to stimulate local growth.

LEPs have been tasked with taking on a diverse range of local roles, including setting key investment priorities, distributing funding, co-ordinating projects and proposals, supporting high-growth businesses and helping people into employment. In establishing its local growth agenda, the government highlighted 10 roles that LEPs could play. Supporting energy projects was included among them.³

“LEPs should take on a diverse range of roles, such as exploring opportunities for developing financial and non-financial incentives on renewable energy projects and Green Deal.”

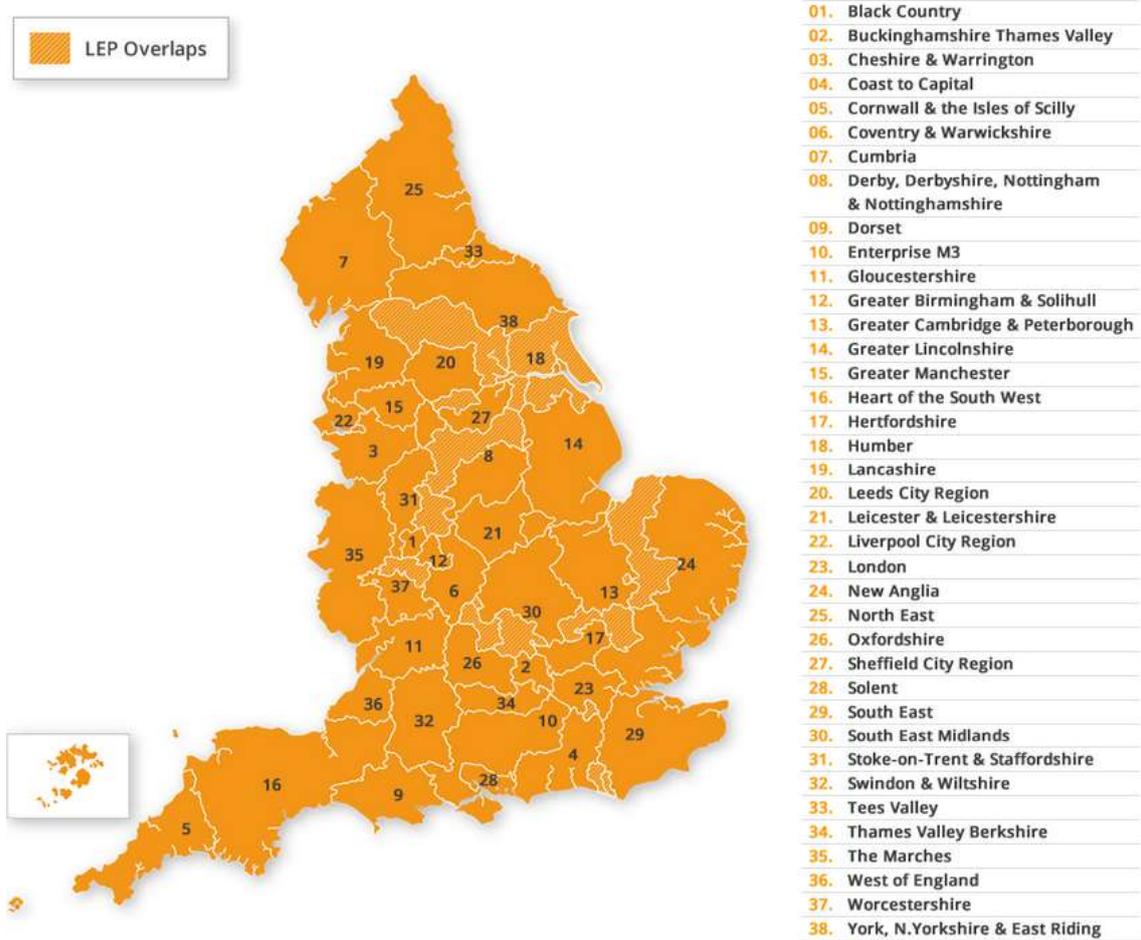
The role of LEPs will vary across England in keeping with their integration into local contexts. However, a core set of objectives are shared by all LEPs and these can be seen to align with activities in the energy sector, the decarbonisation of the energy supply and the transition to a low carbon economy.

LEPs’ strategic roles and relationships in the energy and environmental sector



³ 'Local Growth: Realising Every Place's Potential' (October 2010), https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32076/cm7961-local-growth-white-paper.pdf

Local enterprise partnerships: network of LEPs



Source: LEP Network, <https://www.lepnetwork.net/the-network-of-leps/>



2.2 What is local energy?

For the purpose of this report, local energy is considered to mean energy projects that are led by local actors for local benefit. These local actors could include local authorities, LEPs, other public sector bodies, communities, businesses or others with a local presence. The range of local energy projects that are being delivered or proposed is broad and includes, for example, raising awareness and changing behaviour, improving energy efficiency in buildings, generating and distributing power or heat, implementing smart energy and storage technologies, encouraging uptake of low carbon vehicles, enabling business resource efficiency and growth in the low carbon economy, or establishing business models or services such as local energy supply companies.

Local energy covers a broad range of potential activities that might be relevant in a given local area.

The local energy agenda recognises that some activities undertaken to transform and decarbonise the energy system will rely on local agencies to determine strategy, direct funding and implement projects.

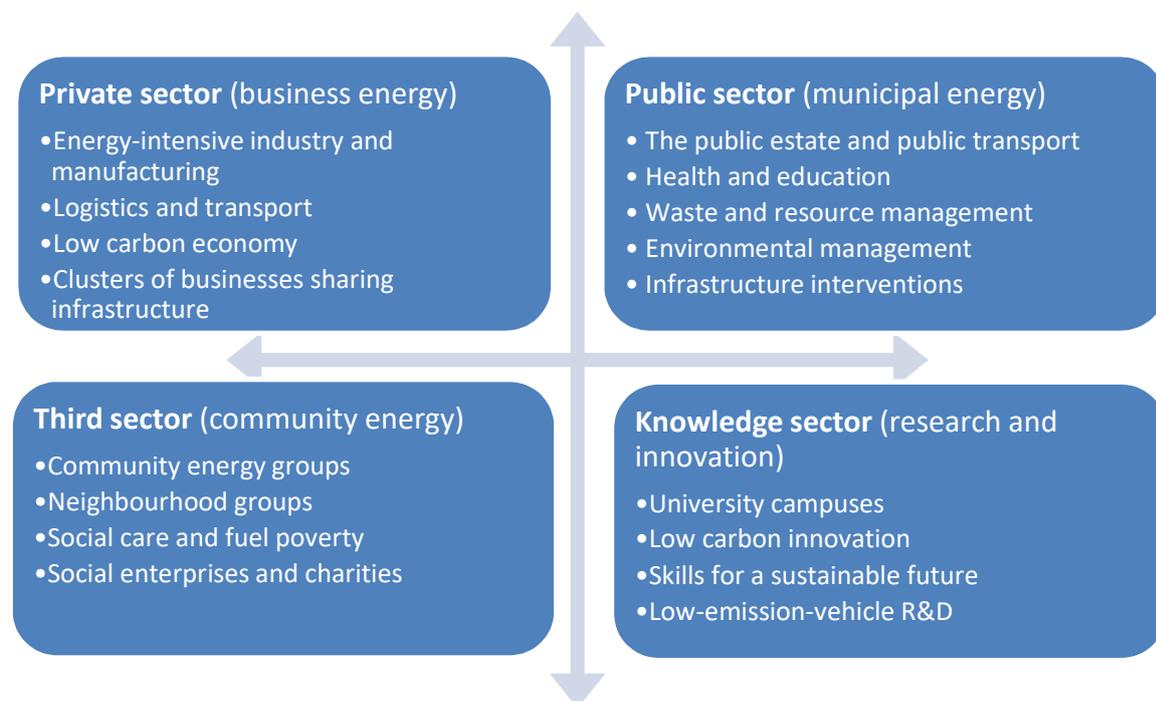
Appendix 2 to this report is a survey of these local energy themes, including a review of national policy context and scope for local action. The survey of local energy themes that has been undertaken suggests that, in many cases, local interventions may be necessary to support the interaction between varied stakeholders in an increasingly complex sector.

2.3 Local energy stakeholders

This section aims to survey the scope of activity within a region and identify key energy stakeholders.

A local economy is comprised of a range of organisations and agencies whose interests in and engagement with energy issues will depend on the importance of energy costs to each household or business, their existing infrastructures and future plans, social and environmental drivers, policy and incentives, and their level of engagement with the overriding issue of climate change.

A local economy can be subdivided into four principal sectors, and energy can be seen to be important to certain types of actor in each of these four categories:



2.3.1 Business energy

Energy can be a key cost for business, particularly in some sectors, and low-cost and low carbon energy can help create advantages over competitors. The degree of importance that any given business attaches to energy use will be linked to the sector it operates in and its scale of operations.

Energy-intensive industries are defined by government. These industrial sectors transform raw materials into glass, paper, metals, etc., and because energy is a substantial operational cost they are highly exposed to international commodity markets. Energy costs are so important to these sectors that government has given exemptions to energy-intensive industries in the tax regime.

In the rest of the industrial, light industrial and manufacturing sectors, energy and carbon taxes will be an important cost variable, and programmes to reduce energy use would be reflected in the productivity/GVA of the organisation.

Freight and logistics are significant transport energy users. National policy in this area is probably needed to create a level playing field when considering decarbonisation of transport, although air quality management and low-emission zones have been or will be implemented in a number of English cities and have already had an impact in London.

Energy use in commercial office buildings and most retail outlets will not be energy-intensive in comparison with manufacturing and industry, although there will be significant opportunities to reduce energy by addressing the building stock.

Unless they have green outcomes embedded in their brand, SME⁴s may tend not to have a focus on energy, especially if they are in tenanted buildings. However, behaviour change and minor capital measures undertaken by SMEs would have an impact on their energy costs and probably recoup the investment. There are an estimated 5.4 million SMEs in the UK and cumulative action on energy use in this sector would have a significant impact.

2.3.2 Municipal energy

Municipal energy describes energy projects led by a local authority or other public sector organisation.

The public estate, the public realm and the role of the public sector in waste and resources management makes the public sector an important stakeholder in local energy. Opportunities include retrofitting to improve the efficiency of public buildings and programmes to deploy low-energy street lighting.

In recent years, local authorities have increasingly been stepping into the energy market. These municipal energy activities have included purchasing collective energy, setting up energy supply companies, and owning and investing in energy infrastructure such as district heating, energy-from-waste and solar farms.

Municipal energy projects might hope to support a range of outcomes, including the following:

- intervening to provide strategic infrastructure where the private sector won't act
- decarbonising the energy system and achieving carbon targets
- reducing costs associated with the public sector estate and public services
- addressing fuel poverty and reducing energy costs for consumers
- creating a revenue stream to support other local services.

Ofgem's Retail Market Review and the 2015 decision to allow 'white label' energy suppliers has led to a surge in municipalities establishing energy supply companies. They are appealing because they offer opportunities to drive a broad reduction in energy costs in their local area, as well as providing a mechanism for delivering targeted support to fuel-poor households.

⁴ The usual **definition** of small and medium sized enterprises (**SMEs**) is any business with fewer than 250 employees. There were 5.2 million **SMEs** in the **UK** in 2014, which was over 99% of all business. Micro-businesses are business with 0-9 employees

2.3.3 Community energy

'Community energy' refers to community organisations that are investing in energy projects or are active in energy efficiency efforts, including charities, co-ops and social enterprises. Some have been established specifically to invest in energy assets, while others have a broader range of interest. The emphasis is on providing a benefit to the community as well as community ownership, leadership or control.⁵ In 2014 the government published its Community Energy Strategy, which defined community energy as follows:

“Community projects or initiatives focused on the four strands of reducing energy use, managing energy better, generating energy or purchasing energy.”

This broad definition encourages community energy groups to form in response to local challenges and opportunities. They can be led by specially constituted community benefit societies (BenComs) or community interest companies (CICs). They can operate in partnership with public bodies.

Community energy can bring a wide range of social and economic benefits,⁶ including the following:

- generating income for the community
- supporting social programmes
- increasing community cohesion
- building local skills
- creating jobs
- tackling fuel poverty
- cutting carbon emissions
- reducing energy bills

Many of these benefits are closely aligned with regional development objectives. This serves to highlight the opportunities for LEPs that support community energy groups.

Case Study 4

2.3.4 Research and innovation

Delivering a low carbon future will be a comprehensive process of transition for the UK.

The technologies to decouple the growth of the economy and fossil fuel energy use are not yet all in place. Some technologies such as wind and solar are fully commercialised, with gradual improvements in efficiency and consumer adoption as a result of continued innovation. For many other low carbon technologies that are less mature, markets are still emerging, for example in energy storage, carbon capture, hydrogen and fuel cells, anaerobic digestion, marine energy, ultra-low-emission vehicles and many others besides.

A local economy can be substantially boosted if it can incubate innovative industries or play host to innovative energy technology companies, particularly those that operate in international markets.

Universities and innovation hubs can generate new intellectual property and create proposals of early-stage technical readiness. They then need to demonstrate proof of concept in real-world scenarios, an activity that can be facilitated by local public sector agencies and industry.

Many areas of the country boast centres of excellence in industrial R&D that is relevant to the energy and environmental sector.

Catapults are government-sponsored research and demonstration facilities acting as knowledge transfer hubs for key sectors. These include the **Energy Systems Catapult**, based in Birmingham, the **Offshore Renewable Energy Catapult**, based in Blyth, and the **Future Cities Catapult**, in London.

The low carbon economy is creating demand for a wide range of skilled jobs that require both technicians and specialists in engineering, planning, construction and other STEM-related subjects, among others. The skills agenda, which is moving to a devolved model of funding for both further and higher education, has an important role to play.

Case Study 5

⁵ Community Energy Strategy (January 2014), Department of Energy and Climate Change, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/275163/20140126Community_Energy_Strategy.pdf

⁶ Community Energy Strategy (updated March 2015), Department of Energy and Climate Change, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/414446/CESU_FINAL.pdf

2.4 Local energy objectives

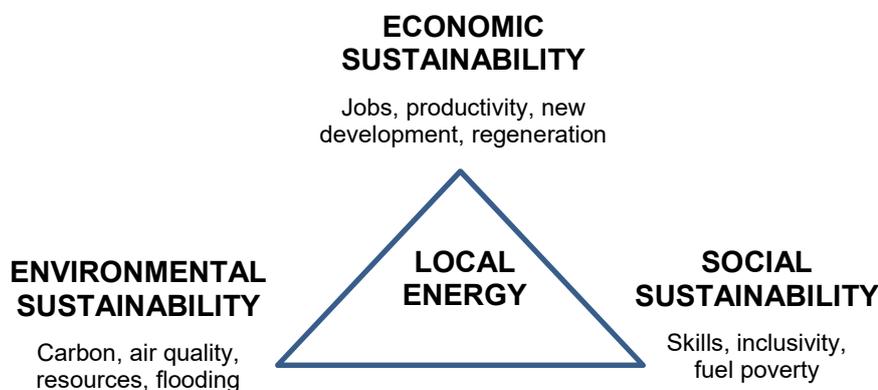
Action on local energy should proceed from a clear understanding of objectives.

The removal of carbon emissions from economic activity (decarbonisation) is necessary to combat climate change and is a national policy objective enshrined in law by the Climate Change Act 2008.

The growth of a local economy, meanwhile, implies improved business productivity and/or increased activity by businesses, which in turn can be reliant on increased energy use. Where additional energy use is supplied from fossil fuel sources, this will increase carbon emissions.

Decoupling carbon emissions from economic growth is the challenge that must be faced nationally and locally. The political capital that will be associated with measures to mitigate and adapt to climate change may vary greatly between localities, as well as being subject to change when leadership changes and there is a different weighting of this objective with other priorities.

The sometime tension and trade-off between energy security, energy costs and decarbonisation is often expressed as the energy trilemma. More broadly, the objectives of action on energy can be considered in the context of economic, environmental and social sustainability.



Local energy activities can be an opportunity to deliver on and reconcile these various objectives.

For example, where a decentralised energy system generates heat and power locally, there is an environmental advantage in reduced UK carbon emissions; a social advantage in the jobs created to manage the system; and an economic benefit in reduced energy costs to consumers.

Key objectives for local energy include the following:

- productivity improvement through decreased energy costs to business
- jobs from improved productivity, growth of the low carbon economy and inward investment
- jobs from upskilling the workforce into new sectors of the low carbon economy
- resilience of cities through embedding efficient, smart and future-proof systems
- reduction in fuel poverty and household energy bills
- community cohesion from local ownership of energy infrastructure
- reduction in carbon emissions and other greenhouse gases
- air quality improvements from reduction in transport emissions
- measures to mitigate noxious emissions associated with decentralised energy
- resource efficiency from reduction in use of water and materials
- resource efficiency from reuse and recycling and local sourcing of materials
- a cleaner and greener environment.

When partnerships are formed to develop local energy projects, it is important to ensure that there is clarity about the hierarchy of objectives.

3 Developing local energy projects

With the aim of familiarising LEPs with local energy activities, this section of the report provides a brief introduction to different types of energy project, the project development process and a range of different ownership models, as well as a recognition of the need for collaboration. It concludes with a summary of common barriers to project delivery and some potential responses from LEPs.

3.1 Types of energy project

3.1.1 Energy awareness

The impact that changing behaviour can have on energy use is too often underestimated. Programmes to install efficient systems are often only effective if the end users welcome and adopt the measures. Activities to raise awareness can be low cost and can include the following:

- meetings or workshops where a group of people come together to share energy-saving tips and other behaviour change initiatives based in a local community; activities such as this can be arranged by local authorities, social landlords or social enterprises
- collective switch programmes encouraging groups to switch to cheaper and cleaner fuel tariffs
- engagement of young people and the uninitiated on climate change and environmental issues so they understand the importance of thinking about energy use.

