

REPORT

# CITY ENERGY



## A NEW POWERHOUSE FOR BRITAIN

Reg Platt,  
Will Straw,  
Jimmy Aldridge  
and Jack Williams

July 2014  
© IPPR 2014

Institute for Public Policy Research

## ABOUT IPPR

IPPR, the Institute for Public Policy Research, is the UK's leading progressive thinktank. We are an independent charitable organisation with more than 40 staff members, paid interns and visiting fellows. Our main office is in London, with IPPR North, IPPR's dedicated thinktank for the North of England, operating out of offices in Newcastle and Manchester.

The purpose of our work is to conduct and publish the results of research into and promote public education in the economic, social and political sciences, and in science and technology, including the effect of moral, social, political and scientific factors on public policy and on the living standards of all sections of the community.

IPPR  
4th Floor  
14 Buckingham Street  
London WC2N 6DF  
T: +44 (0)20 7470 6100  
E: [info@ippr.org](mailto:info@ippr.org)  
[www.ippr.org](http://www.ippr.org)  
Registered charity no. 800065

This paper was first published in July 2014. © 2014  
The contents and opinions in this paper are the author(s) only.

**BOLD** IDEAS  
for CHANGE

# CONTENTS

<b>Summary</b> .....	<b>1</b>
The problem: a broken market and an energy crisis .....	1
The potential: a new alternative to the Big Six .....	2
The impact: lower bills, energy investment, jobs and security .....	3
It is time for the cities to act .....	4
<b>Introduction</b>	
Making our cities energy powerhouses.....	5
A greater role for cities .....	5
City energy: an opportunity for local and national government.....	5
<b>1. The role for cities in the energy supply market.....</b>	<b>9</b>
1.1 The potential for ‘distributed generation’ .....	9
1.2 Barriers to distributed generation .....	11
1.3 How some energy consumers are being overcharged .....	12
1.4 How cities could help consumers to get a fairer price.....	14
1.5 Energy supply business model options for cities.....	16
<b>2. The role for cities in investing in energy .....</b>	<b>19</b>
2.1 The investment challenge.....	19
2.2 The collapse of the utility business model.....	19
2.3 Why cities should become major investors in energy .....	21
2.4 Options for cities to raise finance for investment.....	22
<b>Conclusion</b> .....	<b>27</b>
Summary of recommendations .....	28
<b>References</b> .....	<b>29</b>
<b>Appendix: In-depth analysis of options for city engagement in energy supply ...</b>	<b>34</b>

## ABOUT THE AUTHORS

**Reg Platt** is a senior research fellow at IPPR.

**Will Straw** is associate director for climate change, energy and transport at IPPR.

**Jimmy Aldridge** was a research assistant at IPPR, and is now an energy advisor to Greenpeace.

**Jack Williams** is a research assistant at IPPR.

## ACKNOWLEDGMENTS

The authors would like to give special thanks to the members of the Core Cities Low Carbon and Energy Portfolio Group for collaborating with IPPR and sharing insights into their activities on energy. This have been invaluable for generating the ideas and evidence that are presented in this report. Particular thanks go to Bill Edrich, Alex Moczarski, Mark Atherton, Suzanne Barrett, Jane Forshaw and George Munson. Thanks also go to Peter North and Robert Tudway at the Greater London Authority.

Thanks also go to all of the other people we have spoken to while developing the ideas for this project, of which there too many to mention individually. This project is the result of innumerable conversations with stakeholders across the energy sector over the past few years. Particular thanks for their recent contributions, which are reflected directly in the report, go to Jonathan Graham, Tim Rotheray, Oliver Griffiths, Will Martindale and Syed Ahmed.

Special thanks go to Hywel Lloyd for contributing research to the project, and to Nick Pearce, Graeme Cooke and Ed Cox at IPPR for contributing their wealth of expertise across different public policy areas and for commenting on earlier drafts of the report.

Finally, we would like to thank Greenpeace, whose generous funding support has made this project possible.

# SUMMARY

Britain's cities could transform efforts to create a cleaner, smarter and more affordable energy system, provide an alternative to the big utilities, and boost their local economies in the process. Many cities are already starting to seize these opportunities. Our ambition is to encourage more cities to engage in energy markets, while supporting those that are already pioneering new forms of activity to go further.

This report looks at what cities can do in two areas: engaging in the energy supply market, and raising finance for investment in low-carbon energy infrastructure – particularly generation. It argues that together these steps would allow cities to tackle Britain's energy crisis.

## The problem: a broken market and an energy crisis

Britain faces an energy crisis with five key issues.

- 1. Low-income consumers are being overcharged:** low-income households tend to be on more expensive tariffs, such as prepayment meter tariffs, and are overrepresented among consumers who have never switched supplier in order to find a better deal.
  - In 2013, the gas bills of customers who had not switched supplier since the market was opened to competition were on average £76 higher than those of customers who had switched (IPPR 2014).
  - The electricity bills of customers who had not switched supplier since the market was opened to competition were, in 2013, on average £27 higher than for customers who had switched (ibid).

