



# Financing the local clean energy transition:

A joint programme to overcome  
our shared challenges



This is a project delivered in partnership by



Department for  
Business, Energy  
& Industrial Strategy

UK:  
100

Leeds  
Climate  
Commission



WALKER  
MORRIS



#localenergy

@beisgovuk @UK100\_ @LeedsCC\_News





“We have a fantastic opportunity to demonstrate what local leadership and collaboration can do to deliver innovation in low-carbon energy infrastructure that stimulates local economies and tackles fuel poverty. Our energy system is changing from a centralised system, to one where local technologies are becoming more important. Local authorities are playing a more prominent role in local energy. Many cities, including

Leeds, are actively pursuing district heating systems and renewable energy projects. Leeds has launched a pioneering Climate Commission to encourage investment in low-carbon, climate-resilient developments, saving millions of pounds as well as countering climate change. Accessing finance to deliver integrated local clean energy at scale remains a challenge for many, and that is why a partnership of local and national government and public and private investors is so important.”

**- Cllr Judith Blake, leader of Leeds City Council**



**Polly Billington**  
UK 100



**Andy Gouldson**  
University of Leeds

# Introduction:

**Every area of the UK has the potential to develop clean, local energy projects that deliver better homes, improved transport, high quality jobs, carbon reductions and long-term financial returns. Local authorities are key to making this happen. They have a long-term interest in the success of their communities, but many face challenges in identifying projects, developing the business case for investment and securing relevant sources of finance.**

This programme – supported by BEIS, and run by UK100 and the Leeds Climate Commission – seeks to address those challenges by bringing local authorities, developers and investors together. The aim is to accelerate the development of a pipeline of investor-ready clean energy projects.

Local authority frontrunners have generated ideas, developed business models and secured finance for innovative low-carbon projects around the UK. They show that it can be done, and there's much to learn from them.

We have gathered their experiences here. These examples point to the need for a serious long-term commitment from national, regional and local government. Regulations need to support the transition to clean energy to benefit the consumer and give business confidence. Capacity needs to be built and made available to local authorities if the experiences of these frontrunners are to become the norm across the UK.

How can local authorities engage work with partners to develop a pipeline of investable projects in their area? How can investors make best use of the enormous opportunities that exist? Where and how will local authorities access the advice and support they need?

Throughout 2019, we will be holding workshops across the country to bring together local councils, developers and investors, energy generators, regulators and operators. We will answer these questions, understand local practice, the barriers to investment and how they can be overcome. We hope this programme enables you, whatever your role in the energy transition, to make progress on your own projects and to contribute to the case for change.



- “What was once a niche topic, climate change, has evolved
- into the most important issue of our time.

Decarbonising our economy has become a strategic imperative, and we are now witnessing deeper – and genuine – engagement by the private sector in green finance. The UK has established itself as a leading international financial hub for the green finance sector, but it’s time to move things up a gear.

The Green Finance Taskforce, which I was honoured to chair, identified the importance of place based solutions to the decarbonisation challenge. The opportunities for green investment at a local level are plentiful, the task for us is to come together in a meaningful way to realise them.”

**- Sir Roger Gifford, Chair of the City of London Corporation’s Green Finance Initiative**



- “Local Authorities in the UK face a number of challenges,
- including central government funding, cost of care, reducing overall cost to serve and the increasing pressure to invest in housing. For Local Authorities, in a time where UK communities are in need of support, progressing a green agenda can help to serve communities’ long term needs while also improving efficiency.

Not only does a properly executed green agenda aid reputability, it has commercial benefits. Nottingham’s City Council, for example, has seen over £300,000 of yearly savings from its investment in solar energy.

The regulatory market will also shape attitudes towards green agendas and how we operate our communities in the ‘right way’. This is, of course, due to the ever growing need to act against climate change. In doing so, Local Authorities will see increasing pressure to deliver on their green agendas.

Climate change represents one of the greatest challenges faced by the world today. Banks have a direct environmental and social impact through their operational footprint, as well as indirectly in the way they mobilise capital, advise clients and develop products.”

**- Ross Taylor, Barclays Corporate Banking**

# A place-based Stern Report:

## Learning from experience in Leeds

**Global agreements and national commitments on climate change often take centre stage, but ultimately action must be taken at the local level. Many local authorities have faced questions of whether, and how, to develop policies on climate change, and if so, on what evidence should these policies be designed and delivered.**

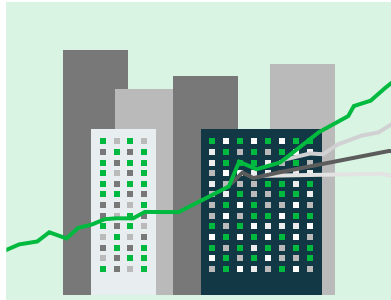
In 2012, Leeds City Council tackled this question head on. Working with the ESRC Centre for Climate Change Economics and Policy, they identified the most effective and efficient way to decarbonise the city, using detailed modelling that drew on the principles of the Stern Review and the work of the Committee on Climate Change.