Case Study 6

3.1.2 Energy efficiency

Consumers can take action to use energy more efficiently in buildings in many different ways and on different scales. This can involve the following:

- businesses or public institutions that reduce energy costs by empowering an energy management function within the organisation, working from engaging staff on energy behaviour to reviewing operational processes to find efficiencies; this can lead to investment in on-site heat and power generation
- housing retrofit programmes that improve the energy performance of the housing stock, perhaps led by local authorities as part of public health and fuel poverty strategies or social landlords aiming to reduce energy bills for tenants
- community groups being set up to improve the energy efficiency of local community buildings, or social enterprises encouraging the uptake of energy efficiency measures in a neighbourhood.

Case Study 7

3.1.3 Smarter management of supply and demand

Along similar lines to energy reduction, some projects look at ways to manage energy more effectively by moving energy use away from peak times of the day. A number of financial incentives for this have been made available to the largest energy users, with the hope that the national rollout of domestic smart meters and half-hourly meters for commercial consumers, along with other regulatory changes, will in time enable more consumers to benefit from a more flexible, smarter energy supply.

Low carbon decentralised energy is often generated intermittently; sunshine and wind are not consistent over the course of the day or the year. Measures to balance local generation with local demand on local grids and micro-grids are becoming increasingly important. Storage of energy will play a role and it is envisaged that energy storage will play a much more significant role in the energy system in the coming years.

Smart energy management and time-use charging could be very significant for the resilience of cities in future, because action on the 'demand side' of the meter reduces the need for distribution network operators (DNOs) to carry out expensive works on local energy infrastructure (substations) in order to increase capacity. Ultimately, management of supply and demand makes better use of existing generating capacity and could reduce the total capacity of power stations needed in the UK.

Case Study 8

3.1.4 Generation and supply of low carbon energy

Decentralised generation of energy is the trend that is driving the local energy agenda. Energy produced at or near the place of use contributes to the supply provided by larger, centralised power stations at remote locations.

Projects seeking to generate energy can be broadly classified by scale; different scales involve different project development approaches.

- **Microgeneration** projects will be small-scale installations of low carbon energy technologies (solar photovoltaic and thermal systems, wind turbines, biomass boilers) integrated with buildings. Microgeneration links to local energy objectives when projects are complex, such as when a social landlord or community group considers investment in installations across several locations.
- **On-site generation projects:** Larger businesses, hospitals, leisure centres, residential blocks and other types of building can incorporate on-site generation as an integral part of the energy services design or as a retrofit project. New-build projects increasingly do so to conform to building regulations. Clean energy generation could take the form of gas CHP engines, heat pumps, solar thermal panels and biomass systems. Where an institution cannot finance a project itself, local energy actors could play a role in directing it to sources of funding; involving the local supply chain; and potentially encouraging the site to future-proof the energy centre for later connection to an off-site communal or district heating system.
- **Communal energy** projects could describe local networks for energy sharing, particularly between residential properties and business clusters. Communal networks connect buildings within a development site and require some facilities management function.
- **District-scale energy:** Local energy policies and guidance are needed to facilitate district energy networks. These projects will be schemes to provide heat, power and cooling to neighbouring buildings and sites, generally supplying a mix of different uses. District energy can scale up to cover whole cities as it does in parts of Scandinavia and Eastern Europe. 'Anchor loads' for district heating are the large users of heat and power that must usually be involved in order for a business case to be made for initial capital investment.
- **Large-scale energy projects:** Energy infrastructure that can generate multiple megawatts of energy. Examples include energy-from-waste plants, solar and wind farms and a range of combustion technologies that generate power (CHP, diesel generators, biofuels). Additional revenues from connection to local consumers might be an important part of the business case.
- **Nationally significant infrastructure:** Significant investment in the local economy is attached to offshore wind turbine arrays, gas turbine and nuclear power stations, fuel (gas, biomass) import and storage terminals, transmission network balancing assets, carbon capture and storage.

3.1.5 Low-emission transport

Around a third of UK carbon emissions are associated with transport. Conventional modes of transport by road, rail and shipping rely on petrol and diesel, which are also associated with emissions of noxious gases with the potential for detrimental impact on human health. Responses to the challenge of decarbonising transport and improving air quality in built-up areas aim to replace standard vehicles with ultra-low-emission vehicle (ULEV) alternatives or prompt people travelling by road to travel by rail, by tram, on foot or by bicycle, and to shorten the distances travelled by freight.

Local projects that can reinforce national standards can be championed by relevant transport and planning bodies.

- Electric vehicles are expected to revolutionise road transport in the next decade. An infrastructure for recharging batteries will be rolled out across the UK. Charging points will be desirable at places of work and transport interchanges and stopovers. Some planning authorities have begun to require developers of new homes to future-proof them for electric vehicle charging.
- Fleets of logistics vehicles, public bus networks and others can be converted to ULEV as part of replacement programmes. Electric and hybrid buses are becoming common. Vehicles fuelled by gas, including biogas and hydrogen, are available.

- Urban planning can design cycle highways into existing transport networks. When designing new employment sites, developers can limit environmental impact by ensuring such infrastructure is included from the outset. Town centres are adopting rent-a-bike schemes to improve traffic congestion.

3.1.6 Energy purchase and services

The business case for investment in energy infrastructure is reliant on the contracts that are made between suppliers and consumers. The willingness of consumers to enter into contracts for energy over several years depends on how much of a priority they place on energy costs, standing charges, reliability of supply, exit clauses and other nuances.

Substitution of standard contracts with contracts for green and local energy will rely on a level of understanding being developed by the purchaser, and in some cases this means the supplier must educate the customer before negotiation can begin.

Collective purchase, switching, local supply and green energy tariffs are all features of the energy market that seek to engage consumers on where their energy is sourced from.

Businesses in industrial and manufacturing sectors that have a power demand above a given threshold purchase energy half-hourly on the wholesale market. Choosing the right contract can be critical to their bottom line.

Meanwhile, for many businesses in the service sector, energy makes up a relatively low proportion of running costs. Businesses may consider energy a 'fixed' cost that warrants no attention. This is in spite of there being easily realised opportunities that could pay back quickly and the risk that energy prices may rise in future and become a tangible concern.

Traditionally, domestic consumers and small business have remained with the 'Big Six' energy suppliers and have not responded en masse to efforts to encourage them to switch to cheaper tariffs. There is a recent trend relating to smaller energy supply companies entering the market, some of whom provide 'green energy' tariffs approaching competitiveness with standard rates.

Local authorities and other public sector institutions are bound by procurement rules about how they purchase energy. They are often part of local or national frameworks for energy purchase; an example is the Yorkshire Purchasing Organisation (YPO), which has packages for purchase of gas, electricity and also low carbon heat and power systems.

For community energy, third sector actors are less constrained than the public sector and can consider collective purchasing and/or switching, which can help consumers secure better deals on energy tariffs, fuels, products and services. This could include entering contracts to purchase locally generated energy.

3.2 Local energy project development

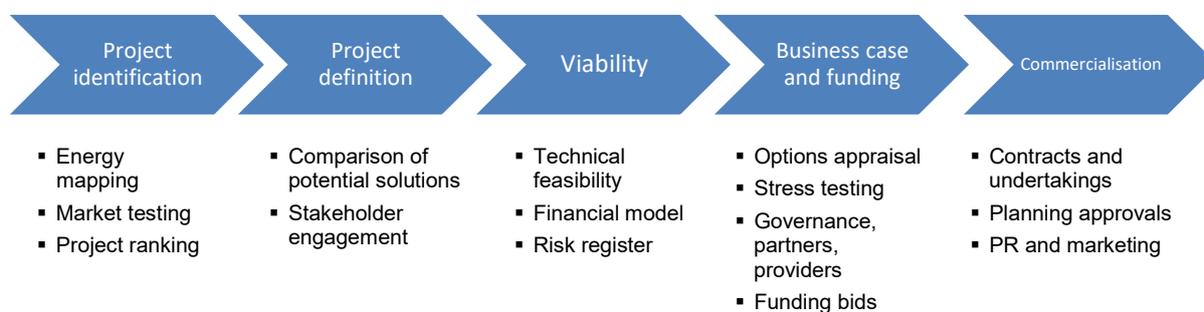
We have seen that energy projects can take a number of forms. In terms of project development, there are some common factors that shape decision-making.

As a consequence of trying to connect energy generators and consumers across development boundaries, many local energy projects involve a large number of stakeholders, rely on complicated financial models and require trust and stakeholder engagement over long project development periods.

Energy project timeline

Energy projects can take time to come to fruition. The project development process manages the level of project risk sequentially, by minimising the prominent risks first and by resolving important issues before substantial funds are committed. This can help reduce the risk that time and money are expended on ultimately undeliverable projects.

Project development, prior to implementation of the project itself, can be addressed in stages:



An energy project business case

Following government guidance (Green Book⁷), a project can be assessed for fitness against the project owner’s range of considerations, including the following:

Strategic case	Rationale for the project, why it is better than the alternatives, what the benefits will be <i>Example: A district heat network can provide low-cost energy to consumers, reduce CO₂ and make the city more resilient</i>
Economic case	Option appraisal, comparing technical and financial viability and key outputs criteria <i>Example: A solar scheme benefits from connection to a local consumer, saving energy and CO₂</i>
Commercial case	Contracts and delivery models for preferred option, risk mitigation and management structure <i>Example: An ESCo will be subcontracted to manage the customer sales for a heat network</i>
Financial case	Value for money and rate of return of the preferred option, budget timeline and external funding <i>Example: Equity and loans fund a project; income generates a net revenue within five years</i>
Management case	Necessary resources for the project team, a clear timetable and communications strategy <i>Example: Competent persons project-manage engagement with suppliers and developers</i>

The barriers to commercialisation of an energy project should not be overlooked, and although this process is developed in detail at a later stage for most projects, it is advisable to consider early on the need to have potential partners contractually engaged (e.g. with memorandums of understanding).

It can be helpful to take a ‘pipeline’ approach to sponsoring energy projects. A longlist of opportunities can be organised by their fit with strategic priorities and the risk associated with delivery. Some projects will fall by the wayside and others will develop quickly from left field.

⁷ <https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government>

Community energy

Community energy provides a good model for local energy activities. Communities are trying to achieve not just financial rates of return but also social and environmental benefits.

Community energy projects can face particular challenges due to the fact that a project team can come together for the first time in parallel with the project taking shape.

Community project teams

Community energy projects are typically led by members of the community in which they are hosted and form only one of several demands on their time and attention. The project team who lead the development may not have all of the expertise or experience they require, making the goodwill and support of the community, local businesses and authorities all the more important. The key elements of success for a community energy project team are as follows:

Core group: A committed group of people who are prepared to give their time as volunteers to progress the project.

Project management: This can be demanding and can require a lot of time. This is a particular challenge when the project manager is part-time or is a volunteer. Community energy can require familiarity with specialist technology and multiple stakeholders, making it important that the project manager is experienced.

Finance: Financial expertise is needed in order to manage funds and expenditure. In addition to accountancy, there can be a need for additional support when the community project involves investments and when organising for members of the community to contribute towards funding. Access to and familiarity with financial models can also be valuable.

Technical knowledge: Community groups benefit from having access to relevant experts or trade experience in the core group of its network. This could be an architect, electrician or construction manager, depending on the nature of the project.

Network: Being able to call on the expertise and experiences of others who can provide support at key stages or troubleshooting.

Supportive community: The support of the community, recognition of the value of the community benefits and a willingness to engage in the project.

Community project timeline

A community will need to go through a number of stages when identifying and developing a community energy project. These are outlined in the figure below, with some examples of specific activities at each stage that are typical of community renewables projects.

Developing a community energy project



3.3 Local energy ownership models

Commercial energy projects

The majority of energy generated in the UK is from assets owned and operated by commercial organisations operating in a highly competitive sector. While the trend is towards decentralisation of energy generation and smaller-scale installations, the key driver remains the need for a return on the energy investment. Project developers must consider the balance of capital and operational costs against revenues from sale of energy, the avoided cost of energy supplied from conventional sources, incentive schemes and other incomes.

Examples would include the following:

Solar and wind farms	These can achieve a better rate of return if supplying consumers directly. They compete with other potential land uses for best value.
Energy-from-waste	Plants that burn combustible waste. Often designed solely around power generation; there is an opportunity to locate nearby industrial processes that can use the substantial volumes of waste heat generated.
Grid-balancing intermittent	Gas turbines, diesel engines and combined heat and power systems are all being installed on a medium scale to take advantage of national grid financial mechanisms (e.g. in the capacity market).
Clean energy	MW-scale heat pumps, fuel cells, biofuel burners, power storage batteries, heat storage, tidal schemes. All might find a role in the energy system, either integrated into the national power grid or supplying local consumers or both.

These projects are owned and operated by commercial developers with the aim of maximising profit.

There is therefore a role for local agencies seeking to attract inward investment to a region (such as LEPs acting as local growth hubs) to provide a link between developers from outside a region with local landowners and large energy consumers.

Community benefit funds

One way for communities to benefit from the construction of new energy infrastructure by commercial organisations is through **community benefit funds**. Community benefit funds are created when a developer provides a proportion of revenues from an energy project (maybe 5%) to local agencies, often not-for-profits, in order to support socially beneficial outcomes for local areas.

In some instances, community energy groups may be able to access a community benefit fund from a nearby commercial renewable energy project in order to fund an energy efficiency project. In principle, community benefit funds could support smaller-scale energy generation projects too. Community benefit funds are mandatory for wind turbines in Scotland. In England they are sometimes voluntarily put forward by developers of projects in order to address local concerns. A regional response could be to work with developers to co-ordinate the scope of local community funds to deliver shared aims.

Case Study 11

An **ESCo** is an energy services company. ESCOs are created when local energy infrastructure requires specialist management. This could, for example, cover the design, construction, operation and management of a communal (on-site) or district (off-site) heat network. ESCOs may be entirely commercial, private sector businesses operating independently, or under contract to a public sector body, or a joint venture between the public and private sector, or they may be wholly owned by a public sector organisation such as a local authority.

An ESCo or other service provider can offer an **Energy Performance Contract (EPC)**. An EPC is a contract that a business undertakes with a provider to invest in energy saving and generation in exchange for a share of the cost savings that are achieved. This enables a business to focus on its core activities and hand over the decision-making about energy systems to a specialist.

Municipal energy

The scope for public sector bodies to engage in energy ownership is related to the activity.

Collective purchase The public sector is a significant purchaser of energy. Lowest cost is generally the driver of decision-making, but this is a complicated area and opportunities are often missed. Procurement teams may be at a remove from energy managers. Bringing them together and consolidating energy contracts for different assets could increase the purchasing power of local authorities and enable them to engage in activities such as half-hourly purchase and demand-side response.

Case Study 12

Energy efficiency Energy measures in public buildings, public realm, transport and street lighting projects can be achieved on an ‘invest-to-save’ basis. Where an institution does not have the capital to invest upfront, low-cost loans for the public sector are available (Salix, Green Investment Bank). Local authorities may also have a remit to reduce fuel poverty and can engage in the housing agenda by working with providers of Energy Company Obligation funding.

Generation & supply Where public bodies generate energy for their own use, governance is relatively straightforward. It is when a public body seeks to provide energy to a third party that complexity arises. Many institutions do not want the added risk that sale of energy entails. Hospitals, for example, may generate substantial waste heat, but providing this to nearby housing is not in their mandate. Multi-utility service companies (MuSCOs) are very common in continental Europe and appearing in the UK, MuSCOs can facilitate local energy sharing by acting as an intermediary.

Community energy

Community energy outcomes can be delivered by a range of providers and models, but a quintessential funding model is for a community group to establish a co-op or BenCom with special tax status and exemptions. This allows the group to act as a social enterprise and to generate revenues for local communities in exchange for asset-locking and other constraints so that the advantages cannot be passed into private ownership, at least in the early years.

Case Study 13

Community energy projects range from those where communities benefit from externally owned projects (through a community benefit fund, for example), to those that are 100% community owned. Shared ownership projects are those where communities will develop and own a project in partnership with local public or private sector organisations.

Models of community energy funding



The key point is that greater community ownership can yield greater returns and benefits for the community but this entails exposure to more risk. Larger community projects increase the overall size of benefits. The most appropriate options will depend on the opportunities identified and the roles that the community and project partners are willing to play.

NOTE: The scale of £5,000 to £100,000 of installed capacity is an example for illustrative purposes only. (Source: Scottish government Community Energy Policy Statement.)

3.4 Local energy challenges

There are a number of recurring challenges that can hinder energy projects.

Access to early-stage investment

Access to early-stage investment is crucial for local energy projects. This is particularly important for renewable energy generation projects, as the pre-construction phase will have significant costs associated with feasibility work, work undertaken prior to planning applications and then the planning applications themselves. The costs of the feasibility work in particular can be difficult for projects to bear because, until feasibility work is complete, the project is still at risk of being deemed unviable.

- Businesses and public sector bodies can work with suppliers in the market who offer initial feasibility studies at low or no cost, funded from their business development budgets. For businesses, the Carbon Trust has a national scheme.
- There are a number of funds that have previously provided communities with funding for feasibility and pre-planning development work. These include the Rural Community Energy Fund (the Urban Community Energy Fund (UCEF) is now closed).
- The Green Investment Bank has invested in some large-scale municipal and community energy projects, such as projects involving LED street lighting, non-domestic energy efficiency, renewable heat and biomass power.

Reliable income streams

In recent years, the Feed-in Tariff (FIT) and Renewable Heat Incentive (RHI) schemes have been a key source of income for energy generation projects, as they provide a reliable long-term source of income.

However, reductions to tariff level and other changes to these financial incentives mean that energy projects are now starting to look at alternative income streams in a post-subsidy scenario.

- Third-party investors in energy infrastructure can be matched with landowners, businesses or public sector sites that want to host energy assets and make full use of the energy generated in exchange for a proportion of the upside.
- Projects would benefit from assistance in identifying local businesses and public sector customers who will enter into long-term power purchase agreements for green energy.

Supplying consumers directly

The ability to sell electricity locally, at a local price, across development boundaries could deliver greater local benefit from a decentralised generation project. However, the cost and complexity of setting up a licensed energy supply company or a private wire network are difficult to overcome. Electricity and gas supply are regulated. The Heat Trust is a voluntary consumer protection mechanism for heat schemes.