Ofgem recently cited this differential charging as evidence that competition between energy suppliers is not fully effective (Ofgem 2014a).
- 2. There is a crisis of trust in energy companies:** exceptionally low levels of trust in energy companies (Edelman 2014) stops some consumers engaging in the market to look for a better deal, and undermines public confidence in clean energy projects.
- 3. There is a green finance gap:** the Green Investment Bank (HOC 2014) estimates that investment totalling £200 billion is required in the power sector and supporting infrastructure alone up to 2020. The additional investment requirement in residential energy efficiency improvements could be as much as £125 billion (EBR 2014 forthcoming). However, the Environmental Audit Committee has recently warned that under half the annual investment required in the power sector (£8–£10 billion out of £20 billion) is currently being delivered, and utilities are ill-equipped to make the investments off their own balance sheets (ibid).
- 4. The British economy is missing out on benefits from low-carbon subsidies:** in 2012, 50.4 per cent of offshore wind generation and 69 per cent of nuclear generation was owned by nine foreign state-backed companies. Even where the generation is not foreign state-owned it is often owned by companies from outside of Britain. At the margin, foreign owners are more likely to use supply chains, employ management, make investments and carry out research and development from their country of origin than from Britain. Their shareholders are also likely to be foreign, which means that any dividend goes overseas.

5. **Local generators are being held back:** smaller-scale electricity generation is increasingly cost effective, supports growth by smaller energy companies, delivers local jobs and skills development opportunities, and creates opportunities for consumers, business and local authorities to own a stake in the low-carbon transition. Project developers have continually faced problems selling their energy to the largest six energy companies ('Big Six' – British Gas, EDF Energy, E.ON UK, npower, Scottish Power, SSE), whose business models are fundamentally threatened by the rise of local generation.

### The potential: a new alternative to the Big Six

The C40 Cities Climate Leadership Group of pioneering megacities points out that because cities account for two-thirds of the world's energy consumption and 70 per cent of global CO<sub>2</sub> emissions, they will necessarily be the engines of the green economy (C40 2012) and can play a key role as purchasers of locally produced power, thereby opening up the energy market.

The potential is huge. For example, the city of Munich in Germany has a target to supply the entire municipality of 1 million people with renewable electricity by 2025. The city has already invested €900 million in renewable energy projects, and it has plans to invest a total of €9 billion to deliver its 2025 target (C40 2014).

This report highlights the fact that Britain's cities are already starting to play a substantive and innovative role in Britain's energy market – tackling fuel poverty, investing in local clean energy and benefiting the local economy.

The Greater London authority (GLA) and members of the Core Cities group (including Nottingham and Bristol) intend to engage in the energy supply market. City engagement in energy supply (see box below) would unlock the potential of local generation and generate a new source of income for cities. The high levels of trust that cities and local authorities have from their local communities means that city-energy suppliers could prove to be very popular, which would disrupt the energy market and help repair the current crisis of trust.

In terms of investment, some leading local authority pension funds have already begun to invest in low-carbon energy. For example, Lancashire County Pension Fund has committed approximately £200 million to low-carbon projects including a £12 million investment in Westmill Solar, a UK solar cooperative. But there is greater potential to invest in energy.

Some cities are also taking innovative action to boost their local economy. Aberdeen, for example, is planning to become a global pioneer in the use of hydrogen produced using excess power from nearby offshore wind farms. While the Bristol Solar City project aims to install 1GW of solar PV by 2020, with opportunities for local community groups to invest in installations on council properties rent-free.

---

#### Energy supply business model options for cities

Some local authorities are pioneering an innovative new form of activity in city energy by seeking to engage in the energy supply market. In this report we set out the case for cities to engage in energy supply and identify the following five options.

1. **Fully licensed supplier:** a city sets up and runs an independent supplier, taking full responsibility for delivery and meeting licence conditions – as is being pursued by Nottingham city council.
2. **Joint venture:** a city works with one or more third parties to set up and run an independent supplier.

3. **Licence lite:** a city becomes a 'junior supplier' with responsibility for some aspects of delivery and meeting licence conditions, while a partner 'senior supplier' is responsible for the rest of the business – as is being pursued by the GLA.
4. **Partnership:** a city works in partnership with an existing, licensed supplier and takes responsibility for some operational aspects of the supply business in its area.
5. **White label:** a city licenses use of its brand to an existing supplier who uses it to market to customers in the local area.

To assist cities in determining which model they might pursue, this report includes a detailed analysis of the pros and cons of the different approaches.

### The impact: lower bills, energy investment, jobs and security

With the right policies in place, cities in Britain could both help deal with the energy 'trilemma' – keeping bills low, reducing emissions, ensuring energy security – and also generate jobs and growth.

- **Cut bills for low-income households:** research by IPPR (2014) has revealed that gas and electricity bills for customers who had not switched in 2013 were £76 and £27 higher per year respectively. By engaging in the energy supply market, targeting lower-income groups and controlling the tariffs they pay, cities could help tackle local fuel poverty. Municipal ownership of clean energy may allow cities to keep bills low by reinvesting subsidies in energy efficiency.
- **Invest to decarbonise the power supply:** we set out three ways in which cities could access significant levels of finance that could be channelled into low-carbon energy investment and help towards the UK's decarbonisation targets. These go above and beyond existing options, including the Public Works Loan Board and EU funding, which are uncertain sources.
  - *Municipal bonds:* bonds have been used in the past for municipal energy infrastructure and offer cities and local authorities a way to raise finance that is independent from national government. Cities should establish a collective bond agency to issue 'green' bonds on their behalf to minimise the fixed costs and complexities of single bond issuances, including for low-carbon infrastructure.
  - *Pension fund investments:* with a total of £150 billion invested, the 101 Local Government Pension schemes in the UK together represent the second-largest pension fund in the country. If only a small portion of this money was directed towards low-carbon projects it could make a huge contribution to the UK's investment needs.
  - *The Green Investment Bank (GIB):* the GIB could be a key driver of capital to cities for energy infrastructure investment. Already the GIB is providing funding for local authorities that want to upgrade their street lighting as part of a major project to retrofit all of Britain's street lights, starting with Glasgow.
- **Build system resilience** through affordable distributed generation: the costs of small-scale, distributed power generation – such as solar, and combined heat and power – have fallen dramatically. By supporting and investing in local generation, cities could not only cut the costs of decarbonisation but also increase their resilience by diversifying the sources of their energy.
- **Generate jobs and growth:** a typical wind farm could generate an annual income through the business rate retention scheme of £50,000 for local authorities (Deans 2013). But cities could also ensure that local communities benefit from national subsidies. For example, Bristol city council is making council roof space free to potential investors in solar panels which will ensure some of the subsidies for decarbonisation are captured in the city (O'Nians 2013).