Their ‘mini Stern review’ has paved the way for work on low-carbon development in many more cities around the world and has led to the founding of the Leeds Climate Commission (LCC). LCC has since updated the review and is devising road maps for financing and delivery that encourages investment in low-carbon, climate-resilient development. The aim is to save millions of pounds for the city as well as countering climate change.

Statistics for every local authority in the UK are available at:  
[www.candocities.org](http://www.candocities.org)

# The facts

\*Source: The Economics of Low Carbon Cities, A mini-Stern review for the City of Leeds 2017



**£1.2 billion**

Leeds spent a total of **£1.2bn** last year on all of its energy and fuel bills



**5.9 percent**

That means **5.9%** of everything that is earned leaves the city to pay for energy



**£277 million**

If it invested in profitable energy and low carbon stuff, it could save **£277m** a year



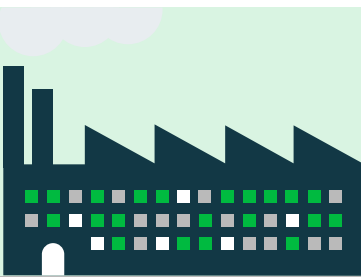
**£81 million**

This means households in Leeds could save **£81m** a year



**£31 million**

Schools, hospitals, offices and other buildings could save **£31m** a year



**£13.8 million**

Industry in the city could cut its costs by **£13.8m** a year



**4,200 job years**

This would create **4,200 years** of extra employment in the city



**23 percent**

This would allow the city to cut its carbon emissions by **23%**, over and above what is happening anyway







# Financing the transition:

## Progress since 2017

**Since UK100 published *Financing the Transition* in September 2017, there has been significant change in the clean energy sector. Many initiatives have launched that will help more clean energy projects traverse the ‘valley of death’ that separates projects from investment.**

- The government’s Clean Growth Strategy outlined a range of commitments and targets to underpin the shift to a decarbonized economy.
- The Industrial Strategy named Clean Growth as one of the Grand Challenges facing the country.
- The Prospering from the Energy Revolution programme, which aims to develop world-leading local smart energy systems, has invested £70 million in innovative designs and local projects.
- Local Energy Hubs have been established across England, with legal and financial expertise to facilitate investment into clean growth projects.

There’s also been an acknowledgement that place-based, local approaches are essential to meet the transformation we require.

- The Environmental Audit Select Committee’s report on Green Finance, exploring the challenges of access to finance for local projects, cited UK100’s evidence about the barriers local energy projects face in securing private investment and recommended;

*“The Government should explore how to create partnerships with local authorities to provide technical and development expertise to enable more towns and cities to access finance for green projects.”*

- The government’s Green Finance Task Force made four recommendations on local clean energy, including setting up Clean Growth Regeneration Zones and increasing the awareness of green finance opportunities among Local Authorities. They said;

*“Greater action is needed to unlock the full potential of place-led investment across UK regions and cities. This is especially the case as the UK prepares to exit the European Union and lose access to technical assistance facilities.”*

**The case for local clean energy partnerships, led by local authorities and involving their community, their academic institutions, their businesses and their key employers has never been stronger.**



# Clean energy action partnerships:







Local authority  
frontrunners are  
showing how  
it can be done.  
We should learn  
from them.



# Cambridgeshire:

Cambridge County Council is putting renewables and clean growth centre stage with a scheme dedicated to developing and implementing low-carbon projects on public sector assets across the region.

The Mobilising Local Energy Investment (MLEI) team was set up using a €700,000 grant from Intelligent Energy Europe. The grant paid for staff capacity and training, the procurement of a development partner and the work with politicians to create the business case for projects. Thanks to a successful pipeline of projects, the team soon became self-funding.

MLEI now have 98 projects across the county at various stages, with a potential total investment of £84,196,124. The projects span schools, council buildings and community projects with technologies ranging from LED light bulbs and biomass boilers to solar and smart energy grids.

The schools programme has been particularly successful. The MLEI provides loans to pay for energy saving measures upfront, helping schools plan for the future, operate more efficiently and reduce emissions. 53 schools have signed up so far, reducing their operating costs while upgrading their often aged heating systems.

On a large scale, the council has invested £10 million in a solar park, which is already generating revenue of £1 million a year. £350,000 of this is going directly into front line services such as adult social care. They're not stopping there. 2019 will see the delivery of three microgrids on park-and-ride sites that include solar, battery storage and EV charging.