- District heating and power, it is acknowledged, require local authorities and other brokers to facilitate the conversation between developers and consumers.
- There is a role for umbrella organisations with experience of sale of energy to consumers to act as intermediaries for energy projects.

Navigating planning and regulatory systems

Regulatory processes can appear complicated for newcomers to the energy market such as local authorities and small, volunteer-led community groups. Connecting to the electricity network is a particularly common challenge encountered by energy generation projects. The planning process also often presents challenges for community groups.

- A locality will benefit from a supportive and proactive distribution network operator that is sympathetic to the local energy agenda.
- If they can develop a robust evidence base and demonstrate a public appetite, planning authorities can incorporate policies and guidance relating to decentralised energy infrastructure as part of local plans and other spatial strategies.

3.5 Collaboration on local energy

Local energy succeeds through collaboration.

Local authorities can play an important role in bringing together local stakeholders to collaborate on energy projects. Local authorities have a number of vital contributions to make to the local energy agenda:

- statutory responsibility to develop policies to improve the energy performance of housing
- powers over waste collection and recycling
- Local Plans with planning policies supported by secondary guidance on spatial planning
- Development masterplans that inform the growth of an area.

A recent report by NESTA, 'Local Energy in the Age of Austerity',⁸ highlighted the reduced role that some public sector bodies are playing in strategic place-making as a result of reductions in central budgets. This suggests a need for other organisations to support, reinforce and sometimes replace local authority activity. There are a number of available models and existing structures that might facilitate local energy projects. It is important that these have resources available to support project development.

Chambers of commerce: Engagement with businesses on energy use can be facilitated by chambers of commerce.

- **University sustainability networks:** Many universities have research faculties dedicated to low carbon innovation, and these are linked to networks of local technology suppliers.
- **Business Improvement Districts (BIDs):** A BID can be created when a sufficient proportion of local businesses at a business park or other cluster agree that a proportion of business rates can be diverted to a local fund and used collaboratively to improve the public realm. This makes the locality more attractive for existing business and can attract new ones. BIDs could be invited to play an increased role in energy management and sustainability for sites where there is an opportunity to develop shared utilities infrastructure.
- **Distribution system operators:** Traditionally, distribution *network* operators have acted to manage the supply of centralised energy to consumers at the lowest cost without sacrificing grid performance. Under consideration is a distribution *system* operator model, where the DNO plays a more active role in managing distribution.
- **Social enterprises:** Partly publically funded and partly funded by revenues generated by their activity, social enterprises are natural partners of community energy groups and could be created from within or invited from outside to implement renewable energy on an invest-to-save basis.
- **Neighbourhood plans** may be created by a community that wishes to engage with developers and planners on new buildings and infrastructure, ensuring that the public realm is protected, roads remain uncongested, and more. If incentives were aligned, these plans could be a format for communities to invite sustainable energy projects to an area.
- **Umbrella community co-ops:** Community energy groups can be supported by umbrella groups that play a mentoring, funding and contract management role.
- **Public health and social care:** Fuel poverty is an agenda shared by housing bodies, public health officials and social landlords, among others. The NHS has an interest in preventing cold residences from causing respiratory illness in unheated homes. NHS Sustainable Development Management Plans encourage NHS trusts to reach out to communities, and this could include efforts to share heat from energy centres with local residents.
- **Municipal energy boards:** In Europe, where the energy system is regulated differently, energy investment is often co-ordinated by energy boards accountable to the local population.
- **Local enterprise partnerships** are well placed to mediate the creation of local energy partnerships of all kinds.

⁸ 'Local Energy in the Age of Austerity', NESTA, https://www.nesta.org.uk/sites/default/files/local_energy_in_an_age_of_austerity.pdf

4 A role for LEPs in local energy

This section illustrates how LEPs could take a more prominent role in energy policy, liaising between central government and local stakeholders. It also presents ways LEPs can help overcome the barriers faced by local energy groups, as well as guidance for LEPs who want to develop an approach to community energy.

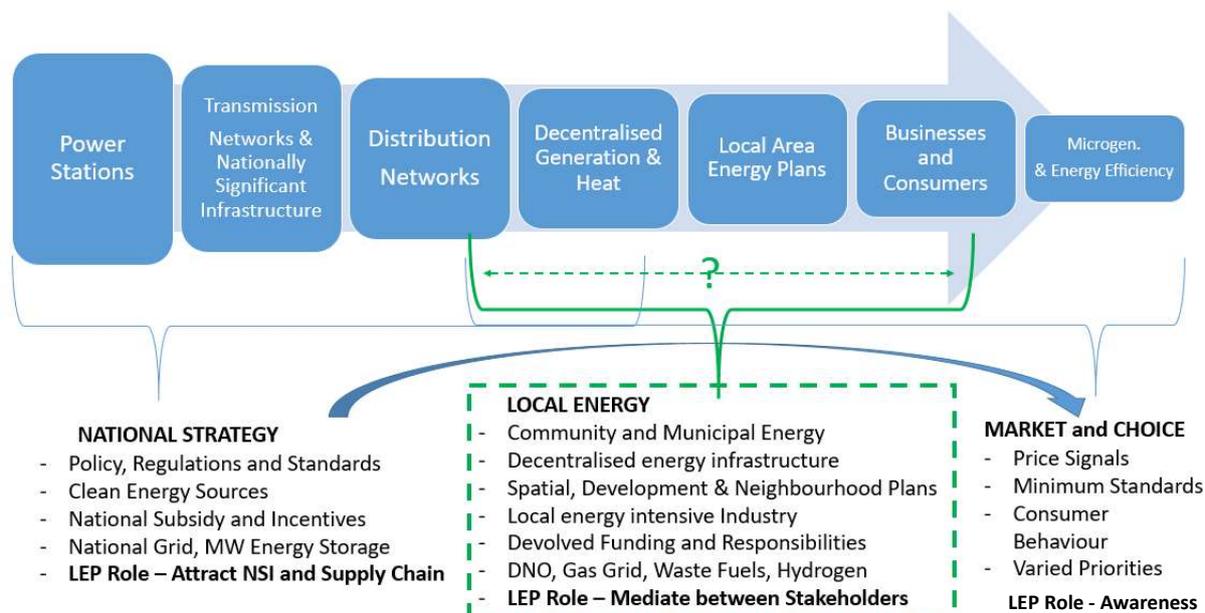
4.1 A growing role for LEPs in energy policy

Energy policy is primarily implemented by central government, which engages with energy sector stakeholders directly through national policy frameworks, regulations and funding decisions. Regulation on housing standards, for instance, has resulted in improved energy performance of new and refurbished homes.

There is strong justification for more local decision-making in energy. There are an increasing number of smaller energy projects that have an important bearing on the communities that host them. Some communities have particular renewable resources, such as good wind speed or old hydro infrastructure that can be repurposed. Others have acute energy challenges, such as poor housing stock or fuel poverty. The development and deployment of new energy technologies is dependent on both local and global supply chains.

The figure below presents some potential roles for LEPs, local government and communities in the energy sector. It illustrates a continuum of energy policy activities, from national strategy down to individual consumer decisions. LEPs appear to be well suited to informing and guiding energy policy where national policy becomes local at the distribution network, district and neighbourhood levels. LEPs are also well placed to mediate between central government on one hand and local authorities and businesses on the other, advocating on behalf of their partnership areas while also providing support in the implementation of new policy and in accessing funding streams.

What is the role for local agencies in decarbonising the energy system?



The figure above illustrates the ways in which LEPs might play a role across the range of local energy themes. A more detailed look at potential LEP roles in relation to local energy themes, and how these in turn might relate to the municipal and community energy agendas, is included in Appendix 2.

4.2 BEIS Local Energy team

The Department for Business, Energy and Industrial Strategy (BEIS) is the central government department responsible for energy policy. It is considering the ways in which its policy and strategy can inform and be informed by actions at the local level. An initial pilot phase of testing ways of working in 2015 with a number of LEP regions has since been formalised with the creation of a Local Energy team within BEIS in July 2016.

The Local Energy team at BEIS is meeting with LEPs and local authorities across England. A LEP round table on local energy was hosted by BEIS in September 2016; 20 of the 38 LEPs attended and discussed the scope of their engagement in the energy agenda.

Below are excerpts from the summary of the event:

On the role of LEPs in energy planning

Priorities include energy and low carbon commercial opportunities, and securing affordable/reliable energy supplies for industry.

LEPs already distribute EU funding and Local Growth Funds. They could also take a role in strategic energy planning, e.g. identifying significant generation opportunities, working with distribution network operators.

Incorporating energy in LEPs' governance structures is important.

On building skills and capacity

A dedicated person is needed at the LEP or local authority to take a lead on energy and facilitate regional collaboration

LEPs need technical support, paired with local understanding.

[Central government] could encourage and enable LEPs to work together, convene discussions or working groups on priority themes, fund capacity support, support innovation and share best practice.

On funding local energy projects

Financial and technical support is needed for initial stages of project development to establish business case.

Other finance options available once business case demonstrated.

A significant proportion of local energy projects receive some EU funding.

These insights will be used to consolidate and prioritise the work programme for the BEIS Local Energy team.

BEIS LOCAL ENERGY TEAM

A new Local Energy team has been set up in BEIS to facilitate delivery of national energy objectives at the local level. The Local Energy team works with local partners including LEPs and local authorities, and across BEIS and other government departments. The team aims to provide support in the following ways:

- developing local capability and capacity across England
- tackling barriers, e.g. legal, procurement, financial viability
- linking up local projects with sources of funding
- providing a central contact point in government for local energy
- signposting existing government support and resources, e.g. RE:FIT, Salix, the Heat Networks Delivery Unit and the Energy Company Obligation, along with support provided by intermediaries such as the Local Government Association (LGA) and the Association for Public Service Excellence (APSE).

4.3 National policy landscape

Current national policy relating to energy and environment is referenced throughout this document and in Appendix 2. There are some significant emerging policy frameworks that may become relevant.

National Infrastructure Commission

The National Infrastructure Commission (NIC) will enable long-term strategic decision-making to build effective and efficient infrastructure for the UK. It was established as a permanent executive agency in January 2017. Energy infrastructure is included in the terms of reference of the NIC and in 2017 it is consulting with LEPs and subregions on their local priorities.

Industrial strategy

The government is consulting on the details of a new industrial strategy. Energy has been included in the terms of reference for Building our Industrial Strategy, Green Paper January 2017.

Emissions Reduction Plan

The government is developing an Emissions Reduction Plan for publication in 2017, which will set out how the government intends to meet post-2020 greenhouse gas emissions reduction targets, including the Fifth Carbon Budget, which was agreed by government in June 2016. The Fifth Carbon Budget commits the government to achieving emissions 57% below 1990 levels during the five-year period between 2028 and 2032.

4.4 Funding landscape

The best kinds of local energy projects are those that suggest themselves as the best way to deliver an outcome, where the knowledge and expertise are already in place and there is strong leadership with a desire to deliver. Energy projects can be financially viable in themselves, repaying the investment made in them and potentially creating a sufficient return on investment for further activity.

However, carbon emissions are an 'externality', a by-product of fossil fuel use where full environmental costs are not recouped by the primary activity that generates them. Some projects that can significantly reduce CO₂ emissions and achieve societal outcomes are not of themselves financially viable.

Some low carbon projects are designed around an emerging technology that has not yet achieved full market readiness. Certain technologies are subsidised, while others are at the very early stages of innovation readiness and there is a need for a demonstration project to show the market the scale of the opportunity.

For this reason, many energy projects will seek external funding support as part of the business case for investment.

Current funding mechanisms (January 2017)

A range of national funding programmes can be considered by regional partners. The table on the next page provides an incomplete list of potential funding sources and mechanisms.

Grant	Grant funding can help to make a marginal business case viable. Grant funding is often predicated on the recognition of the need to promote innovation and/or address an identified economic, social or environmental need that the market will not address without support.
Loans/equity	Loans for energy projects can be sourced at commercial rates from banks and other lenders. More favourable interest rates and terms might be negotiated through specialist low carbon providers, both commercial and government-sponsored, through prudential borrowing by public sector bodies, and from EU and regional funding bodies.
Subsidy	A number of subsidy mechanisms exist that are linked to the unit cost of renewable or low carbon energy. Subsidy mechanisms are a way of balancing the energy market in favour of decarbonisation and other preferred policy outcomes.

Funding sources and funding mechanisms: energy projects

Organisation/place	Funding source
Commercial business	Reserves
	Equity
	Loan
	Tax incentives – businesses
Commercial third party	Energy Performance Contract
	Green lease
	Services contract/lease
	Green loans
Local authority	Prudential borrowing
	Business rates retention
	Reserves
Electricity market	Capacity market
	Contracts for difference
	Feed-in Tariffs
	Renewable Heat Incentive
	Energy Company Obligation (ECO)
Community	Crowdfunding
	Community benefit funds
	Tax incentives – community groups
Low carbon specialist	Carbon Trust
	Salix
	Green Investment Bank
UK government grant	Heat Networks Delivery Unit (HNDU)
	Heat Network Investment Projects (HNIP)
	Public building energy efficiency (Salix)
EU funds	European Regional Development Fund
	Horizon 2020
	Intereg
	ELENA
	JESSICA
Innovation and skill	Innovate UK
	Catapults
	HE and FE funding
	Electricity network innovation funds (NIC and NIA)
LEP regional	Business growth funding (business growth hubs)
	Local Growth Funds
	Devolved funds (in devolved city regions)
	Growing Places
	Regional loan funds (e.g. North West Fund)

4.5 LEPs strategic and funding roles

Since 2010 local enterprise partnerships have acted between national government and local authorities, taking on some of the functions previously performed by regional development agencies.

In 2013 government asked LEPs to draw up plans for local growth. LEPs responded with Strategic Economic Plans (SEPs). SEPs provide context on local opportunities, challenges and priorities and have subsequently provided the basis for bids for Local Growth Funds. Local Growth Funds are transfers of national budgets to local delivery agencies. LEPs are accountable for strategic outcomes of Local Growth Deals. The most recent settlement, 'LGF3', was announced in January 2017.

LEPs will continue to play a role in informing national strategy. For example, LEPs will co-ordinate the views of local stakeholders and submit recommendations to the consultation on *Building our Industrial Strategy* following the green paper in January 2017. When Strategic Economic Plans are periodically updated, there is an opportunity to align them with the industrial strategy and other government policies. LEPs can align Strategic Economic Plans with the Emission Reduction Plan when published.

LEPs also have a strategic role in establishing local need for the allocation of European Union Structural Investment Funds (ESIF). European Regional Development Funds (ERDF) are a part of ESIF funds in the 2014–2020 programme. Depending on the designation of an area, between 20% and 10% of ERDF budgets are apportioned to low carbon outcomes.

A LEP statement of intent with respect to local energy, particularly in respect of business growth, could both inform Strategic Economic Plans and contribute to other regional energy plans that inform spatial strategy, housing policy, transport plans and more.

4.6 Devolution

The UK government has set out its case for the devolution of more power and responsibility to English cities and non-metropolitan areas as a means of improving decision-making and creating long-term prosperity.⁹ The Cities and Local Government Devolution Act 2016 provides the legal framework for the implementation of devolution deals with combined authorities and other areas.

In some devolved English subregions, combined authorities have taken on accountability from LEPs for the outcomes of Local Growth Deals and ESIF funds, when they have agreed assurance frameworks with government and therefore become 'intermediary bodies' as part of devolution deals.

The Liverpool City Region Combined Authority Devolution Agreement sets out the terms of a proposed agreement between the government and the leaders of the Liverpool City Region to devolve a range of powers and responsibilities to the Combined Authority. The deal allocates an additional £30 million a year in funding over 30 years to unlock the economic potential in the region.

Devolution creates a rare opportunity for city regions and other local bodies to take a more ambitious role in local energy.

Energy and environment form part of Liverpool City Region's devolution deal. Liverpool City Region Combined Authority has sought from government a route to have a conversation about

- energy from the Mersey
- working with the distribution network operator on quicker and more efficient grid connections
- domestic energy efficiency programmes and local flexibility.