## It is time for the cities to act

The cities want more powers from national government so that they can become powerhouses of the British economy. At the same time, the energy system is being radically transformed by the need to decarbonise and the emergence of new, clean energy technologies.

There is a clear opportunity for cities to be at the forefront of the changes that are happening in the energy sector. They can achieve this by engaging in energy supply and investing in low-carbon infrastructure. Through these actions cities can boost their local economies, demonstrate that they have the ingenuity, skills and capacity to take on more powers, and raise their influence at the national level.

### Recommendations for cities

- Cities should consider engaging in the energy supply market where this can support efforts to tackle energy affordability and promote local generation.
  - Local authority organisations, including the Association for Public Service Excellence, the Local Government Association (LGA) and the Local Government Information Unit, should prioritise supporting local authorities to understand the various business models that are available.
- Cities should explore opportunities for investing in low-carbon energy development.
  - Cities should work with the Green Investment Bank on discrete low-carbon infrastructure projects where there is a clear rate of return on investment.
  - Cities should back the LGA's plans to create a collective agency for the issuance of local authority bonds, including green municipal bonds of the kind already used in South Africa. Clear and transparent rules governing the market should be established to instil investor confidence.
  - Local authority pension funds should, on an individual basis, sign up to the Principles for Responsible Investment (PRI). They should ensure that the investment managers they appoint are taking environmental, social and corporate governance (ESG) factors into account by writing this requirement into their investment manager agreements and requiring them to report back on how they are managing these factors across all assets within their portfolios.

### Recommendations for central government

- A Local Authority Energy Unit should be created within the Department for Energy and Climate Change that brings together guidance for cities and local authorities relating to energy supply, heat delivery, energy efficiency programmes, renewable energy deployment and access to finance. This unit should harmonise the expertise and advice that is currently held within different areas of the department.
- The UK government should echo the European Commission and encourage all UK pension funds, including local authority pension funds, to adopt the Principles for Responsible Investment (PRI). Responsible investment principles should be enshrined in domestic legislation, as they have been in many other countries.
- Fiscal rules should be designed to ensure that local debt for capital expenditure from local authority bonds or green municipal bonds do not count against legitimate targets to bring current spending back to balance in the medium term.
- The Green Investment Bank should continue to work with cities on low-carbon energy projects, and it should be given borrowing powers immediately.

# INTRODUCTION

## MAKING OUR CITIES ENERGY POWERHOUSES

### A greater role for cities

Deepening globalisation, rapid technological development, increasing resource scarcity and climate change are set to place intense pressures on national economies in the 21st century. Nowhere are these challenges being played out more immediately than in the energy sector, which is being fundamentally transformed because of decarbonisation requirements and by the emergence of new technologies.

If the British economy is to thrive in the face of these challenges it is essential that cities have independence to grow and innovate. Cities are the powerhouses of the British economy. They take up just 9 per cent of the country's landmass but account for 54 per cent of the population, 58 per cent of jobs, 60 per cent of the economy and 72 per cent of high-skilled workers (Centre for Cities 2013). Excluding London, eight cities in the UK have a population of over 400,000 and 28 have a population of over 200,000.

As it stands, the potential of Britain's cities is not being captured. Across the world big cities normally outperform their national economies, but in Britain only London does so (Core Cities 2013). Smaller cities, such as top-tier local authorities or unitary councils and combined authorities, also have a critical role to play in the British economy.

There is a growing debate about the degree of autonomy that cities should have from national government to enable them to perform better economically. For example, the eight biggest English cities outside London – Birmingham, Bristol, Leeds, Liverpool, Manchester, Newcastle, Nottingham and Sheffield – working together as the Core Cities group, have stated that by 2030 they want to become financially independent of government, producing more money from taxes than is spent delivering public services (ibid).

For its part, national government is becoming increasingly willing to give power to these core cities (DPMO et al 2011). Launched in 2011, a new initiative called city deals involves agreements between government and cities that give the latter control over decisions that affect their area to help businesses start up and grow, have greater control over the levers of economic growth, and decide how public money should be spent. The first city deals were with the Core Cities. The second wave of city deals involves the next 14 largest 'key' cities outside of London and their wider areas, and the six cities with the highest population growth during 2001 to 2010.

The Labour party plans to boost city autonomy to drive the local economy by devolving up to £30 billion of spending per year and potentially giving cities greater powers to borrow and invest (O'Donnell 2014).

### City energy: an opportunity for local and national government

Energy should be central to debates about the cities. The energy sector is going through a period of profound transformation, underpinned by the need to tackle carbon pollution and driven by the disruptive force of new technologies. Within the

changes that are taking place there is an array of new opportunities for cities to get involved in the energy markets and, by doing so, increase their independence, boost their local economies, improve local social conditions, contribute to national policy objectives and raise their influence at the national policy level.