Retrofit programme:

**7 council buildings,  
energy saving  
£52,173 pa**

Energy Efficiency Fund:

**31 sites upgraded,  
saving £53,790 pa**

Project implemented:

**Capital cost £66.6 million,  
net return £114.2 million**

- “Cambridgeshire County Council’s
- ambitious energy programme is driven by the Council’s need to generate income, cut carbon emissions and reduce energy costs on its assets to continue the delivery of quality services to our communities. Demand to create smart, high tech communities where business can thrive has pushed staff and members at the council to learn, seek new innovations and develop new business models for energy projects. This makes energy an exciting area to be involved with.”

- Cllr Josh Schumann

- “This is a major investment for
- Glenrothes town centre. It will not only provide clean sustainable energy but will help to secure jobs and reduce fuel poverty in Glenrothes.”

- Cllr Ross Vettraino



Cost: **£24 million**

Energy generated:

**Currently 9,000 MWh of heat. Up to 15,000 MWh when expanded**

Carbon saved:

**Projected 2,087 tonnes pa**

Money saved:

**Projected 10% of energy costs per customer pa**

### Case study:

## Glenrothes, Fife:

Launched in 2015, the Low Carbon Infrastructure Transition Programme (LCITP) is a partnership between the Scottish Government, Scottish Enterprise, Highlands & Islands Enterprise, Scottish Futures Trust and sector specialists.

The programme aims to stimulate private investment and maximise Scotland’s vast potential for low-carbon energy. The LCITP team provide a range of expertise, from project development to financial advice, to support the development of private, public and community-owned projects across Scotland. One of their latest successes is the Glenrothes Energy Network.

The Glenrothes Energy Network is a collaborative local heat scheme jointly funded by Fife Council, Scottish Government and the European Union. It will provide sustainable low-carbon heat to businesses and homes in Glenrothes. The network will be designed to be scalable, with the opportunity to supply further homes across Fife.

The heat for the network will be provided by RWE’s Markinch CHP biomass plant in Fife; Fife Council will own the network and act as service provider and the Scottish Government is supporting the development through the LCITP (match funded by the European Regional Development Fund).

The scheme will not only help Fife Council reach its goal of reducing carbon emissions by 42% by 2020, it will provide clean sustainable energy, secure jobs, cut air pollution and reduce fuel poverty in Glenrothes. The project is expected to be operational in the first quarter of 2019.



# Leeds/WYCA:

Leeds City Council is developing a groundbreaking District Heating Network (DHN) that will use heat generated by processing waste at the council's Recycling and Energy Recovery Facility. The heat network, one of the UK's largest, will deliver low-carbon heat in the form of hot water, through 16.5km of super insulated underground pipes in and around the city centre.

Even though it wasn't ready for private finance, Leeds City Council decided to invest in the DHN in the confidence that the project will grow organically and has strong potential to be refinanced over time. This bold step will effectively de-risk it for future investors. The project also received £4 million funding from West Yorkshire Combined Authority (WYCA) and Leeds City Region Enterprise Partnership (LEP), and an additional £5.8 million of European Regional Development Funding.

The initial phase will provide heat to 1,983 council homes as well as public sector and commercial customers. New internal heating systems and smart metering solutions will be provided to give customers greater control over their energy consumption, helping to tackle fuel poverty and further reducing the bills of vulnerable residents.

The network is set to bring major benefits to Leeds, cutting carbon, improving air quality and creating jobs. It will bring further benefits for new developments, helping them comply with local planning policies, removing the need for on-site heat generation as well as capital costs associated with enhanced building fabrics or low-carbon technologies.



Cost: **£35 million**

Carbon saved:

**Projected 22,00 tonnes**

Money saved:

**Projected 10%-25% per household pa**

- “District heating is notoriously hard to initiate
- and we knew that without council investment we would lose this unique opportunity to create a citywide district heating network. We're proud to have supported construction of this first stage and look forward to some of our most vulnerable residents receiving lower cost and lower carbon heat, generated by waste thrown away in the city. I hope to work with others to continue to extend the network.”

**- Cllr James Lewis**

- “With 70% of greenhouse gases coming
- from cities and 70% of our population forecasted to live in urban areas by 2050, we believe energy efficiency and CO2 neutrality for cities is not only possible but a necessity. It is projects like this that will help make this a reality. We look forward to sharing the results with the community in the coming months.”

- Carl Ennis,  
Siemens Energy Management

Manchester Art Gallery:  
**£40,000 savings from  
24% less gas use and  
12% less electricity use**

Manchester  
Metropolitan University:  
**400kWh Lithium-ion  
battery storage. 375kWh  
combined heat and power  
generation and 157kWh  
solar PV**

#### Case study:

## Siemens, Manchester:

How can we make our cities fit for the future?

Siemens, Manchester City Council, University of Manchester and Manchester Metropolitan University are working together to transform Manchester's Oxford Road Corridor into a 'Smart Quarter'. The area will play host to innovations designed to reduce energy bills and carbon emissions, flatten peak demand and increase the use of renewable and low-carbon energy.