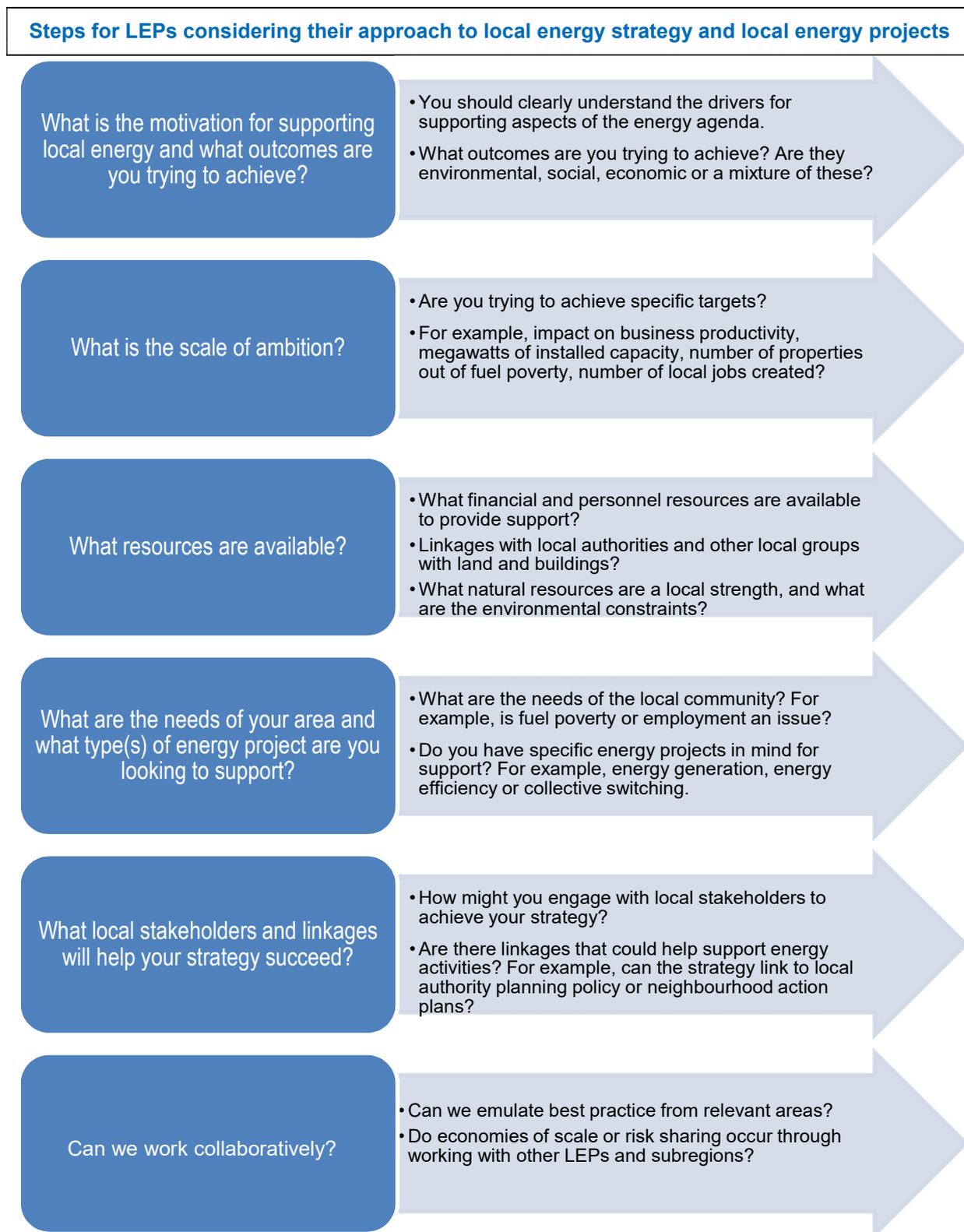
Other local and regional bodies have included energy as an area of interest in their initial devolution settlements and intend to increase support for community energy through devolution. For example, Cornwall council's rural devolution deal supports new models for community energy, encouraging local and neighbourhood plans to support community ownership of renewable electricity and heat. It is hoped that the trials will create more meaningful links between local energy generators and local energy consumers.¹⁰

⁹ The Local Government Association has published a document on English devolution: <http://www.local.gov.uk/documents/10180/6917361/L15-178+DevoNext+devolution+publication/7e036308-6ebc-4f20-8d26-d6e2cd7f6eb2>

¹⁰ 'Cornwall Council supports community energy under Cornwall Devolution Deal', <https://www.cornwall.gov.uk/council-and-democracy/council-news-room/media-releases/news-from-2016/news-from-may-2016/cornwall-council-supports-community-energy-under-cornwall-devolution-deal/>

4.7 Developing an approach to local energy

For LEPs (or other local strategic bodies) that wish to support local energy in their area, there are a number of key points to consider when developing a strategy. The figure below shows the process that can be used by a LEP to develop an appropriate approach.



4.8 Potential roles for LEPs

There are a wide range of activities that could be described collectively under the heading of 'local energy'. Local energy activities have in common that they are seeking to grow businesses in the low carbon economy, drive investment in sustainable energy infrastructure and form collaborations in order to support the decarbonisation of local areas. It is activity that reinforces and seeks to go beyond the national agenda, capitalising on local expertise and a grass-roots desire to act.

LEPs' role as a conduit between national agencies and local strategy means they are well placed to mediate between the national energy and decarbonisation agenda and what is actually achievable in each locality.

LEPs might choose to support local energy activities in a number of ways. First, they can influence the agenda at the *strategic level* by integrating some or all of the range of local energy themes into plans, programmes, funding requirements and discussions with partners. LEPs can ensure that devolved funding streams such as Local Growth Deals are evaluated on their energy and low carbon outcomes.

LEPs have a core strategic role in supporting the growth of the local economy. Most obviously, if LEPs are convinced that there are opportunities to grow the number of jobs in key sub-sectors of the economy, they can direct resources towards promoting local supply chains. There are good examples (see Case Study 2) of sector-focused approaches being taken by LEPs that have had a significant impact.

LEPs can also view local energy from the perspective of productivity. Reductions in energy costs achieved through energy efficiency translate directly into GVA for businesses.

Decentralisation of energy generation brings sources of energy supply closer to energy users. This is usually more efficient than centralised forms of energy supply, and therefore promotion of smart and low carbon infrastructure will help to make cities and towns more resilient in the long run. LEPs will want to consider the evidence base for decentralised energy infrastructure before seeking to support strategic energy projects. When they do so they should consider the social and environmental outcomes and indirect as well as direct economic benefits of projects, such as opportunities for local job growth and 'costs avoided' of reinforcing transmission networks.

A second role for LEPs is to seek to reinforce the *delivery* of local energy projects.

LEPs can engage with local businesses of all kinds that are interested in opportunities to reduce energy costs and incorporate low carbon measures. In representing the view of the local public and private sectors, LEPs provide a trusted voice that can facilitate conversations between consumers and suppliers.

This could include facilitating conversations between community energy groups and landowners who might be interested in playing host to third-party renewable installations.

All LEPs are linked to business growth hubs, developing local growth strategies and acting as conduits for national budgets. Some LEPs hold contracts for business growth hub delivery. Business growth hubs can form links with the networks of advisors that provide businesses with information about options to 'invest-to-save' in clean energy alternatives. Business advisors typically play a brokerage role, connecting growing businesses with advisors and experts. Brokerage of conversations about energy investment can follow the same model.

LEPs' remit is generally limited to an economic growth function. While LEPs' role in engaging with businesses on energy is relatively clear-cut, their involvement with the issue of strategic energy infrastructure for housing and transport is less obvious. LEPs would be stepping outside of their current mandates if they sought to lead the agenda across the full range of themes.

LEPs must therefore understand themselves to be part of an evolving local energy landscape and understand that the best approach in a given LEP area will follow the logic of the localism agenda, finding a form that best fits local strengths and priorities.

The next section of this report presents a number of case studies showing the breadth of activity being undertaken across England by different kinds of institution. In the concluding section, reflection on these case studies gives rise to a number of recommendations about the ways in which LEPs can support local partnerships to deliver local energy outcomes.

5 Local energy case studies

This section of the report presents **16 case studies** to illustrate a range of local energy projects covering different types of energy solutions. These case studies have been referred to throughout the report. The case studies highlight examples of local energy projects that are addressing a specific local need. They demonstrate what communities can achieve and in some cases illustrate how a LEP or other regional body can benefit from supporting groups in its area.

Keywords are provided at the start of each case study to highlight the area of relevance, and each case study ends with a short commentary on its relevance to LEPs and local agencies wishing to support local energy.

[Local energy case study overview](#)

	Case study	Scope and relevance
1	LIVERPOOL CITY REGION COMMUNITY ENERGY GUIDE	LEP promotion of community energy; networking with stakeholders; signposting to relevant information
2	HUMBER LEP	Low carbon supply chain; business clusters; local procurement; inward investment
3	ROBIN HOOD ENERGY	Municipal energy supply companies; municipal energy; energy purchase; fuel poverty; community benefits
4	CHESHIRE – ASHTON HAYES	Low carbon place-making; community group success in energy efficiency, energy management and energy generation projects
5	LIVERPOOL CITY REGION EMPLOYMENT AND SKILLS	Skills for the Future; energy management of public estate; engaging students and community
6	BRISTOL ENERGY TREE	Public engagement; 'light-touch' information approach for local community; additional social benefits
7	BEDMINSTER ENERGY GROUP	Housing energy efficiency; local voluntary group; local groups working together
8	PIXIE ENERGY	Local energy markets; contracts matching energy generators with nearby consumers
9	GATESHEAD ENERGY NETWORK	Energy service companies; infrastructure design, construction and management
10	SPARSHOLT GREEN GASMILL	Rural energy projects; green energy supply company; energy from agricultural by-products
11	THRIVE COMMUNITY ENERGY	Community benefit funds; larger energy projects providing funding for smaller-scale local energy improvements
12	MERSEYSIDE COLLECTIVE SWITCH	Energy purchase; community bulk buying; fuel poverty benefits
13	LIVEWIRE COMMUNITY ENERGY LIMITED	Community group as BenCom; established with support of local council; solar and wind power generation
14	OXFORDSHIRE LOW CARBON HUB	Regional low carbon network; public and third sector involvement in a social enterprise
15	CHESHIRE AND WARRINGTON LEP	Innovation projects; Local Growth Funds
16	LIVERPOOL UTILITIES MASTERPLANNING	Energy infrastructure planning; working with distribution network operator, grid constraints, future projections, data

CASE STUDY 1: LIVERPOOL CITY REGION COMMUNITY ENERGY GUIDE

RELEVANCE: LEP promotion of community energy; networking with stakeholders; signposting to relevant information

The Liverpool City Region has an ambition to become self-sufficient in energy by around 2035. The generation of energy locally, in a competitive and sustainable way, is seen as important to this ambition. For this reason, the Liverpool City Region LEP has begun a programme of activities to support and promote community energy and community-led activity.



As a first step in the promotion of community energy, the LEP has produced a guide to community energy for Liverpool City Region. The guide has been created for those who are interested in learning more about community energy and how it can benefit communities, with a specific focus on the following:

- community leaders considering an energy project
- investors who want to support community projects
- landlords with space to host renewable energy installations
- businesses that can provide expertise and products
- others who have an interest in climate change and energy supply in the UK.

During the production of the guide, the level of interest in community energy was surveyed in the region and engagement was carried out with a network of active community energy groups.

The guide provides some initial tips for getting involved in the region as a community group, investor, property owner, supplier or installer, as well as detailing local case studies and providing information on funding and support. The guide is available for download at

www.liverpoollep.org/core-sectors/low-carbon/community-energy/

Following on from publishing the guide, in January 2016 the LEP, Liverpool city council and the regional distribution network operator (Scottish Power Energy Networks) hosted an event 'What Next for Community Energy' that reflected on the role that local authorities, LEPs and government could play in supporting community energy. The LEP is continuing its activities to promote community energy with this report looking at the role of LEPs in supporting community energy.

COMMENT ON CASE STUDY

This case study demonstrates the role that local and regional bodies can play in promoting local and community energy within their area. This could also take the form of signposting to information and best practice, and stakeholder facilitation through publicity events.

CASE STUDY 2: HUMBER LEP WIND SUPPLY CHAIN

RELEVANCE: Low carbon supply chain; business clusters; local procurement; inward investment

Over the past five years, the UK has established itself as the biggest market for offshore wind development in the world. By 2016, the UK market was approximately twice the size of the rest of the world combined. It has the largest total number of turbines, the largest individual windfarms and the largest turbines in terms of individual generating output. Investments running close to £10 billion have been executed or are in construction. This investment has come from a number of overseas investors including DONG Energy, EON, Vattenfall, RWE and Iberdrola. Offshore turbine supply is dominated by Siemens and Mitsubishi Vestas.

Investment in offshore wind is presently the largest confirmed investment across any sector in the Northern Powerhouse area. This investment has provided a transformational economic opportunity for coastal communities situated close to the offshore windfarms. These areas include the Humber, Cumbria, Liverpool City Region and Teesside. These areas have seen significant investments in manufacturing, construction, operations and maintenance infrastructure and capacity.

New operations centres have been created on the Humber and Mersey, each employing over 60 highly skilled technicians and engineers and hundreds in the supply chain. Existing manufacturing and assembly facilities in Teesside and Birkenhead have won substantial orders to help secure their futures. New FDI opportunities have been developed around the Humber and Mersey as Scandinavian and German companies have looked to follow Siemens and Mitsubishi Vestas into the UK. The biggest single investment has been made by Siemens with its new blade manufacturing facility in Hull. This represents one of the largest single investments ever made in Hull and the facility is already employing over 700 people with many more in local supply chains. The blades produced in Hull are the most technologically advanced in the world, using new materials and production methods. The output from the plant will service the UK market but also export markets in Europe and potentially further afield as new markets open up in Europe, Asia and the USA.

These investments across the Northern Powerhouse area have been hard-won. The LEPs in areas such as the Humber, Cumbria and Liverpool City Region have brought together the private sector, public institutions and local and national politicians to put together compelling business cases for the investment in offshore windfarms and their supply chains. A recent example of this is the collaboration between the Humber, Cumbria and Liverpool City Region LEPs and DONG Energy. This collaboration has two goals: to create a long-term, sustainable pipeline of projects for companies to bid for to address the 'boom and bust' issues major capital projects create; and to maximise opportunities for companies in the three LEP areas to bid for contracts. A common format to supply chain development has been created across three current projects at Burbo Bank (Liverpool City Region), Walney (Cumbria) and Hornsea (Humber). Companies across all three areas are kept up to date with contract opportunities and collaboration routes across all three projects with the active support and participation of DONG Energy and their Tier One suppliers.

This approach has delivered commercial benefits for local companies that have translated into increased employment opportunity and economic benefit to all three areas over and above what could have been expected from a narrower, more sporadic approach. The Department for International Trade has recognised the success of the collaborative approach and is recommending elements to be used to support the new-build nuclear programme emerging in the UK.

COMMENT ON CASE STUDY

The inclusion of a UK supply chain plan on projects such as offshore wind makes a substantive difference to the volume and type of contracts won by local and UK companies. The supply chain plan must be developed in a tripartite approach between national government, the developer and local LEPs. This approach allows a level of sophistication and pragmatism from the start of the process as to where opportunities lie and the ability of local companies and areas to respond to them.

Local areas and companies need reasonable lead-in times to enable them to respond to opportunities. The complex nature of energy infrastructure projects requires investment in people, capital and places. This investment takes months and, in many cases, years. It is vital that local areas are involved at the earliest possible stage of planning and forecasting by central government.

Such investment requires a long-term, stable project pipeline to justify and recover costs. Although individually these energy projects are substantial investments in themselves, most companies will only be involved in a proportion of each project. It is vital that projects are considered as part of a wider infrastructure investment programme. It is often the case that successful companies and areas have multiple projects in the pipeline where skills and supply chains can be deployed. This reduces establishment costs and risks for individual projects while maximising UK content opportunities. The new industrial strategy can build on recent successes to make this approach consistent and sophisticated.

CASE STUDY 3: ROBIN HOOD ENERGY**RELEVANCE: Municipal energy; energy purchase; fuel poverty; community benefits**

**RobinHood
energy**
A not for profit company



Robin Hood Energy is an energy supply company operating at arm's length from Nottingham council. Its status as a licensed supplier allows it to buy electricity wholesale and supply it to its customers at a competitive tariff.

Robin Hood Energy is supporting the most financially stretched households by offering cheaper local tariffs, replacing high-tariff prepayment meters and offering extra support to cut their bills.

Setting up a new licensed supply company can be a challenging and expensive process. Robin Hood Energy is supporting other councils who want to set up their own municipal suppliers by allowing them to share their licence, procurement systems and IT infrastructure. The council does its own marketing and sets local tariffs.

This 'white label' option has been taken up by Leeds city council and means lower upfront costs while still offering many of the community benefits. Other councils that are creating municipal energy companies are following a similar model, including the Liverpool Energy Community Company, soon to be launched.

<https://robinhoodenergy.co.uk/>

COMMENT ON CASE STUDY

Municipal energy companies have the potential to deliver real reductions in energy poverty while also creating opportunities to deliver a broader range of energy initiatives. These are ambitious local energy plans. The municipal energy companies are operating in a competitive commercial market and the council therefore needs to be comfortable with the investment and risks.

Other examples

A number of city councils are planning to set up municipal-owned energy supply companies. Their objective is to provide affordable energy to residents while also creating opportunities to address fuel poverty and to help deliver a wider range of community benefits. They are operated on a not-for-profit basis.

Bristol Energy is offering to purchase the energy generated by community energy projects at competitive rates with flexible terms. Bristol Energy plans to become a fully licensed supplier of electricity and gas.

These ambitious local energy initiatives have the potential to deliver real social benefits. However, the council-owned energy supply companies are fully licensed, which puts them in direct competition with existing suppliers, many of which are household names. It is a competitive market and this therefore exposes these councils to commercial risks in the electricity market.

CASE STUDY 4: ASHTON HAYES COMMUNITY ENERGY CIC

RELEVANCE: Local authorities working to support local groups; community group success in energy efficiency, energy management and energy generation projects

Cheshire West and Chester council has been working with other local councils and organisations as part of the Cheshire and Warrington Low Carbon and Resilient Communities Network. The network was set up to support and help co-ordinate the efforts of individual voluntary community groups taking action to make their communities more sustainable.

One community group supported by the Low Carbon and Resilient Communities Network is Ashton Hayes Community Energy CIC. The Ashton Hayes Going Carbon Neutral Project is a community-led initiative that is aimed at making Ashton Hayes the first carbon-neutral community in England.

The project, which launched in 2006, first looked at encouraging behaviour changes to reduce personal carbon footprints. The group has run a number of surveys to track progress, which have revealed that the community has managed to cut its carbon emissions by 40% through behavioural changes (such as switching off appliances and changing to low-energy light bulbs) and that some people have cut the costs of their energy bills 50% by focusing on improved insulation and careful energy use.

The group has also received funding under the Department of Energy and Climate Change's (DECC's) Low Carbon Communities Challenge, which was used to build a low carbon sports pavilion with a solar PV array that helps to fund the maintenance of the pavilion and field. They have also funded PV arrays for low carbon school classrooms and are still looking at new ways to generate income for the community through renewable energy.

<http://www.cheshirewestandchester.gov.uk/residents/energy/community-energy.aspx>
<http://www.goingcarbonneutral.co.uk>



COMMENT ON CASE STUDY

Ashton Hayes is a good example of a successful community group that has been operating for several years and that has carried out projects across a number of areas (energy efficiency, energy management and energy generation). The group has been supported by Cheshire and Warrington Low Carbon and Resilient Communities Network. LEPs/local strategic bodies could consider whether they can facilitate networks that would support local community groups in their set-up and projects.