In fact, as the C40 Cities Climate Leadership Group points out, because cities account for two-thirds of the world's energy consumption and 70 per cent of global CO2 emissions they will necessarily be the engines of the low-carbon economy (C40 2012).

The potential is huge. For example, in Germany the city of Munich has a target to supply the entire municipality of 1 million people with renewable electricity by 2025 (C40 2014). The city has already invested €900 million in renewable energy projects and it has plans to invest a total of €9 billion to deliver its 2025 target.

By acting on opportunities that exist in the energy sector, cities can demonstrate that they are capable of taking on more powers and rising to the challenges of the 21st century. In fact, the same opportunities exist for larger local authorities.

Some cities and local authorities are already seizing new opportunities to engage in the energy sector. Figure A.1 and table A.1 together give a snapshot of the breadth of initiatives that are underway. From Bristol's success in being awarded the honour of European Green Capital 2015 to Manchester's groundbreaking international collaboration on 'demand side response' technologies, and from Aberdeen's pioneering work with hydrogen to Woking's investments in distributed generation, authorities are demonstrating that they have a willingness to innovate and lead on energy.

Building on the work of leading authorities, this report puts the focus on leading-edge actions that cities *can take now* within the energy sector, without requiring new powers from government. We look in detail at two forms of innovative activity that could have a transformative impact on local economic and social conditions and the energy sector in general which city regions should undertake. These are, first, engaging in the energy supply market, and second, raising finance for investment in energy projects. By doing so, our ambition is to encourage more cities to engage in energy markets while supporting those that are already pioneering new forms of activity to go further.

We also make recommendations for how central government could facilitate the development of city energy and unlock a level of delivery that would make a substantial contribution to national carbon reduction and renewable energy targets.

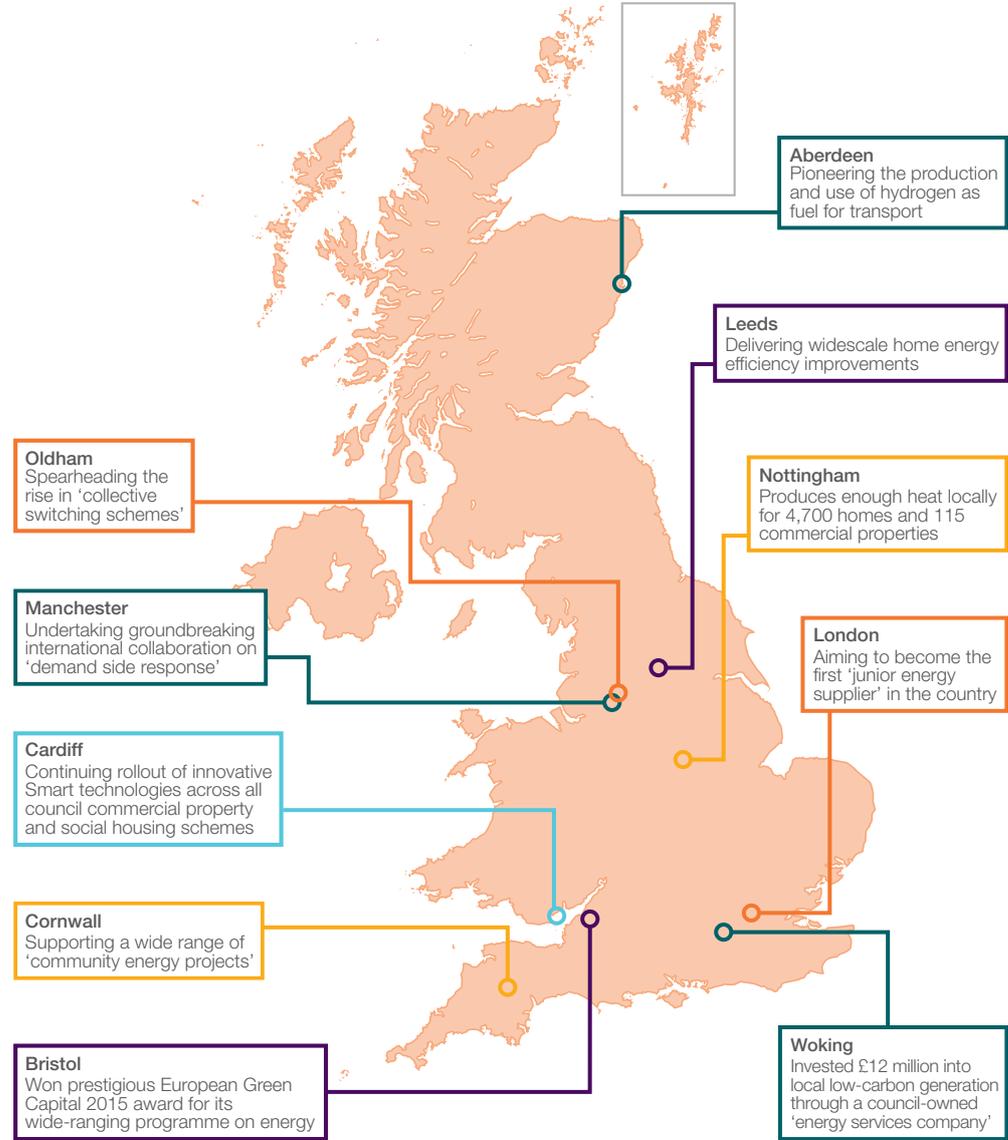
In chapter 1 we explore the opportunity for cities to engage in the energy supply market. We show how this could substantially improve energy market conditions by unlocking growth in locally based electricity and heat generation and ensuring that low-income consumers can access better prices. Cities would benefit by encouraging local investment, tackling fuel poverty, generating a new source of income, and increasing their ability to coordinate energy initiatives in their area. We set out a range of models for city engagement in energy supply with key considerations for each.