The project will make use of a range of technologies, including building management systems that control energy consumption, solar PV and battery storage. One standout technology is a central controller, which integrates with the Building Management Systems of several buildings in the Corridor. Scaled across Manchester it could save 42,000 tonnes of CO2 each year.

€6 million for the project came from the EU Horizon 2020 research and innovation programme. Its aim is to create a smart energy network that can be replicated in other cities. With installation now complete, Siemens are monitoring the impact on energy usage and demand. Looking ahead, Siemens and partners have ambitions for 20%-25% of the energy used in the Oxford Road Corridor being delivered by local, low-carbon resources as part of Manchester City Council's commitment to be zero carbon by 2038.



# Nottingham:

Community energy is rarely adopted by new developments. From concern it may put off buyers and management companies, to regulatory uncertainty around subsidies, there are many barriers to overcome. Project SCENe wants to change this. SCENe is an R&D collaboration project funded by Innovate UK and the Energy Research Accelerator (ERA) that includes University of Nottingham, Blueprint and SmartKlub. Its aim is to create a model of community energy that enables all future housing developments to embrace renewables in a subsidy-free model.

How? Discounted green energy delivered to households in exchange for using the community's rooftops for solar panels, public and private EV charging points, ground-source heat pumps, battery technology and thermal heat stores to make the best use of the power generated.

The Trent Basin Waterside development in Nottingham has proved the ideal testbed for Project SCENe. Phase 1 involved retrofitting solar panels for 46 households, including an apartment block. The next phase involves installing solar at the build stage on a further 36 houses. This will be followed with a combination of solar and ground-source heat pumps on future stages.

The resulting system creates a more stable electricity grid and will deliver better financial returns than would be achieved through individual solar installations. The project consortium also set up an Energy Services Company to manage, maintain and invest in the energy infrastructure. Every household in the project has the right to a share in the company, giving them reduced energy costs from selling surplus energy back to the grid.

Energy generation:

**3kW system average per house  
generating 4,000 kWh pa**

Carbon saved:

**398 tonnes pa from the 200kW  
currently installed**

Money saved:

**25% of energy costs per  
household**

- “We want to move community
- energy from niche to mainstream by creating a hassle free model that makes complete sense for both the residents and developer. Working hand-in-hand as a consortium with the wider City of Nottingham, we hope to achieve that by 2020.”

**- Charles Bradshaw-Smith,  
SmartKlub Ltd**

- “This is the latest example of how we’ve
- been able to use renewable energy to reduce our carbon footprint as well as save a significant amount of money at a time when we have to deliver large savings from our budget. I am delighted we have been able to flick the switch to this green energy source.”

**- Cllr Maureen Penny**

Cost:

**£2.2 million funded by Swindon Borough Council**

Energy generated:

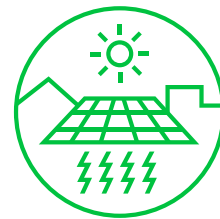
**2,5GWh/y**

Carbon saved:

**1075 tonnes pa**

Money saved:

**£185,000 in avoided grid electricity costs in year 1**



#### Case study:

## Swindon:

In 2014, Swindon Borough Council set up Public Power Solutions (PPS), a wholly owned subsidiary, to develop new energy projects on behalf of any UK public sector body. To date, PPS has developed 185MW of solar capacity for various public sector organisations.

PPS is based at Swindon’s recycling centre, a Solid Recovered Fuel (SRF) Plant, which diverts 97% of the borough’s waste from landfill and transforms it into a valuable fuel. Keen to go a step further, the council began looking for a renewable way to power the plant.

The council teamed up with PPS to develop a solar farm to supply power directly to the recycling centre and SRF Plant. The solar farm was switched on in December 2018, with future plans to deploy both behind-the-meter and grid-connected battery storage capacity, delivering grid-balancing revenue and other services to PPS and neighbouring businesses.

The scheme is projected to operate profitably with only a small subsidy and a private-wire contract. The generation capacity will also facilitate future expansion plans including electric vehicle charging. PPS is working on a business case for a 1.2MW battery as the next phase of the development to optimise the usage from the solar PV. This stepped approach is one that can be rolled out to other public sector sites in the UK.





Department for  
Business, Energy  
& Industrial Strategy

UK  
100

Leeds  
Climate  
Commission

E·S·R·C  
ECONOMIC  
& SOCIAL  
RESEARCH  
COUNCIL

WALKER  
MORRIS







With thanks to our sponsors:



**BARCLAYS**

**SIEMENS**

*Ingenuity for life*



**sse**  
Enterprise

| Utilities

**NEXTENERGY**  
CAPITAL

**#localenergy**