Another example

Morecambe Bay Community Renewables (MORE) was established in 2011 to help people and organisations benefit from renewable energy by developing a range of projects in the Morecambe Bay area. By 2015, MORE had raised £180,000 in three community share offers and installed 89kWp of solar PV at Forge Bank, the Lancaster cohousing development in Halton, and a small biomass boiler at the Women's Holiday Centre in Horton-in-Ribblesdale. At the end of 2014, MORE installed solar PV and solar thermal systems in a community building with surplus funds from our previous share offers. MORE was able to make its first share interest payments in autumn 2013.

<http://www.morerenewables.co.uk/>

CASE STUDY 5: LIVERPOOL CITY REGION LOW CARBON SKILLS CAPITAL

RELEVANCE: Investment in skills; further education; learner awareness; smarter energy management, knowledge transfer

In 2016 an investment of £1.5 million was made in seven further education colleges across Liverpool City Region, with the aim of reducing their running costs and promoting smarter energy management within these institutions.



Grant funding support was provided from Skills Capital funding devolved to the Liverpool City Region. Funding was made available as part of a wider programme of capital investment in eligible regional training providers. The Liverpool City Region Skills Capital Investment Fund operated between 2014 and 2016 and invested around £21.5 million to support capital investments as part of a Growth Deal with government.

As part of the Skills Capital Low Carbon Fund, the further education colleges were empowered to embed energy management processes in their ongoing estate management. Energy metering and monitoring systems were installed in five of the six colleges, integrated with existing building management and other systems. Energy use was made visible to students. Also funded were investments in LED lighting and upgrades to building services to make them more efficient.

<https://www.liverpoollep.org/economic-strategy/growth-deal/skills-capital-investment-fund/>



The Low Carbon Team at the Liverpool City Region LEP originated the proposal that a proportion of funds should be allocated for low carbon outcomes, and the team supported the design and implementation of the programme. The LEP also formed a Merseyside colleges energy management group and played a low carbon brokerage role in the local and regional energy efficiency supply chain. Soft market testing facilitated in this way informed each college's procurement process.

The programme outcomes were promoted to other institutions across the City Region through a Smarter Energy Management event.

https://www.liverpoollep.org/lep_past_events/smarter-energy-management-liverpool-city-region/

A legacy of the programme was bringing together energy managers from local authorities, the fire service, hospitals and visitor attractions to discuss invest-to-save, energy procurement and smarter energy systems. Local visitor attractions have since worked in collaboration to develop proposals for innovative energy efficiency measures in historic buildings and are seeking European Regional Development funding to support their own project budgets. Meanwhile, one of the FE colleges has developed its internal energy management capacity and used energy cost savings to engage with specialist consultants. A proposal for saving 50% on energy bills through a combination of combined heat and power and energy storage has been prepared.

COMMENT ON CASE STUDY

Loan funding for energy efficiency in public buildings is available through the national Salix programme. However, uptake of the offering in the North West lags other regions. An initial grant fund has stimulated estates and finance managers to think as energy managers and demonstrate return on investment to senior leadership. The programme support by the LEP is anticipated to have wider indirect benefits by stimulating the market and promoting the example to local institutions.

CASE STUDY 6: BRISTOL ENERGY TREE

RELEVANCE: 'Light-touch' engagement with local community; additional social benefits

Bristol's Solar Tree project began in 2012, when it was conceived primarily as a new and interesting way to engage people on energy issues.

The initial solar tree was built by Demand Energy Equality in collaboration with Bristol-based artist John Packer, workshop participants from community groups and the wider public. It was constructed at Edible Futures, a local growing project in Brislington, south-east Bristol.



Following on from this initial project, Demand Energy Equality worked in partnership with John Packer and the Bristol Drugs Project to build the Energy Tree, which was launched in Bristol's central Millennium Square in 2015. The Energy Tree has 36 solar PV panels that were built during workshops run with Bristolians recovering from drug and alcohol abuse. The panels are made from 'rescued' solar cells discarded in production processes.

The Energy Tree is a public art installation and renewable power source designed to engage the public in energy issues. It provides a power for free public phone-charging and a Wi-Fi hotspot that users can access by first going through an online Energy Quiz.

Further information on the Bristol Energy Tree can be found at

<http://www.demandenergyequality.org/energy-tree-2015.html>

COMMENT ON CASE STUDY

This case study demonstrates an innovative approach to engaging the local community in energy issues. It not only promotes messages around energy generation, reducing energy demand and developing a vision for future energy, but it has also included social benefits, specifically in terms of involving local people combating drug and alcohol use and demonstrating the power of building collectively.

CASE STUDY 7: BEDMINSTER ENERGY GROUP

RELEVANCE: Local voluntary group; local groups working together; household energy; fuel poverty

Bedminster Energy Group (BEG) is a group of local volunteers working to support the local community of Bedminster and Southville to cut their energy bills by improving the energy efficiency of their homes. BEG is a subgroup of Sustainable BS3, which has worked on local community and environmental schemes for many years.

While the majority of work is carried out on a voluntary basis, the group has received some funding, which has allowed larger pieces of work to be carried out. The group has been supporting Bristol Energy Co-op in its solar photovoltaic installations and is part of Bristol Energy Network.

<http://www.bedminsterenergy.org.uk/>



COMMENT ON CASE STUDY

While there is no LEP or local council/public body involved in this group, the case study provides a good example of a community working together on a voluntary basis to improve the energy efficiency of local homes. The group also works with other local community energy organisations to support various energy activities in the locality. LEPs could act to facilitate the creation of such groups and potentially help these organisations to identify and access sources of funding.

Another example

Project VIRIDIS, Merseyside

VIRIDIS is the collective name for a group of registered housing providers and local authorities operating across the Liverpool City Region. Its overall purpose is to help residents lower their household energy costs, alleviate fuel poverty in local communities and reduce CO₂ emissions.



VIRIDIS is also committed to working collaboratively to deliver retrofit programmes across members' housing portfolios. VIRIDIS's collective work to tackle fuel poverty and carbon emissions was recognised with a national award, the **Energy Management Project of the Year**, at the first National Community Energy Awards in September 2014. Special praise was given for the approach to standardising elements such as their website (www.viridisenergysaving.co.uk), helpline and training. The awards celebrate and recognise the outstanding achievements made by community energy organisations across the UK and the dedication of their staff and volunteers.

CASE STUDY 8: PIXIE ENERGY AND LOCAL SUPPLY COMMUNITIES

RELEVANCE: Local energy markets; local energy markets; contracts matching energy generators with nearby consumers

Pixie Energy is a Norfolk-based company created to tackle the concept of local energy markets. **Pixie Energy** is leading a project called **Local Supply Communities (LSC)**.

LSC asks parties from across the energy industry what a decentralised or local energy system would look like, addressing potential benefits and risks in doing so. Consumers, merchant generators, suppliers, traders, network operators, technology providers and more are represented at its round-table discussions. A number of local authorities have signed up to contribute to the scheme and understand the potential benefits of sourcing power locally.

LSC initially considered options to maximise the value of the power offtake (power purchase agreement) market to address electricity system benefits and the value of improved balancing services.

Three case study schemes (Eastern, South Wales and Yorkshire) are using energy data from multiple generators and consumers to explore the benefit of dynamically netting energy consumption.

The project has been researching methods of increasing value for generators, reducing costs for consumers and generating system benefits from local markets. The benefits have included intelligent balancing services, more engaged and flexible customers and more cost-reflective network charging. Initial findings suggest that there is value in creating a local energy landscape.

COMMENT ON CASE STUDY

Although only in the conceptual stage, several projects are exploring the benefits of local supply of energy. Mechanisms that can locally balance energy generation and supply across consumer bills must come to be a feature of future energy markets because they help solve the problem of marrying intermittent renewable generation with the demands of multiple consumers.

Other examples

Energy Local, Bethesda Trial. By clubbing together, 100 households in the Welsh village of **Bethesda** are taking part in a trial to be able to purchase power generated by a local hydro scheme for half the price. The aim is to help communities benefit more directly from renewable energy projects in their area. The electricity produced by the Bethesda hydro will be split evenly between club members using energy at any given time. Each home will pay 7p/kWh for their share. That is about half the average price for electricity in the UK, but more than the hydro would usually receive for selling it.

The sharing is conceptual – the villagers' homes are not physically plugged into the hydro. But through the use of smart meters they will be able to show the extent to which they are using power at times when the hydro is generating. To maximise the benefits, they will have to change their habits – such as using the washing machine or dishwasher after it has been raining and the hydro is running at full pelt, for example. Energy Local, a company set up to help communities benefit from locally owned generation projects, has been co-ordinating the trial. The electricity itself is being supplied by Co-operative Energy, which buys from the hydro and sells it to the households involved, as well as topping them up at times when the hydro is not running. It is believed that each household will be able to save 10–30% on its electricity bill. <http://www.energylocal.co.uk/the-idea/>

Piclo is a peer-to-peer energy matching platform for renewables. <https://www.openutility.com/>

CASE STUDY 9: GATESHEAD ENERGY NETWORK

RELEVANCE: Energy service companies; infrastructure design, construction and management



Gateshead council has started construction work on a district energy network to serve Gateshead town centre and the Gateshead Quays area. The new, low carbon energy centre will generate both heat and power for sale directly to customers, via a new 3km underground network of heat pipes and high-voltage private wire electricity cables.

Construction of the energy centre will begin with the laying of the heat and power network, starting later in the summer. A detailed programme of network

construction will be published in due course, showing how the network will be laid and where any temporary disruption may occur. The scheme will supply public buildings and homes managed by the Gateshead Housing Company, but the council is in discussions with several more commercial hotels and offices about connecting to the scheme.

The scheme is also designed to provide low carbon energy for all future development of Gateshead Quays, Baltic Business Quarter and the Exemplar Neighbourhood (which includes development of 1,000 new homes, delivered by the Gateshead Regeneration Partnership).

COMMENT ON CASE STUDY

District heating schemes exemplify the challenges and opportunities within the local energy agenda. With project feasibility supported by central government (Heat Networks Delivery Unit), the council has taken a proactive approach to investing in significant energy infrastructure. This will enable Gateshead to take a lead in the decarbonisation of heat, creating one of the first of a new generation of district-scale schemes. The council can act as a facilitator with private businesses and, having established a viable scheme based on an anchor load, can now grow the network, which should improve profitability as it scales up.

Another example

Bunhill Energy Centre and its district-wide heat network provide cheaper, greener heat to homes on several estates and buildings in Bunhill Ward, London. Launched in November 2012, the heat network is fed by the local energy centre on Central Street, which produces both electricity and heat. It is now bringing cheaper energy to over 700 homes. The energy centre constructed in Phase 1 uses the heat created in producing electricity to help heat buildings and provide hot water. Unlike normal electricity production, which wastes up to two thirds of the fuel used to make it, Bunhill Heat and Power uses the otherwise wasted heat to heat homes, the baths and leisure centres and so it is more efficient, cheaper and greener. Tried and tested gas-fuelled combined heat and power technology is used to run the energy centre and there is strict monitoring of the air quality. <https://www.islington.gov.uk/environment/energy-services/bunhill-heat-power>

CASE STUDY 10: SPARSHOLT GREEN GASMILL

RELEVANCE: Rural energy projects; green energy supply company; energy from agricultural by-products



In 2016 Sparsholt College in Hampshire, in partnership with Ecotricity, received planning permission for a 'Green Gasmill', fuelled by locally sourced grass.

The Green Gasmill will use anaerobic digestion. This proven technology allows microorganisms to break down biodegradable material in an oxygen-free environment. The outputs are green gas and natural fertiliser. The project is anticipated to inject £60 million into the local economy, create new jobs and produce clean gas to heat 4,000 homes.

Ecotricity is a regulated energy supply company, licensed to sell electricity and gas in the UK. Ecotricity offers green energy tariffs, with 100% of power supplied from renewable sources. Ecotricity raises funds through the sale of ecobonds, which offer a fixed rate of return over a fixed term. Ecotricity will finance and build the Green Gasmill with an investment of £10 million and also help to fund the development of a renewable energy demonstration centre.

The College has also won funding of £1.2 million, supported by the local enterprise partnership (M3 LEP), to help create this renewable energy demonstration centre. The centre will be a place to train the next generation of green energy engineers in Britain.

COMMENT ON CASE STUDY

Ecotricity has estimated that up to 66% of UK domestic and commercial gas demand could be satisfied by grass grown on marginal land. While the infrastructure to realise this would require a revolution in UK agriculture, it goes to show that there are opportunities in the agricultural supply chain for substantial waste- and by-product-to-energy schemes within a sustainable circular economy.

Another example

T & O Harrison, Water Lane Farm, Knowsley: this arable farming business has grown from a small 250-acre family farm to 1,000 acres of farming and diversified businesses over the last 10 years. The driver behind the development has been Olly Harrison, who has managed the business since the age of 26. The changes in the business are all linked to profitable sustainability and minimisation of volatility. In 2007, 350 square metres of office space was converted from old cattle buildings. This was followed by green waste processing, workshop space and grain handling and storage.

In 2015 a 145kW rooftop solar photovoltaic system was installed. The system's production is mainly utilised on-site. The installation cost £180,000. The system has produced 164,914kWh since its installation, saving £4,500 on electricity bills annually and securing the Feed-in Tariff.

In 2017 a 995kW biomass wood chip system has been installed. This will save £6,500 on fuel annually and secure the Renewable Heat Incentive. The investment was around £0.5 million and was a year in the planning. It will allow the business to hold its tenant's rent at the current level, heat all buildings on the farm and dry 6,500 tonnes of grain and by-product.

The investment in energy helps to achieve the goals of the business and has enabled this family farm to become an agribusiness with 35 people employed on-site with a minimal carbon footprint.



CASE STUDY 11: THRIVE RENEWABLES

RELEVANCE: Community benefit fund providing funding of local energy improvements

Thrive Renewables (formerly known as Triodos Renewables) has a community benefit fund (administered by the Centre for Sustainable Energy (CSE)) that funds energy improvements to community buildings in areas close to its project sites. The company has a range of wind farms and hydro schemes across the UK. Communities with buildings in relevant locations close to these schemes can apply for grants of up to £4,000 for improvements like LED lighting, insulation, draught-proofing or improved heating controls. They also provide guidance on energy-saving improvements, finding an installer and other funding sources.



Projects funded to date include heating improvements, lighting upgrades and installation of other energy efficiency measures, such as secondary glazing and high-performance thermal doors.

<https://www.cse.org.uk/projects/view/1304>

COMMENT ON CASE STUDY

Community benefit funds that provide funding for local communities to make energy efficiency improvements are good examples of where communities can benefit from third-party developments. LEPs or other local bodies can play a role in ensuring that communities are informed and make use of available community benefit funds in their area.

Another example

The Burbo Bank Extension is currently under construction by DONG Energy. **Burbo Bank Extension** is an offshore wind farm west of the existing Burbo Bank wind farm in Liverpool Bay. The project will install 32 turbines with a world-first output of 8MW. DONG Energy has committed to a community fund worth approximately £225,000 each year for the 25-year lifetime of the project. Following a detailed community consultation process, the Burbo Bank Extension Community Fund has been open to applications since 2015, with grants from £500 up to £25,000 available.

The first two rounds of funding have supported 30 local community projects, including an allotment, scout group, disability forum, wildlife trust, newspaper and local council.

<http://grantscape.org.uk/fund/burbo-bank-extension-community-fund/burbo-bank-extension-community-fund-awarded-grants/>

CASE STUDY 12: MERSEYSIDE COLLECTIVE SWITCH

RELEVANCE: Energy purchase; fuel poverty benefits

Merseyside Collective Switch is a not-for-profit partnership between Energy Projects Plus, Halton council, Knowsley council, Liverpool city council, Sefton council, St Helens council, Wirral council and VIRIDIS.



Energy Projects Plus is a registered environmental charity that has provided free and impartial energy advice across Merseyside for over 20 years. Projects include advice, awareness raising and training and education work. Energy Projects Plus promotes and manages local home energy schemes that can provide grants for energy efficiency, heating and renewable measures. Energy Projects Plus helped to design Merseyside Collective Switch to promote collective energy switching as an exciting new way to help the people of Merseyside save money on their energy bills as well as providing information on grants and discounts to help make homes more energy-efficient.

See more at <http://www.lcrenergyswitch.co.uk>

COMMENT ON CASE STUDY

This case study is an example of collective energy purchase. There is a clear link to goals in the local agenda, such as bringing communities out of fuel poverty. There could be a role for LEPs and other local strategic bodies to provide information on the benefits of communal energy purchase, how to go about setting up a group and facilitation of such initiatives locally.

Another example

Cornwall Community Energy Club is an oil-buying club that uses collective buying power to help householders in Cornwall and West Devon access cheaper electricity, gas and heating oil. Membership of the club is free, although there is a small administration charge (maximum of 1p per litre) to oil suppliers to cover the administration of the oil-buying club and to support charitable objectives. Despite the administration fee, members enjoy a cheaper rate per litre than if they purchased the oil on an individual basis.



The club is committed to alleviating fuel poverty in Cornwall and specifically aims to help those who spend more than 10% of their income on heating bills. The service was launched to offer the greatest benefits to people who don't shop around between suppliers and who place small orders for heating oil. <https://www.communityenergyclub.org.uk/>

CASE STUDY 13: LIVEWIRE COMMUNITY ENERGY LIMITED

RELEVANCE: BenCom; established with support of local council, recycled revenues for further projects



LiveWire Community Energy Limited (LWCE) is an established community benefit society in Warrington that seeks to enable local people and organisations to invest in renewable energy installations that benefit the local community. LWCE is not-for-profit, with any surplus reinvested for the benefit of the community. It has been established with the support of Warrington borough council and LiveWire Community Interest Company.

LWCE's first projects are solar PV systems fitted to community buildings such as libraries, neighbourhood hubs, leisure and sports clubs. They are also considering other technologies, such as solar water heating, biomass boilers and heat pumps, for future projects.