Chapter 2 then looks at how the collapse in the financial health of the major utilities means that central government must ensure alternative investment strategies for low-carbon infrastructure are delivered. Cities, we argue, could be a valuable new source of investment, and we set out a number of options that cities could pursue in order to raise finance.

The report concludes by urging city leaders to drive forward this agenda.

**Figure A.1**

Energy activities already occurring at the city and local authority level across Britain



**Table A.1**

Energy activities already occurring at the city and local authority level across Britain

City/local authority	Activity	Detail
<b>Aberdeen</b>	Hydrogen Economy	Building on its abundant supply of local renewable wind energy, the city is pioneering the use of hydrogen as fuel. Hydrogen, produced from water using the electrolysis technique during periods of excessive renewable generation, is being used to power the world's largest fleet of hydrogen buses (ACC 2013).
<b>Bristol</b>	European Green Capital 2015	Bristol has been awarded this prestigious award (Bristol Green Capital 2015) in recognition of the city's highly ambitious and innovative £140 million energy investment programme, which covers everything from renewables deployment to comprehensive energy efficiency auditing and ownership of the electricity network.
<b>Cardiff</b>	Smart Meters	Cardiff is taking the lead in the smart meter roll-out and already has a meter in 90 per cent of the council's corporate buildings, with meter readings made viewable to the public through an online platform (Carbon Culture 2014). The city is now focused on deploying smart meters in the council's social housing.
<b>Cornwall</b>	Community Energy	Cornwall Council has supported a wide range of community energy projects throughout the county through a revolving investment fund of £2 million (CC 2013 and CC 2014). The nature of the projects is very diverse covering electric vehicles, energy efficiency and renewable energy, including geothermal, marine, biogas and solar.
<b>Leeds</b>	Energy Efficiency	The Wrap Up Leeds programme led to 20,000 lofts and cavity walls being insulated in 2012 (LCC 2013). Plans are underway for a new programme in which households will be offered a comprehensive energy solution combining energy efficiency and small-scale renewables.
<b>London</b> (Greater London Authority)	Energy Supply	The GLA is the first organisation to try and become a 'junior supplier' under Ofgem's 'licence lite' model (GLA 2012). If successful the GLA intends to purchase locally produced energy from heat, waste and renewable sources and supply large local consumers, such as Transport for London, at preferential rates.
<b>Manchester</b> (Greater Manchester Combined Authority)	Smart Demand Response	Through a groundbreaking international collaboration with Hitachi, funded primarily by a semi-governmental Japanese organisation, Manchester is trialling innovative technologies and techniques to manage demand for energy. Through the Smart Community Demonstration Project, 600 air-source heat pumps will be installed into council-owned homes linked to a 'smart' aggregation system that will reduce the level of electricity used at times of peak demand when prices are at their highest (Hitachi 2014).
<b>Nottingham</b>	Local Generation	Nottingham has a legacy of local heat production stretching back to the 1960s, including for example the Eastcroft energy-from-waste combined heat and power plant (Enviroenergy 2014). Enough heat is generated locally for 4,700 homes and 115 commercial properties, at the same time as 20GWh of electricity is generated (Greener 2010).
<b>Oldham</b>	Collective Switching	Oldham has spearheaded the rise in collective switching schemes, in which people pool their collective bargaining power to get lower tariffs from energy companies. The 'Power to the People' scheme involved over 8,000 residents and achieved an average saving of £171 for participants in the first year it operated (Scheerhout 2012). Oldham has since run a number of additional schemes and is now collaborating with 10 other local authorities.
<b>Woking</b>	Low-carbon Investment	The council-owned energy services company, Thamesway Energy Ltd, has invested £3 million in buying legacy energy generation assets with a further £9 million spent on new generation assets, including combined heat and power plants and renewables (C40 2011). As a result of these investments, more than 60 local generators now provide local customers through a 'private wire' network which is 99.85 per cent self-sufficient from the grid (Greenpeace 2006).

**Note:** These examples have been picked to illustrate the breadth of initiatives occurring and only provide a snapshot of the vast amount of activity that is taking place.

# 1. THE ROLE FOR CITIES IN THE ENERGY SUPPLY MARKET

*In this report the term 'energy supply' is used to refer to the business of procuring energy from generators and selling it on to the end-user: consumers and businesses. This is sometimes referred to as 'energy retailing'. 'Energy generating' is here used to refer to the business of generating energy and selling it to suppliers.*

Several cities, including London (through the Greater London authority) and members of the Core Cities group, have set out their intentions to engage in the energy supply market. In this chapter we examine the case for city involvement in energy supply and set out how this could boost growth in local generation developments, help ensure lower-income consumers are not being overcharged for their energy, and generate a new income stream for cities. We identify a range of different approaches that cities could adopt.

## 1.1 The potential for 'distributed generation'

The term 'distributed generation' (DG) refers to smaller-scale electricity generating technologies that connect to the electricity distribution networks.<sup>1</sup> The majority of DG technologies are renewable, including solar photovoltaics (PV), wind power and hydropower. Another DG technology, combined heat and power (CHP), in which heat created during power production is captured and provided locally, can be powered by either renewable resources, such as biomass,<sup>2</sup> or gas.