<http://livewirecommunityenergy.org/livewire-community-energy/what-is-livewire-community-energy>

COMMENT ON CASE STUDY

This case study is an example of a BenCom, which is working with the local community to install a range of generation technologies in local community buildings. As it is not-for-profit, all revenue generated is reinvested into the local community. The BenCom has been set up with the support of Warrington council and is an example of how public bodies can support the set-up of such groups.

Another example

Community Power Cornwall is an independent co-operative that delivers community energy projects in Cornwall. It develops, owns and operates small and medium-scale community-owned renewable energy installations, which generate electricity for on-site use and sale via the national grid.

Development is supported through a partnership between Community Energy Plus and Social Economy and Co-operative Development Cornwall. Early development funds were also provided by Cornwall council and the Cornwall Development Company.

Their first project consisted of two Endurance E-3120 80kW wind turbines at Gorran High Lanes. The project was developed in partnership with Community Power Cornwall and Transition St Goran. Between August 2011 and October 2015 the turbines generated 1,494,93kWh, which is equivalent to powering 323 UK homes for one year and with carbon savings calculated as 717.6 tonnes CO₂. 3% of the revenue generated by the project is provided to Transition St Goran for other low carbon activities in the local area. Activities funded to date include insulation for the village hall and LED lighting in the village church.

<http://communitypowercornwall.coop/>



CASE STUDY 14: OXFORDSHIRE LOW CARBON HUB

RELEVANCE: Involvement of local bodies in a social enterprise; low carbon business growth hubs

The Low Carbon Hub is a social enterprise that develops community-owned renewable energy in Oxfordshire. It does this in partnership with schools, businesses and community groups, at no cost to the partners. Money for the projects is raised through share offers, giving local communities the opportunity to invest for a good financial, social and environmental return. The Low Carbon Hub reinvests 100% of its own surplus in its mission to scale up community-owned renewable energy in Oxfordshire and reduce fuel poverty, CO₂ emissions and energy demand.



The Hub also offers practical and financial support to groups who want to set up their own renewables or energy-saving projects and works closely with local councils to identify opportunities for renewable energy generation and demand reduction in Oxfordshire.

An example of the collaboration between the Low Carbon Hub, Oxford city council and Oxfordshire county council is the development of a revolving loan fund for major renewable energy and energy reduction projects across the city and county. The first phase of this was the Low Carbon Hub's solar energy scheme for Oxfordshire schools. The £2.3 million construction loan facility to the Hub enabled it

to put solar PV on 18 schools in Oxfordshire over the summer of 2014, in advance of the Hub launching a community share offer in September 2014.

The Hub continues to work with schools, businesses and communities across Oxfordshire and now has 35 renewable energy projects in Oxfordshire, totalling 3.7MW. There has been £3.5 million in returns to Oxfordshire communities as community benefit funds and an average of a 28% discount on electricity bills for partner schools and businesses. The local investment in a clean energy system for Oxfordshire keeps jobs and profits circulating in the local economy.

See <http://www.lowcarbonhub.org/#about-us> and <http://oxfutures.org/wp-content/uploads/lch-businessplan-pages09-FINAL-pdf.pdf> for further information on the Low Carbon Hub.

COMMENT ON CASE STUDY

This case study provides a good example of a successful social enterprise with a strong business plan and demonstrates how this can drive the development of local and community energy in a region. The Low Carbon Hub has shown that clear financial, employment, social and environmental benefits are being seen locally as a result of activities undertaken. This provides a good case for LEPs to support the development of such social enterprises in their area, possibly through a facilitation role.

Another example

Greater Manchester's Green Growth Hub has been supporting businesses to improve efficiency and benefit from opportunities in the low carbon economy since 2001. It has supported over 13,500 businesses since 2001, enabled savings of £325 million and created or safeguarded over 8,300 jobs. Support has helped businesses to save one million tonnes of CO₂e (carbon dioxide equivalent) by reducing their use of energy, water and materials.

The Green Growth Team is part of Manchester Growth Company Business Growth Hub and has been supported through the European Regional Development Fund.

<https://www.green-growth.org.uk/resource-efficiency>

CASE STUDY 15: THORNTON INTELLIGENT ENERGY SYSTEMS DEMONSTRATOR

RELEVANCE: Low carbon innovation; LEP funding support; Local Growth Funds; university research



The University of Chester is currently developing an Intelligent Energy Systems Demonstrator (IESD). The building is located in the University of Chester's Thornton Science Park and the demonstrator will be a flagship innovation project of the Cheshire Science Corridor – a new Enterprise Zone developed by Cheshire and Warrington Local Enterprise Partnership.

Companies with an involvement in the energy sector are being invited to become part of the project, which will aid the development of cost-effective and environmentally responsible sources of energy.

The IESD will be a space where industry can work alongside the University's Faculty of Science and Engineering. Technical expertise, facilities and supporting infrastructures will support and enable energy research, innovation and technology development to meet the growth needs of the sector. Energy companies will be able to test at scale new power-saving and distribution technologies.

The project will see the redevelopment of a former industrial R&D facility and is being funded from the Cheshire and Warrington Local Enterprise Partnership, which will be contributing around half of project costs, up to £6.8 million, from the Local Growth Fund awarded as part of the LEP's Growth Deal. The project is due to be completed in spring 2017.

COMMENT ON CASE STUDY

This project demonstrates that devolved funding that has a specific low carbon scope can be utilised to bring together researchers and industry to create new R&D facilities.

Another example

Launched in 2016, the **Low Carbon Eco-Innovatory** is a joint project between the University of Liverpool, Liverpool John Moores and Lancaster University. The Low Carbon Eco-Innovatory will promote the development of innovative low carbon goods, processes and services, developed through collaborative partnerships between local companies in the Liverpool City Region and university researchers, students and academic staff. Experts will work with local organisations to identify opportunities for low carbon development, which will ultimately bring economic and environmental benefits to business and the wider community. The project aims to support 250 businesses and reduce 1,600 tonnes over its three-year life.

<https://www.ljmu.ac.uk/microsites/ecoinnovatory>

CASE STUDY 16: LIVERPOOL UTILITIES MASTERPLANNING

RELEVANCE: Energy infrastructure planning; working with distribution network operator, grid constraints, future projections, energy data

In future, power grids will become smarter and better able to integrate decentralised energy generation technologies. Presently, distributed network operators (DNO), who are responsible for the management of local power networks connected to the national grid, are constrained by regulation in their ability to plan for future patterns of use. Usually, work to understand the need for grid reinforcement is triggered by an application from a developer for a grid connection or new capacity. Other utilities infrastructure for water, gas and digital services are similarly planned on an ad hoc basis. This can rule out future-proofing of upgrades that are subsequently required by adjacent sites.

Investment ahead of need is viewed as one way of optimising investment in substations and other infrastructure, but existing mechanisms do not always allow the risk of investment to be shared between all parties.

Liverpool city council has worked with the local distributed network operator Scottish Power Energy Networks (SPEN), supported by the Liverpool City Region LEP, to develop the Utilities Masterplanning Tool (UMP). UMP is an online software platform that uses public data from planning portals of local authorities to present a view of future growth of the network.



The UMP tool selects, from the aggregated planning data set of six local authorities, large planning applications for new buildings and refurbishment likely to have an impact on grid and other utilities infrastructure. It then presents the data both in a geographic information system (GIS) format and tabulated so that new demands can be allocated.

UMP has allowed the local authority to enter into discussions with SPEN about areas of the city where significant investment is likely to be required in coming years. The focus of activity has now turned to ways of working that might enable investment to precede normal ways of working. A review of the current regulatory system and future possibilities has been carried out and will be of general interest to local authorities. In the current eight-year round of funding for networks, DNOs are required to plan for cost-efficient investment in the network and engagement with communities and other local stakeholders.

GRID CONSTRAINT CASE STUDY

Liverpool's Baltic Triangle is a former industrial area of the city housing a number of old warehouse buildings associated with the nearby docks. More recently, it has been an up-and-coming area for creative and digital businesses as well as housing a growing nightlife and strong interest from residential property developers. As it is generally an underdeveloped part of the city, current electricity demand is of low volume and density, with ageing infrastructure and a requirement for upgrades in the future. The area is characterised by a large number of smaller businesses looking to develop premises and they are therefore not likely to bring forward the type of development that can sustain high grid connection charges. Furthermore, the speed of local area regeneration has meant that this area was not identified by the DNO for investment within the current eight-year RII0 price control period. Liverpool city council has recognised this issue and is concerned that connection costs could deter investment in the area, with a particular effect on small businesses. The Baltic Triangle and surrounding area is seen as an important example of the issues being faced both in Liverpool and in other city regions where there is no large clear investor, although anticipatory investment would seem to make business sense.

Another example

The Energy Systems Catapult in Birmingham leads a **Smart Systems and Heat** programme that aims to create future-proof and economic local heating solutions for the UK. The programme commissioned will develop a suite of software models and heating technologies that will enable the design of location-specific energy systems and improved heating efficiency in buildings. In the first phase of work, an energy planning tool, **EnergyPath**, is being used to develop strategies for low carbon heat in partner cities including Newcastle and Manchester. <https://es.catapult.org.uk/what-we-do/ssh-programme/>

6 Conclusions

Local energy is a multifaceted agenda. A survey of projects and programmes from across England demonstrates that different types of institutions are taking a leadership role in different places. Local authorities, community groups, universities and the NHS are all demonstrating proactive engagement.

This points to a general feature of energy infrastructure and decarbonisation. It does not have a natural home in any one local institution. The agenda is a broad one. It is important to recognise its 'cross-cutting' nature. Local leadership on energy must engage with aspects of the agenda within housing, health, transport, the public realm, waste and civic institutions, in terms of behaviour, buildings, connective infrastructure, major development, regulation and national policy.

'Local energy' outcomes could be approached simply by taking the constituent themes separately, with a remit for decarbonisation embedded as a core driver for the relevant institution. For example, housing bodies can take a lead on energy efficiency in the housing stock, while planners and regeneration bodies can consider the opportunity for district heating networks. These bodies can separately strive to develop a business case for energy projects. This has the advantage that leadership sits with an established function that best understands the issues, and there are existing governance structures in place. Local energy would in this model 'pass through' any subregional strategy bodies such as LEPs and combined authorities.

However, while this embedding of low carbon objectives within separate institutions is necessary, it may not be sufficient. An approach that seeks decarbonisation outcomes across disparate organisations has disadvantages. Individual projects and programmes must find resources and expertise to separately develop their energy strategies. There are aspects of the decarbonisation agenda that are hard to deliver and require concerted action on the ground. Heat networks, for example, require joined-up thinking by local authorities, energy supply companies and 'anchor' sites (private and public). Even within a local authority there must be joined-up thinking between planners, regeneration teams, housing etc. Local delivery needs a shared strategy and leadership.

A challenge for energy projects of all kinds is delivering reductions on energy costs while retaining a proportion of revenues for future works. Many of the most successful examples of local energy activity involve the creation of a partnership of institutions that then becomes a 'cost centre' for further investment. There are several examples of initial programmes that have become revenue generators for municipalities and communities. Where governance structures are properly established and supported by wider leadership, local partnerships on energy can then be attractors, forming 'coalitions of the willing', which can go forward to develop robust investment cases, attract funding and deliver projects of increasing scale.

Devolved budgets for transport, skills and housing within Local Growth Deals, as well as the devolution settlements being agreed for some areas in England, create an opportunity for governing authorities to better co-ordinate action by formalising working partnerships. A hybrid approach to local energy would be one in which an umbrella body develops an overall strategy and consolidates some core policy and operational functions, while ensuring that delivery institutions have the resources and mandate to act. In keeping with the localism agenda, the way this is implemented can be flexible and make the most of local strengths and resources. In Oxfordshire, community groups have taken the lead and created a consortium for low carbon action; in Bristol the council is leading, having established Bristol Energy; and in Greater Manchester the Combined Authority has co-ordinated a spatial energy plan across 10 local authorities.

There are core functions and operations shared by different types of local energy projects that could be consolidated. These include engagement on energy policy with government, co-ordination of local strategy, advertising of opportunity, attracting inward investment, creating frameworks for procurement of supply contracts, setting up back offices for energy sales, providing legal and contractual support, third-party due diligence, providing low-cost loans and underwriting schemes.

There is perhaps scope in future for energy and carbon reduction programmes to be administered locally, building on established relationships. Business Improvement Districts (BIDS) perhaps offer a route to targeting local groups of businesses with local energy-saving programmes, as would embedding carbon impacts into grant and loan funding from the public purse. Business rates retention is a power devolved to local authorities. Business rates could conceivably be used to incentivise energy performance in future.

There are challenges ahead. Low energy costs are vital to the bottom lines of many businesses, and this driver can be in tension with the need to decarbonise the UK energy system. Regulations, obligations and taxation can only deliver so much from organisations for which managing energy is not part of core business and which therefore lack much incentive to collaborate with neighbours.

The energy market could be reformed to reward local balancing and better-value embedded low carbon generation. This is an opportunity for central government to act to support local energy.

Municipal energy is a relatively new feature of the UK energy market. Nottingham and Bristol have been pioneers and, while they appear successful, they have not been operating for long. They have yet to prove that their local customer base can reach a critical size and that their business model is commercially sustainable. Swings in energy price, regulatory changes or broader economic shocks are yet to test the robustness of their business and funding model.

It is a time of reflection for community energy in England. Government support for communities at the early stage of project development has been reduced and there are broader challenges facing renewables and energy efficiency programmes. This will make it difficult for some types of project to proceed.

Nevertheless, there are clear opportunities to be realised and LEPs can play an important role in supporting local energy. The energy market is undergoing a period of transition, which is being accompanied by an intense burst of innovation and creativity. New technology, new business models and new ways of approaching old problems will lead to significant investment in coming years. Increased community awareness, local energy matching and collective energy purchasing, for instance, are creating new opportunities. Decentralisation will be a growing feature of the UK energy system as opportunities arise for consumers, communities and whole towns and cities to invest in energy generation, transmission and supply. Billions of pounds of investment will flow into the reworking of our national utilities infrastructure into smarter and more sustainable networks.

LEPs can support energy projects, particularly during the initial scoping and development stages, and can help energy projects to overcome funding challenges. This report has described a range of ways that LEPs can support business, municipal and community energy activities, from promoting successes to mentoring and funding. In all its forms, help from LEPs can enable local economies to seize opportunities and implement projects that deliver investment, jobs and local growth.

It's also clear that central government see LEPs as having an important strategic role in local energy. LEPs are in a unique position to facilitate the translation of national policy into local goals and initiatives. LEPs can provide evidence and advocate on behalf of industry. They can use their funding, networks and influence with local authorities to maximise opportunities for local energy and local growth. LEPs can ensure that devolved funding is evaluated for energy and low carbon outcomes. LEPs can support the development of an integrated local energy strategy by helping stakeholders to identify their respective roles and support the formation and expansion of catalyst energy schemes.

Local delivery of energy and low carbon outcomes has been happening in practice alongside the national agenda for many years. Local energy could now emerge more explicitly as a way for LEP subregional areas to empower local agencies and have a two-way discussion with government on the direction of energy policy. LEP regions that can align the efforts of various stakeholders will realise a substantial dividend from local energy.

The findings of this report are presented as a set of recommendations on how LEPs can promote local energy activities. These are set out in detail in the executive summary and can be summarised as follows:

- 1. Recognise the breadth of activities encompassed by local energy**
- 2. Encourage private businesses to engage with local energy**
- 3. Work with public sector partners and develop municipal energy projects**
- 4. Promote community energy activities and recognise that LEPs have shared objectives**
- 5. Harness local research and innovation**
- 6. Work as a conduit between government and local stakeholders**
- 7. Provide support to local energy projects**
- 8. Review funding streams that might be aligned to local energy outcomes**
- 9. Grow LEP capacity to promote local energy activities.**

Appendices

Appendix 1: Glossary

Appendix 2: Survey of local energy themes

Appendix 1 – Glossary

BEIS	Department for Business, Energy and Industrial Strategy
BenCom	Community benefit society
Biomass boiler	A boiler that burns sustainable organic material to generate heat
Building retrofit	Improvements to existing properties that can include installation of energy-efficient measures such as wall insulation
Carbon emissions	Gases (carbon dioxide and carbon monoxide) produced by industrial processes and vehicle emissions
CO₂	A gas (carbon dioxide) that is a by-product of burning fossil fuels and industrial processes
Combined heat and power	A technology that simultaneously generates electricity and useful heat
Commercial developer	A developer of larger renewable energy projects
Community	Geographic: a group of people living or working in a defined area; ‘of shared interest’: a group of people with a common interest or objective
Community energy	Community involvement and control over the generation, reduction, management or supply of energy, with the aim of benefiting a community
Community group	Groups that are predominantly run by volunteers at a local level
Community interest company (CIC)	A type of company that wants to use its profits and assets for public good
Community pledge	A community promise
Community share offer	The sale of shares in organisations serving a community purpose
Co-operative	A democratically run organisation set up for the mutual benefit of its members
CSR	Corporate social responsibility
Crowdfunding	Funding a project by raising money from a number of people, typically via the internet
DNO	Distribution network operators own and operate the regional electricity networks that distribute electricity between homes and businesses and the high-voltage transmission system
Energy behaviour	How people interact with energy
Energy efficiency	Measures to reduce the amount of energy needed to achieve an outcome
Energy generation	The production of useful energy
Energy supply	The transmission and sale of energy

Feed-in Tariff (FIT)	A Feed-in Tariff is a financial incentive received from your energy supplier for generating your electricity via selected renewable technologies
Heat pumps	These extract ambient heat from the environment (air, ground or water) for use to heat or cool buildings and provide hot water
Hosting community energy	A property or landowner willing to locate a renewable technology on their land or at their property as part of a community energy project
Hydropower	Uses running water to generate electricity, using a variety of devices such as turbines
Hydro turbine	A machine that rotates in flowing water to generate electricity
kWh	Kilowatt-hour (a measure of energy use; 1,000 watt-hours)
KWp	Kilowatt-peak (a measure of rated peak electrical output, for example from a solar PV array)
Landlord	The owner of a property or land that is rented or leased
Liverpool City Region (LCR)	The economic and political area that includes the local authorities of Halton, Liverpool, Knowsley, Sefton, St Helens and Wirral
LCR Local Enterprise Partnership	Liverpool City Region's primary strategic economic development body
Managing energy	Reducing the demand for energy by using energy monitors and changing behaviour
Municipal energy Supply	A local-authority-led organisation that buys and sells electricity on behalf of its customers. It aims to provide competitive prices while also meeting social objectives
Purchasing energy	Communities coming together to buy collectively, e.g. buying oil, or switch provider for a better tariff
Reducing energy	Reducing the demand for energy by making buildings more energy-efficient
Renewable energy	Energy that is generated from replenishable resources such as sun, wind and tide
Renewable Heat Incentive (RHI)	A financial incentive received for generating heat from renewable technologies, including biomass boilers, heat pumps and solar thermal
Small and medium enterprises	'SME' businesses employ fewer than 250 personnel or have an annual turnover below a defined threshold
Social enterprise	An organisation that uses a commercial approach to fund social or community-based activities
Solar PV	Ground- or building-mounted panels to convert daylight into electricity
Solar thermal	Ground- or building-mounted solar panels to convert daylight to heated water
Wind turbine	Rotating blades generate electricity from the wind; wind turbines can vary in size and can be fixed to the ground or attached to buildings

Appendix 2 – Survey of local energy themes

This survey of local energy themes was produced by the Liverpool City Region LEP as an initial background to the main report. The following sections consider the following:

- (1) **CONTEXT:** The range of local stakeholders and the policy framework around local energy
- (2) **INFRASTRUCTURE THEMES:** Activities that inform local energy projects
- (3) **STRATEGIC THEMES:** Activities that would support the local energy agenda
- (4) Summary of LEPs' potential role in supporting the local energy agenda.

A2.1 CONTEXT

Local energy stakeholders

A range of stakeholders could potentially be involved in establishing the scope of local energy activities.

The **public estate**, which can take a long-term view on investment as well as social and environmental outcomes, can provide an example to a region by implementing energy projects. **Local authorities, universities, colleges and schools** might be the focus of a local energy agenda. The emergency services have also demonstrated proactive engagement in the agenda.

Innovation by enterprise and academia could mean that key research occurs in a LEP area. Innovation funding, including transnational EU as well as UK government funds, could support projects. Future frontiers for energy include communications and data for smarter energy management, energy storage, fuel cells, hydrogen, phase change materials, graphene, carbon capture and marine energy.

Transport authorities in some locations in England are administered at the subregional level. Merseytravel is an example of a transport body that has environmental and sustainability targets and aspirations embedded in its planning approach. Network Rail has landholdings and significant energy contracts.

Waste streams are a potential source of energy. A circular economy approach would see a greater proportion of waste recycled or, where it cannot be, diverted into waste-to-energy uses.

Social landlords represent large numbers of tenants and own and operate the assets, making them a potential strong partner in energy projects.

The health and social care sector is energy-intensive, with significant transport on the roads being attributed to health visits, and hospitals having significant energy use.

The Ministry of Defence has large estates of land in some parts of the country.

Business and domestic consumers are the primary users of energy in a region:

Industrial and business energy

The degree of importance that a business attaches to energy use will be linked to the sector and scale of operations.

Energy-intensive industries are defined by government. These industrial sectors transform raw materials into glass, paper, metals, etc., and energy is their greatest operational cost. Government has given exemptions to energy-intensive industries in the tax regime.

In the rest of the industrial, light industrial and manufacturing sectors, energy and carbon taxes will be an important cost variable and programmes to reduce energy use will be reflected in the productivity/GVA of the organisation.

In freight and logistics, transportation carries a significant energy cost. National policy in this area is probably needed to create a level playing field when considering decarbonisation of transport, although air quality management and emissions zones have had an impact in London. Creating

facilities for ultra-low-emission vehicles could set the stage for local adoption of less carbon-intensive fuels. Warehouses tend to have very large flat roofs, and there are some good examples of large solar arrays being installed.

Energy use in commercial office buildings and most retail outlets will not be energy-intensive in comparison with manufacturing and industry, although there will be significant opportunities to reduce energy by addressing the building stock.

Unless they have green outcomes embedded in their brand, SMEs may tend not to have a focus on energy, especially if they are in tenanted buildings. However, behaviour change and minor capital measures undertaken by SMEs would have an impact on their energy costs and probably recoup the investment.

There is scope for energy and carbon reduction programmes to be administered locally, building on established relationships. Business Improvement Districts (BIDS) perhaps offer a route to targeting cohorts of consumers with local energy-saving programmes, as would embedding carbon impacts into grant and loan funding from the public purse.

Business rates retention will be a power devolved to local authorities, and at one time the possibility of establishing a link between energy use and business rates was reviewed by central government.

Domestic energy consumers and 'prosumers'

Domestic consumers are largely not engaged with the question of where their energy comes from. National incentive programmes to reduce domestic energy have been to an extent successful in changing boilers and lighting in existing homes and embedding efficiency in the design of new homes. The withdrawal of high-profile programmes such as the Green Deal may have left some consumers confused about how to access future funding. A new round of programmes to reduce domestic energy will have to target homes and tackle measures that are harder to treat than those that have been addressed at scale to date.

Individual consumers are hard to reach with local programmes and this is why community energy is envisaged as a way of aggregating a group of interested parties to take concerted action.

The 'prosumer' is a homeowner who both produces energy and consumes it, engaging with the grid and surrounding energy users in a new way. Regulation has not yet caught up with the opportunity presented by the spare energy generation capacity of prosumers in an area to put it to use locally through grid-balancing mechanisms. There will be a surge in prosumers who are active participants in grid management as a result of the amount of solar energy that has been installed, as smart meters enable new time-of-day tariffs, and if and when energy storage becomes cost-competitive.

National policy and regulated energy markets

Over the past two decades, strategies for the decarbonisation of UK plc and the promotion of other low carbon priorities have tended to be enacted by central government through taxation, incentives and obligations placed on suppliers and consumers. Local agencies have played an important role in implementing and promoting national programmes in their areas. However, the statutory obligations on local authorities to achieve carbon reduction and energy-saving outcomes are few.

In terms of planning, local authorities' powers to influence local spatial planning in matters relating to energy infrastructure have been diminished since 2010 by the National Planning Policy Framework (NPPF), which requires local plans to include a strong evidence base for any proposals on energy infrastructure that go beyond national regulatory standards. Few local authorities have yet formulated this evidence base.

Meanwhile, a range of arms-length public and third sector intuitions have adopted low carbon targets for their organisations. For example, higher education and the NHS both have targets for energy reduction embedded in their funding approach.

Decentralised energy

The energy system in the UK functions largely as an integrated whole. The UK gas and electric networks are heavily regulated, privately owned systems. This has meant that forward planning for

new and replacement power transmission and distribution infrastructure is a conversation between Ofgem, the national grid and network operators, without much visibility to local agencies.

However, this as changing as an increasing proportion of energy infrastructure is connected to energy generated locally. Decentralised energy supports decarbonisation of the UK but brings with it planning and integration implications.

Decentralised energy will transform the national power grid into a distributed supply system that requires smarter management of energy flows. This suggests a stronger role for local partnerships. Liverpool council has recently reviewed the scope of local authorities' role in its report 'Electricity Networks and Local Authorities'.

'Decentralised energy' (also called distributed generation) sources range from renewable technologies such as solar and wind to infrastructure projects that transport heat from energy-from-waste, industrial processes and combined heat and power stations for use in the districts of nearby towns and cities. Electric vehicles are projected to have a transformative impact over the coming decade.

An expansion of decentralised energy generation requires an ongoing dialogue between energy generators and the local networks into which they are integrated. Developers of energy-from-waste, wind and solar farms can discover that exporting to the power network triggers a high cost because of the reinforcement of the network that it requires. Not all aspects of energy infrastructure are regulated and this creates a complex landscape for stakeholders to navigate.

A recent report commissioned by the DECC, 'Future Power System Architecture', envisages a more efficiently managed grid in which network operators become distribution system operators (DSOs), creating local incentives for grid management practices both in the network (supply side) and for the consumer on the other side of the electricity meter (demand side). Several DNOs are beginning to understand the scope of this new role, and they are expressly encouraged by Ofgem to engage with local communities when they do so.

A2.2 INFRASTRUCTURE THEMES

A local energy system is a complicated interaction between many stakeholders. The following sections aim to draw out some thematic areas that can be the focus of effort. Local energy infrastructure themes include the following:

- **Business energy efficiency:** Larger businesses have obligations placed on them to consider energy use and energy management. In 2015 large undertakings were required to lodge reports under the Energy Saving Opportunity Scheme (ESOS) as a way of formalising their intentions. Programmes to target smaller businesses do not place obligations on them, on the basis that this will undermine their competitive advantage. Nevertheless, there are likely to be substantial opportunities to save energy within SMEs, many of which will not even have begun to consider their options. The Carbon Trust operates a national SME energy efficiency programme that delivers workshops in host cities. Similar programmes could be operated on a local basis by business support functions and reach a larger audience. It has previously been considered at a national level that investment in energy efficiency could be linked to business rates to act as an incentive for business to act. This could come to have a local form via devolution settlements.
- **Industrial energy:** The significance of energy costs to business varies across sectors and industries. For some energy-intensive industries (chemicals, glass, paper production, etc.) energy costs may make up the larger part of operational costs. There is another tier of manufacturing and logistics businesses on very tight margins, for which energy costs are an important cost variable. Energy-intensive businesses are often clustered with other industrial and light industrial factories in business parks. Where this is the case, there are opportunities to promote district heating and energy-from-waste and engage with businesses on power grid investment. While localities have a strong incentive to retain large businesses and jobs in their areas, and could hope to develop mechanisms to support them, the commercial imperatives of businesses and the sophisticated way in which they purchase

energy can make it difficult to broker relationships that are of mutual benefit. Strong leadership and a willingness to make long-term commitments are required.

- **Public buildings retrofit energy management:** Local authorities and other public sector institutions have made good progress in the past decade in reducing the emissions of the public estate. A past requirement to publish Display Energy Certificates for public buildings raised awareness of energy-saving opportunities and resulted in meaningful action. Salix runs a current national programme to provide low-cost or zero-interest loans to the public sector to invest in energy-saving measures. There is more that can be done to reduce the energy use of the public estate, and there is a role for programmes that co-ordinate activity across institutions so that actors are not working in isolation. Reduced cost for technologies such as LED lighting and smart building controls might make projects viable that were previously ruled out. Energy management is an ongoing activity worth resourcing, which includes behaviour change and not just one-off capital investment. Reductions in public sector staff have resulted in reduced capacity to develop and administer projects. Leadership is required to drive forward activity that is not in all cases a statutory requirement for public bodies.

- **Domestic retrofit and demand reduction:** Retrofit of the older housing stock is acknowledged to be a necessary part of any strategy to meet the UK's carbon budgets. Heating of homes contributes some 30% of national CO₂ emissions. Mechanisms are in place to encourage consumers to invest in insulation and energy-efficient systems. Regulation has been successful in improving the performance of boilers and lighting. In recent years some of the national programmes have been cancelled or wound down (CESP, CERT, Green Deal). The Energy Company Obligation (ECO) creates a budget that can be deployed to implement domestic retrofit. Programmes have tended to follow projects that can achieve the greatest CO₂ reduction per £. The UK has made more than a decade of progress on home energy efficiency, with thousands of cavity walls filled, lofts insulated and boilers replaced. A more difficult challenge will be to target hard-to-treat homes that do not have cavities in the walls and are reliant on inefficient electric storage heating. Consultation on the future of the ECO is currently underway and a focus on fuel-poor households is recommended by government. The consultation describes the scope for local flexibility on directing funding. Stakeholders in a given locality are well placed to work with ECO providers. They might target clusters of adjacent homes, some of which are not fuel-poor, in order to deliver cladding programmes to whole terraces, or communal heating, which though higher cost and more complex activities that deliver large carbon savings if delivered.

- **Local authorities, English energy conservation authorities and HECA:** Local authorities have a statutory responsibility to understand the energy efficiency of local housing stock. Home Energy Conservation Act (HECA) officers play a role in reporting to government on local stock condition every two years. Guidance published in January 2017 updated the scope of activity to bring it into line with current government policy. The Act requires all 326 local authorities to report on progress on implementing measures. The information the Act requires from authorities is as follows:
 - local energy efficiency ambitions and priorities
 - measures that take advantage of financial assistance and other benefits offered from central government initiatives, to help achieve significant energy efficiency improvements of residential accommodation
 - measures that the authority has developed to implement energy efficiency improvements cost-effectively in residential accommodation by using area-based/ street-by-street rollout involving local communities and partnerships (e.g. social housing partners, voluntary organisations and town/parish councils)
 - a timeframe for delivery and national and local partners.

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- **Decentralised renewable generation:** Renewable generation can be implemented across the scale, from wood fuel burnt in power stations such as Drax down to a single solar panel on the roof of house. The market for renewables has been stimulated in recent years by building regulation requirements for new homes and by subsidies to encourage investment. Costs of some technologies such as solar photovoltaic panels have been deemed to have reached a price point where further subsidy can be tapered to zero. Decentralised generation, microgeneration and medium-scale generation are best implemented by being integrated into buildings and nearby energy demands, which can have planning implications including the potential for impact on visual amenity. Local agencies can play various roles in promoting increased updating of renewable generation – leading by example, engaging through the skills agenda, supporting the local supply chain.
 - **Decentralised heat and power:** The government has developed a heat strategy for the UK that seeks to increase the role of district heating in the UK from around 2% of demand to 20%. Decentralised heat and power creates local energy hubs that use a variety of technologies, predominantly gas combined heat and power, to generate energy close to point of use, saving energy wasted in transmission. This can lower costs for consumers and is better future-proofed against the changing and uncertain mix of energy sources that the UK will come to rely on. Many local authorities in the UK, supported by government, have investigated the opportunity for district heat in their localities. In order for district heat to be delivered, local consumers must be engaged with the opportunity and helped to understand the benefits and risks. Examples from Europe have demonstrated that municipal leadership is necessary to anchor heat networks in cities, before they can be expanded as commercial enterprises. In a nascent market, there is a strong role for public sector engagement to develop complicated projects.
 - **Utilities masterplanning:** UK gas and power networks are privately owned and heavily regulated to deliver energy to consumers. Providers such as distribution network operators (DNOs) for the local electricity grid are required to plan ahead and present a business case to government via the regulator (Ofgem). The role of other local stakeholders has receded over recent decades to generally helping the DNO to understand local strategies for major new development. However, the energy system is expected to go through a major transition in the coming years. A system that delivers centrally generated energy to local consumers will convert to one in which local 'prosumers' may also generate energy and share it with neighbours. This is a new challenge for local networks, which will be compounded by the expected rapid uptake in electric vehicles and electric heating. Increasingly there is a role for both urban and rural stakeholders to engage on future planning on network capacity. Constrained power grids can be a barrier to new development (additional load) and new decentralised generation (new supply). Meanwhile, other utilities such as water, gas and digital services can be implemented in a way that is not co-ordinated, which often sees the same road being dug up multiple times in a year.
 - **Transport energy:** A shift from petrol and diesel vehicles to low- and ultra-low-emission vehicles such as electric cars is projected to be a largely consumer-led switch – potentially a rapid one. Displacement of car journeys with cycling and rail and bus is also consumer led. However, localities can support the reduction of CO₂ relating to transport by investing in electric-vehicle-charging infrastructure, for example at business parks, promoting unimpeded cycling routes and working with providers to increase hybrid, hydrogen and public transport.
 - **Energy system clusters:** The range of energy infrastructure themes described above point to an opportunity to focus attention on clusters of energy density, where many different aspects of the energy system can be co-ordinated to achieve synergies. These could include projects that consider the opportunity for district heating networks to reduce the load on local power grids; for energy-intensive industrial consumers, hospitals, universities and transport interchanges to supply heat to local networks to provide spare energy to

surroundings; for energy-from-waste plants to be co-located with energy users; for groups of businesses to collaborate on sharing low carbon energy generation; for local energy tariffs to operate; for revenues to be recycled for green infrastructure; for electric car-charging points and cycle paths to change transport patterns; for air quality to be addressed; for alternative fuels to be integrated into the built environment, etc. An energy systems cluster could be a location where high energy demand coincides with new development or regeneration, local leadership from residential and business communities, a constrained power grid, opportunities for demand-side management, is identified in development plans or planning policies. An energy system cluster approach would seek to overcome a particular problem of energy policy and other planning activities: that policy often exists in silos and cannot take the most efficient whole system approach.

A2.3 STRATEGIC THEMES

Strategic and spatial planning: A theme that unites all local energy activity is the role that strategic plans and spatial planning can play to encourage or limit the implementation of low carbon energy infrastructure. The National Planning Policy Framework (NPPF) discourages local planning policies from imposing energy infrastructure on developers where it creates additional cost for them, unless a properly evidenced local plan is in place. Development of local plans might instead encourage infrastructure that does not impose an added cost on developers on construction but that makes buildings future-proof so they can switch to low carbon technologies at a later date (for example, decentralised generation, smart building controls). Neighbourhood plans, a form of engagement led by communities, have not to date been used to attract energy infrastructure to a locality, but could in principle be a vehicle for doing so. Where adopted spatial planning policy does not formalise obligations on developers relating to energy, there is still scope for development plans, strategic plans and supplementary guidance to point the way towards energy infrastructure investment that is shown to be wanted by local stakeholders. **The London Plan** is an exception to the general rule that local planning frameworks do not impose carbon obligations on new developments. The London Plan is not a statutory document but a material consideration, and local authorities in London make reference to it in their adopted local plans. Carbon mitigation is a cross-cutting theme, and among other policies, developers are encouraged to bring forward developments which exceed the requirement of building regulations (Part L) for CO₂ reduction. There is a mechanism for developers which do not meet the standard to pay a levy that equates to the difference between the target and actual performance.