DG technologies are set to radically transform how energy systems operate, bringing to an end the dominance of centralised generation and distribution, and giving rise to a system which is far more decentralised and, as a result, more competitive. DG offers immense opportunities to cities including local job creation and growth, resilience of the local electricity supply, and control of the local energy system. But for this potential to be fulfilled there are barriers to growth in DG that cities need to help address.

The potential for DG arises from its cost effectiveness and the way in which it supports greater diversity of ownership in energy generation.

Figure 1.1 below shows the costs of subsidies for renewable technologies that the government currently provides via the Renewables Obligation and feed-in tariff policies to support investment. The subsidies provided for medium-scale solar PV (above 250kW), medium-scale onshore wind (above 500kW) and medium-scale hydropower (above 2MW) are shown to be substantially lower than the subsidies provided to offshore wind, which is being prioritised by the government for industrial policy reasons.

CHP is a highly efficient technology because it uses energy from power production (that is, heat) that is otherwise wasted, thereby reducing the requirement for heat from other sources such as gas-fired boilers. Well-planned and well-run CHP can operate at a level of efficiency (that is, generation output relative to resource

---

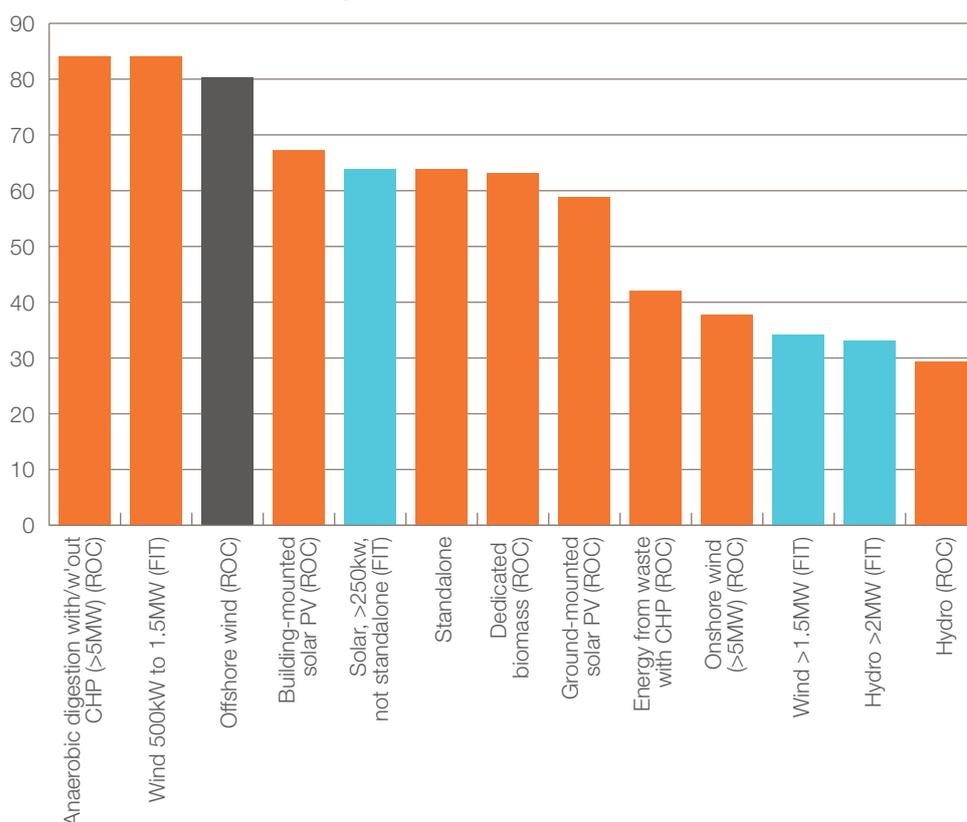
1 Also referred to as 'embedded' or 'dispersed' generation, DG consists of smaller generators connected to the electricity distribution networks. In Britain, electricity is transported via both distribution networks and transmission networks. Distribution networks (operating from 132kV down to 230V) work over distinct regional areas to carry electricity from the higher voltage nationwide transmission grid (which operates from 400kV and 275kV) to industrial, commercial and domestic users.

2 Defined as organic matter which is used as a fuel.

input) in excess of 80 per cent at the point of use, compared to 38 per cent for a conventional coal-fired power station (DECC 2014b). CHP is a key generating technology for community-scale heat, which is provided to customers through a local network, and could contribute to decarbonisation efforts by supplying as much as 14 per cent of the UK's heat demand (DECC 2012). Cities, and local authorities more broadly, have a central role to play in delivering community-scale heat due to their ability to coordinate local infrastructure projects.

**Figure 1.1**

The cost of renewable energy subsidies (£/MWh, 2013/14 prices)



Source:IPPR analysis based on DECC figures (DECC 2013b, DECC 2013c, DECC 2013d, Ofgem 2014b and Ofgem 2014c)

Note: Figure shows all technologies included in the Renewable Obligation subsidy scheme and the cheapest technologies under the feed-in tariff subsidy scheme.

The increasing cost-effectiveness of DG is to be welcomed, because it creates opportunities for new actors to participate in the generation market. In 2012 the largest six energy companies (British Gas, EDF Energy, E.ON UK, npower, Scottish Power, and SSE – referred to as the ‘Big Six’) that dominate the UK’s energy markets owned 71.3 per cent of total electricity generating capacity in the UK. Meanwhile, the Big Six plus a further four companies (the ‘Big 10’) owned 85.8 per cent of all capacity. However, the remaining 14.2 per cent of generating capacity was owned by ‘a long tail of smaller generators’, generating power with onshore wind and CHP, in which there had been ‘remarkably rapid growth’ (Rutledge 2012).