- **Smart grids and smart cities:** The smart cities agenda envisages a future in which digital information and control of networks will make them significantly more manageable. This has the potential to encourage more efficient behaviour by consumers, reducing the demand on national transmission infrastructure. Demand response is an activity in which consumers reduce the use of equipment at peak times to make energy cost savings. One day this might be co-ordinated with the network operators if they are empowered to play a distributed system operator (DSO) role, building on their current regulatory obligation to manage the grid efficiently. Costs avoided on new substations locally, and new power stations nationally, could pay a significant financial dividend to all consumers of power in the UK. Consumers typically pick up the cost of new infrastructure through standing charges on their energy bills, and these costs are rising. Demand response is an activity already deployed by the largest energy-intensive businesses – but there is scope for smaller business and domestic consumers to participate if incentives can be aggregated and aligned. To drive for smarter grids and smarter cities will require strategic leadership and create a space for the market to innovate.
- **Business growth and inward investment:** Energy infrastructure is a factor that can drive decision-making about where businesses locate. For some businesses, high cost of substation connection will make them consider sites elsewhere. Other businesses may be attracted to locations where lower standing charges for energy are going to be sustained over the long term. Some businesses consider energy as part of their environmental management plans and corporate social responsibility. The construction sector has driven the greening of

many parts of the supply chain. Business Improvement Districts with an energy focus, and Green Energy Parks, are ways in which localities can create an attractor for inward investment, as well as retaining jobs in a region.

- **Innovation and the knowledge economy:** A great number of innovators are active in the low carbon economy, seeking to develop technologies to improve the performance of existing technology and create new approaches. As they are moving up the hierarchy of technical readiness, university and commercial research proposals will need to be embedded in real-world environments to be demonstrated and tested. There is scope for local energy partners to create the networks to facilitate this.

- **Low carbon skills agenda:** In recent years, further education skills funding has been devolved to LEP regions. This reflects the view that local organisations can inform the types of learner provision that is delivered, by building ties with local industry and the emerging apprenticeships agenda. Liverpool City Region has piloted an approach to invest Skills Capital funding in smarter energy management within FE colleges in the area to empower them to understand energy demands and engage students on energy issues. To embed sustainability and energy-saving action in everyday thinking, the low carbon agenda can be threaded into both general education, particularly in construction, IT and other STEM provision, and specialist courses targeted at green economy technologies, which might have a local flavour if an industry such as wind turbine manufacture is in the vicinity.

- **Alternative fuels strategies and the circular economy:** Displacing fossil fuels by shifting to alternative fuels overcomes the issue that some renewable energy is intermittent and costly to store and transport. Biofuels can include wood fuels, bio-oils and biogases. Energy-from-waste is a large market in the UK: it diverts waste from landfill and into the production of power. Too rarely is the waste heat produced by Energy-from-Waste plants connected to the surrounding area, although Leeds and other cities are investigating links to their district heating strategies. Hydrogen gas is viewed as a long-term replacement for natural gas, both as a waste product from other activities and as a storage medium for electricity generation via electrolysis. There is scope for local action to promote increased uptake of alternative fuels – from finding suitable sites to host biomass boilers, to strategies to convert waste to energy through anaerobic digestion. The waste, recycling and resources strategies of subnational agencies have a role to play in directing by-products of domestic consumption and industrial processes into local, sustainable uses. The circular economy is a concept that encapsulates the drive towards diverting 100% of waste from landfill and into better and repeatable uses.

- **Rural energy:** Agricultural practices can be energy-intensive. The energy used to transport crops and food from farm gate to supermarket can be expressed as food miles, the carbon emissions associated with which are not often transparent to the consumer. The local food movement seeks to encourage more food to be consumed within local areas, with a positive impact on the environment and the potential to boost the local economy. Growth of food out of season relies on the creation of heated spaces, the energy cost of which can be a significant variable in the overall cost of produce. There are cost-saving approaches to growing that locate greenhouses alongside sources of waste heat from other farm processes. Heat generated in the Manchester Airport heat network is supplied to local growers. Agricultural by-products such as grass cuttings, hay and animal waste have a calorific value and hence can be converted to useful energy through anaerobic digestion. A circular agricultural economy model would divert more of the by-products produced by farming back into useful inputs into the systems and processes, preferably by extracting useful chemical constituents, or via anaerobic digestion into biofuels, or into energy-from-waste as a last resort.

- **Community energy:** The ownership of energy assets by the third sector was a strong growth area from 2013. The government policy paper on community energy identified over 5,000 organisations interested in developing projects. Community energy was in many instances predicated on capturing the revenues from decentralised energy assets to grow and pay for other energy-saving and societal benefit activities. This has been interrupted by a change in

the subsidy model for renewables in the UK. For the approach to continue to grow, future community energy activity will rely on identifying other sources of value in the energy system – which may come from changing the way in which embedded benefits of decentralised energy are realised by the energy generator; from local energy markets connecting generators to consumers; and from finding a model that encourages organisations to host community energy at their sites to mutual benefit. Community energy is a grass-roots movement that seeks to reverse the direction of energy ownership from central to local, taking independent action to support/replace commercial and publically owned assets. Nevertheless, community energy needs top-down support in the form of regulatory change, umbrella bodies, and the support of larger institutions to shelter and incubate them through the early stages.

- **Municipal energy:** The ownership of energy assets by the public sector is increasingly common. This was supported by a change in 2010 that allowed local authorities to sell electricity. Since then, many local authorities have invested in energy infrastructure. Leisure centres in public ownership or at arm's length have benefited from biomass boilers, and schools from solar panels. Where energy is transmitted onwards for use by third parties, then the public sector becomes an energy supplier – with all the legal and contractual complexity that entails (Small-scale electricity supply and distribution is exempted from the full regulatory requirements). Energy service companies (ESCOs) might administer non-regulated infrastructure like heat networks. Where a municipality wishes to supply gas or electricity to consumers, it must be, or must be working with, a regulated energy supply company. Recent examples of municipalities engaging in energy include Peterborough Energy-from-Waste and Energy Services ESCo and Telford Solar Farm
- **Environmental impact and air quality** is an issue that interacts with decentralised generation, alternative fuels and transport. Low carbon strategies such as a shift to electric vehicles and energy efficiency in buildings will reduce all polluting emissions including CO₂. However, some alternative fuels such as biomass, and the shift to decentralised generation in town centre power stations, will in some cases increase local levels of pollution – there is therefore a local need to engage with planners on the risk–benefit assessment of decentralised energy generation.
- **Local energy markets:** The business case for energy assets that supply power to the local grid is often marginal. This is because the grid cannot value intermittent renewables coming into the local infrastructure that are not matched with a nearby demand. Generation of energy that cannot find a use at a given time of day has a negative value in terms of the need for reinforcement of the network to account for impact on fault levels, frequency and voltage balancing. Local energy markets exist elsewhere in the world, but there are not many examples in the UK of consumer and generator matchmaking across the local grid systems. This is due to the regulatory framework and the readiness of the market. Changes to the regulatory framework ('BEIS Call for Evidence on a Smart Flexible Energy System', November 2016) may be realised in time. Meanwhile there have been pilot schemes (Piccolo Energy, Pixie Energy) that seek to understand how a grid-balancing role for decentralised generation would work in practice. Local energy markets combined with energy storage could conceivably play a significant role in the energy system, because they would be the missing mechanism that brings together consumers and generators on the local distributed grid network, 'flattening' the peaks of usage and avoiding costs elsewhere.

Funding context and devolution: Decarbonisation of the UK will require action across all sectors. National policy frameworks and associated funding mechanisms are in place for some approaches, while there are gaps in others. New policy arising from the Emissions Reduction Plan 2017, the Industrial Strategy and the National Infrastructure Commission may address some gaps. Local delivery is also an opportunity to achieve carbon reduction outcomes, whether this is realised through national budgets passed down to regions through Local Growth Deals and other funds, or discrete powers allowed to the increasing number of devolved city regions in England.

A2.4 LEP RELATIONSHIP TO LOCAL ENERGY THEMES

The table below presents local energy themes, along with potential roles for LEPs and the links to community energy.

Local energy themes	Potential for LEP role	Links to municipal and community energy
Business energy efficiency: large undertakings and SMEs	LEPs, as sponsors of local growth hubs or similar networks, might be a conduit for programmes that encourage local SME businesses to consider energy use and invest in energy-saving measures. Chambers could fulfil a similar role in localising national programmes. Where large corporates are engaged in CSR within an area, this can be a route to engaging on low carbon outcomes.	Community and energy groups that are seeking routes to make contact with business with an offer to provide energy generation assets (e.g. rooftop solar on warehouses) might work through business forums such as local growth hubs.
Links to industrial strategy , jobs retention and GVA growth	LEPs are well placed to understand the energy requirements of local industry and have a conversation with government on the energy elements of industrial strategy. LEPs may direct funding towards projects that improve local jobs and GVA. Understanding the links between energy costs and GVA could enable LEPs to influence investment decisions.	Industry uses energy on a scale that cannot be easily satisfied by small and medium-scale renewables. However, communities of businesses might come together under the banner of community energy to seek investment in the local energy infrastructure of a business park.
Public sector energy management , smart cities agenda	LEPs can support the public sector in their region to reduce operational energy costs as part of an efficiency programme. LEPs may be engaged in the smart cities, internet of things and related agendas through innovation funding. The public estate can take a lead in this area.	There are examples of local authorities and institutions such as fire services inviting community groups to invest in solar panels for the roofs of public sector buildings. Social outreach and community buildings are a natural fit with community energy, as are social enterprises supported and part-funded by the public purse.
Housing energy efficiency: future policy on flexible delivery of ECO	LEPs generally do not have a role in influencing funding for private housing or social housing. However, where an energy function is embedded within a LEP, then there is scope for the LEP to signpost local stakeholders to national policy as it evolves. LEPs may have a relationship with energy suppliers administering the ECO in their locality.	Municipal energy often seeks reduction of fuel poverty as a key objective, and local authorities have strong relationships with social housing landlords. Community energy could be a vehicle through which investment in retrofit is targeted via neighbourhood rollout of energy infrastructure. Boiler replacement, external wall insulation, etc., could benefit from scale if many houses in a neighbourhood are targeted at once.
Microgeneration: local incentives	The take-up of small-scale renewable energy generation connected to homes and businesses is a consumer choice influenced by subsidy and tax regimes. Where local agencies wish to increase the penetration of microgeneration, LEPs may have a role in engaging with local supply chains and influencing national policy by communicating local needs.	Community energy is an agenda that aims to increase microgeneration through clubbing together to co-invest in renewable installations such as rooftop solar, biomass heating and micro-hydropower in rivers.

Decentralised energy: heat, power, cooling	Where there is a local interest and business case, LEPs may support major energy infrastructure projects such as district heating schemes by making reference to them in strategy documents, and supporting them through subregional (ERDF) and devolved low carbon funding.	Communal heat in housing relies on acceptance by homeowners and occupiers asked to connect. Community energy activity could be a way to bring neighbours together to own assets. District heating is an objective of several municipal energy schemes.
Power grid resilience: grid balancing with storage	Power grid constraints and an ongoing transformation of the grid into a smarter system are of strategic importance to the business growth agenda, particularly where new development sites are grid-constrained, and strategic investment in critical infrastructure could encourage developers to take projects forward.	Grid connection costs can be prohibitive in some locations, holding back investment in decentralised energy generation. Local mechanisms that lower connection costs for decentralised generation would support community energy activities. Some DNOs have innovation funding to engage with communities and may give additional support to community energy schemes.
Transport energy: low-emission vehicles, walking and cycling	LEPs have a role in transport infrastructure whereby they can unlock economic growth. Local Growth Deals may be directed towards transport schemes that provide improved access to regeneration and new development sites. Transport funding generally takes the form of investment in road and rail but can also simultaneously ensure that walking and cycle networks and low-emission-vehicle infrastructure are in place for business parks, town centres and transport terminals.	Research on electric vehicles has shown that early adopters can be found in clusters, where a first user makes the technology visible and then others in the neighbourhood follow. Since clusters of Electric Vehicle charging create issues for local energy networks, community engagement will be an aspect of the Electric Vehicle agenda.
Energy clustering: targeting investment at infrastructure pinch points	LEPs' role in economic growth means that they are often the sponsors of regeneration and new development sites within their region. Terms of reference for providing funding for the unlocking of strategic sites could include a responsibility to consider the energy context in which the site is developed.	Municipalities can take a lead role in identifying infrastructure pinch points and areas where new development presents an opportunity for co-ordinated investment in infrastructure. Energy masterplanning by local authorities could become more of a feature of their spatial planning in future.
Spatial planning: promoting low carbon energy infrastructure	Depending on a particular LEP's remit, it may have scope to influence spatial planning, particularly around new commercial development sites. This provides an opportunity to create linkages with the local low carbon economy.	Communities that wish to invest in energy infrastructure might develop relationships with developers, so that installations can come forward on new sites (lowering development costs). Local and neighbourhood plans might conceivably facilitate this, although evidence would have to be strong.
Low carbon supply chain: investment, innovation and R&D	LEPs have a key role in supporting local stakeholders to direct investment into local supply chains and R&D. Where there is a strong or growing low carbon economy, or key sector, LEPs can support programmes that target relevant businesses.	Community energy projects might favour local contractors and implement innovations described by local universities, as part of an imperative to localism.
Inward investment: for nationally significant infrastructure	LEPs play a key role in engaging with companies proposing to expand or relocate to an area. Where companies are considering energy infrastructure, such as large-scale wind power and energy-from-waste and power	Communities can benefit from nationally significant infrastructure through community benefit funds, such as are in place for many large wind farms.

stations, LEPs can act as intermediaries with other stakeholders, perhaps engaging with developers on uses for waste heat in wider neighbourhoods.

Innovation and the knowledge economy	LEPs have played a role in establishing local need for European Regional Development funding (ERDF) for local universities and other specialist research facilities.	Communities can be engaged in trialling new technologies, for example neighbourhoods acting as test beds for smart metering and local balancing trials.
Skills for the low carbon economy	LEPs have a strategic role in supporting the devolved skills funding agenda. They are a forum for business to engage with the education sector on local requirements.	Green retrofit of the housing stock and the renewal of the energy distribution system present an opportunity for thousands of construction and engineering jobs. Local contracts are a mechanism that could boost local skills.
Circular economy and alt fuels: diverting waste streams into local use	Local energy interacts with policy relevant to waste and recycling. Where local stakeholders are collecting and converting waste to energy at scale, there may be an opportunity for LEPs to engage.	Community energy groups might make useful links with local food co-ops and agricultural waste producers and investigate anaerobic digestion for, e.g., community buildings.
Municipal energy: public sector ownership and operation	Investment in energy assets by the public sector could target activities that improve local competitiveness and reduce business consumer costs. LEPs can support these outcomes and encourage strategic investment through subregional (ERDF) and devolved low carbon funding.	The public sector, when investing in energy infrastructure, might co-invest with community energy groups. Community benefit funds for larger-scale infrastructure can engage local communities in projects that will impact on their neighbourhood.
Actions to improve air quality/environmental impact through cleaner technology	Local energy is part of a wider environmental sustainability agenda. Where major projects have environmental impact, the LEP should support processes that enable the full impact to be evaluated.	Some energy generation (wood-burning biomass boilers) that might be sponsored by community energy groups has local air quality impacts. Hydropower schemes can be implemented in such a way as to improve the river environment.
Local energy markets: enabling local consumers and generators to contract with each other	Local energy markets – wherein local consumers are matched with local generators – may be a mechanism by which renewable energy project business cases are supported, and they can also be a way to offer cheaper tariffs to local consumers, including fuel-poor households. LEPs may understand local energy markets in relation to the devolution agenda.	Community energy projects may benefit from a trend towards local energy markets.
Devolved funding, Local Growth Funds/EU legacy funding	LEPs' role as a mediator between local bodies and devolved national funding may sometimes have a low carbon focus, as is the case for EU Structural Investment Funds for Low Carbon in the 2014–2020 programme. Future devolved or Local Growth Funds may be available from government, and LEPs can act to understand local demand for projects.	Community groups have articulated that they could grow and expand through early interventions to support their activities. Community energy mentoring, kick-start funding and local carbon hubs are all potential ways in which local funding for low carbon could be directed towards community energy groups.

SECTOR CONSULTATION – EXPERT REVIEW AND COMMENT

Ricardo Energy & Environment has provided consultancy support and advice to the Liverpool City Region LEP in the preparation of this report.



Ricardo Energy & Environment facilitated a workshop with local stakeholders, provided a number of case studies, prepared sections of text and provided critical comment on interim draft versions of the report.

Ricardo Energy & Environment is an energy and environmental consultancy with over 40 years' experience. We are a leading provider of energy advice to UK, European and international clients.

Ricardo Energy & Environment's team has a long track record at the centre of the renewable energy sector, having been instrumental in the development of the industry since the 1980s. We have been an important advisor to UK government and local authorities on the development and deployment of all forms of renewable energy. We managed the UK's research and deployment programme on renewable energy for over two decades. We have worked with community energy groups to generate energy locally and we provide technical and commercial support to the national community energy programmes in Scotland and Wales.

Employing over 400 people, including internationally renowned technical experts, we are part of the Ricardo Group plc. Ricardo plc is a public company quoted on the London Stock Exchange and a constituent of the FTSE techMark100 and FTSE4Good Index, the pioneering global responsible investment index, for companies that demonstrate strong environmental, social and governance practices.



**Liverpool City Region
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The Liverpool City Region Local Enterprise Partnership (LEP) is the primary business-led economic development organisation in the Liverpool City Region. As one of 38 LEPs in the UK, it provides strategic advice to partners including local authorities, the Combined Authority and government in the allocation of funding to stimulate economic growth. The LEP also creates the conditions for growth by supporting business and developing the region's key growth sectors to enable the City Region to expand and create jobs.

The Low Carbon Economy Team at the LEP want to support sustainable energy projects of all kinds and scales.

This report was authored by James Johnson, LCR Sustainable Energy Projects Manager.

For more about the LEP and low carbon:

www.liverpoollep.org

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