Cities and local authorities are already taking advantage of DG to benefit their local areas. Cities can use DG to improve their local economies in two key ways. First, jobs can be created and local training and skills development opportunities provided. Lambeth Council has done this through three solar PV installations on social housing

estates in Brixton, which it has played a key role in facilitating (DECC 2014c). Second, cities can support their residents to invest in and benefit from DG. The Bristol Solar City project aims to install 1GW of solar PV by 2020, with an ambition for local community groups to be able to invest in installations on council properties rent-free (O’Nians 2013). The Department for Energy and Climate Change (DECC) recently published a strategy aimed at boosting community energy projects, which placed a strong emphasis on the role of local authorities (DECC 2014c).

Cities can also use DG to improve their finances. Income can be generated directly when generation is owned, or indirectly through the business rates retention scheme. One estimate suggests that a typical wind farm could generate £50,000 a year for a local authority (Deans 2013). DG sited on public buildings can also reduce spending on energy bills.

## 1.2 Barriers to distributed generation

Before cities and the country at large can gain the full benefits of DG, there are substantial barriers to growth for DG that will need to be addressed. Some of these barriers are beyond the control of cities because they relate directly to national government policy – for example, how subsidy mechanisms have been designed, how subsidies are allocated between technologies, and issues with planning. These barriers will be explored in a subsequent IPPR report to be published later this summer. Cities could, however, support DG by providing project developers with a new route to market.

A major barrier for DG projects is the need for developers to establish a secure contract on good commercial terms for selling the energy they have generated. For electricity generation, this is most commonly achieved through a power purchase agreement (PPA) with an existing supplier. Since the Big Six energy companies supply around 95 per cent of households (DECC 2014a), an independent developer will normally need to secure a PPA with one of these companies.

However, independent renewable generators have continually struggled to secure bankable PPAs from the Big Six (DTI 2007, DECC 2014a). One problem is that small developers are in a weak negotiating position and must often accept a price for their output that is significantly discounted against the traded wholesale electricity price because their output is small and variable in quantity. This can undermine the commercial viability of projects. The government has acknowledged that small developers will continue to face difficulties when the new Contracts for Difference subsidy regime for renewables is operational, none least because the Big Six will no longer be obliged to procure renewable energy, as is currently the case (ibid).

One option for overcoming these problems could be for DG developers to become established as energy suppliers themselves, as this would enable them to sell directly to end-users and circumvent the need to sell to the Big Six. In practice, however, this option is not realistic. Becoming a supplier involves very high costs and a very large regulatory burden which DG developers are simply too small to take on.

In recognition of these challenges, in 2009 the energy markets regulator Ofgem adapted the electricity supply licence regulations to try and make it easier for small generators to sell directly to end-users. This was done through a simplified licensing arrangement often referred to as ‘licence lite’ (Ofgem 2009).

The licence lite reform has clearly failed to achieve its aim because, five years after its introduction, no generator has made use of it. In fact, it has been left to a city authority, the Greater London authority (GLA), to attempt to set one up. The GLA recently invited tenders from existing licensed suppliers wishing to act as a partner, which is a requirement of the licence lite model (Public Tenders 2014).

In explaining why they have chosen to take this action, the GLA have claimed that the licence lite arrangements are too complex for smaller generators and that it is not in the interests of the Big Six, who are obvious candidates for being a partner, for licence lite to succeed (GLA 2012). In fact, as is discussed later, DG directly threatens the business models of the major utilities and is therefore something they are more incentivised to oppose than promote.

The licence lite arrangements are clearly complex since it has taken three years of development for the GLA to reach its current stage. The GLA aims to make it easier for other organisations to follow in its footsteps by producing standardised documents and contractual arrangements that other parties could use. This could be a valuable resource for other cities, yet it remains to be seen if the GLA can get the licence lite model to work and how effective it will be. Moreover, as we discuss below, there are a range of alternative ways for cities to engage in energy supply that could potentially be simpler and more effective than licence lite.

Irrespective of the approach chosen, it is clearly in the interests of cities to address the route to market barrier facing DG because of the local benefits that DG can produce. By engaging in energy supply, cities could become a new source of PPAs for DG, thereby incentivising developments in their area. To further incentivise developers, cities could offer additional support – for example, help with project coordination and planning – alongside a PPA. In addition, with a presence in energy supply, cities could more confidently invest their own money in DG projects as these would be guaranteed a route to market. Finally, by linking up local generators with local customers some charges for using the electricity networks can be avoided (through the ‘embedded benefits’ scheme) which will help to keep the costs of PPAs down.

### 1.3 How some energy consumers are being overcharged

Another reason for cities to get involved in energy supply, which has to date received less attention than the opportunity to support local generators, is how this could help ensure that consumers, in particular low-income consumers, pay a fair price for their energy.

Energy bills have risen substantially in recent years, driven up by a combination of rising wholesale energy prices, rising costs for transporting energy, and rising costs of decarbonisation and social policies. The average consumer energy bill is currently £1,346 (Ofgem 2014d) up from just £605 (CCC 2012a) in 2004. Since mid-2005, energy prices have increased more than twice as fast as general prices (see figure 1.2). The proportion of household income spent on gas and electricity rose from 1.8 per cent in 2003 to 3.1 per cent in 2013 (Wales 2013), despite there being little change in the average household consumption.

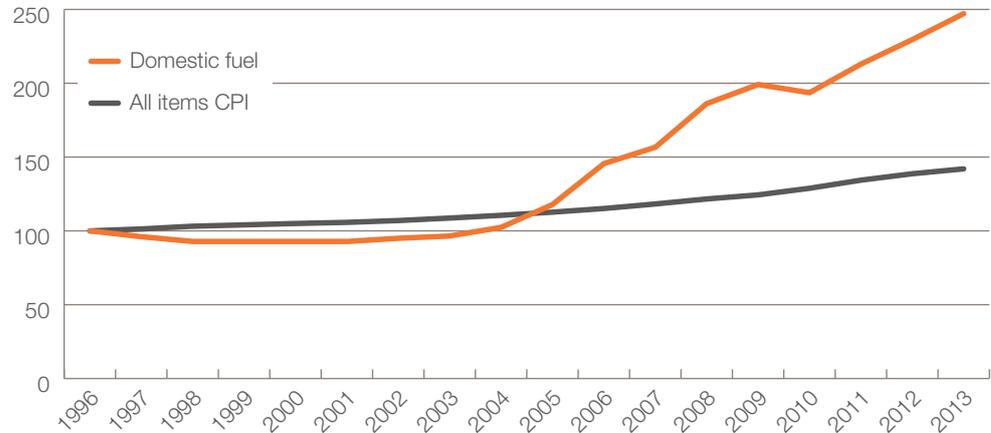
Recession, the slow recovery and stagnant wage growth for many have led to consumers regularly citing rising energy bills as a significant financial worry (Markit 2014). High energy prices can have a detrimental effect on low-income consumers, in particular those living in inefficient housing, referred to as the ‘fuel poor’.<sup>3</sup> In 2011, there were 2.39 million fuel-poor households in England alone (Platt et al 2013). Living in a cold home, which is strongly linked to fuel poverty, can lead to ill health and creates costs for local health services (DECC 2013e). The extent of these costs is only just beginning to be understood, but could be very high. One analysis has suggested that the impact of inefficient and poor-quality housing costs the NHS around £760 million a year (Platt and Rosenow 2014).

---

<sup>3</sup> In England, fuel-poor households are defined as those whose energy costs are above the median level, and whose income after energy costs is below the official poverty line (Platt et al 2013).

**Figure 1.2**

Retail prices of domestic energy compared with the prices of the 'typical' basket of goods and services that make up the RPI (1996=100)



Source: DECC 2014d: 20

The most effective way to bring down energy bills and tackle fuel poverty is for peoples' homes to be made more energy efficient (Platt et al 2013). For around 10 years the main policy approach for residential energy efficiency has been to mandate energy suppliers to deliver efficiency improvements. In these schemes, cities and local authorities have played an important support role. However, IPPR has recently argued that it would be more cost effective to adopt a local area delivery model in which local authorities and other local groups could lead delivery (ibid).

Another way that cities can tackle high bills is by ensuring households are on a cheap energy tariff. This can be particularly beneficial for lower-income customers who can be excluded from accessing the best energy tariffs that are on offer. For example, lower internet access among several groups of vulnerable consumers makes signing up for an online tariff, often the lowest price deal on the market, significantly more difficult. These groups also struggle to use online switching websites, which highlight the cheapest deals retailers are offering. Large numbers of low-income households are on prepayment meter tariffs, which are typically the most expensive form of tariff on the market (Ofgem 2008).

One group of households who would particularly benefit from assistance is those who are being overcharged by energy companies because they have never switched supplier since the energy markets were opened to competition in the 1990s.

Ofgem recently found that 62 per cent of customers could not recall ever having switched supplier (Ofgem 2014a). Lower-income households are overrepresented among this group. 51 per cent of social group AB say they have never switched electricity supplier compared with 68 per cent of social group E, and 56 per cent of social group AB say they have never switched gas supplier compared with 64 per cent of social group E (Ipsos MORI 2013). Nearly one in five non-switchers are not even aware of their ability to switch (ibid).

IPPR analysis in March 2014 revealed how customers who have not switched, and therefore still buy their energy from the Big Six energy company that served them before competition was introduced, pay more than customers who have switched supplier – even if they pay their bill using the same payment method (IPPR 2014).

We found that in 2013:

- the gas bills of customers who had not switched supplier since the market was opened to competition were on average £76 per year higher than those of customers who had switched
- the electricity bills of customers who had not switched supplier since the market was opened to competition were on average £27 per year higher than those of customers who had switched.

The persistent prevalence of these price differentials was recently cited by Ofgem in its first annual state of the market assessment as evidence of weak competition between suppliers (Ofgem 2014a: 11). Following the recommendation of the assessment, the Competition and Markets Authority (CMA) will now conduct a full inquiry into the health of competition in the energy markets, which is expected to take around 18 months.

#### 1.4 How cities could help consumers to get a fairer price

One reason why so many people do not seek to find a cheaper energy tariff by switching is that consumer trust in the market has collapsed. Just 32 per cent of Britons trust energy companies, which makes the sector the least trusted in the UK, behind even media and banking (Edelman 2014). Low levels of trust are both a symptom of poor competition – people become disengaged because they do not believe they can get a good deal – and a cause of poor competition – as people disengage, the competitive pressure on suppliers decreases.

Compared to energy companies, local authorities are highly trusted. A 2013 Ipsos Mori poll/New Local Government Network survey found that 79 per cent of the public trust councils to make decisions, while ongoing quarterly research by the LGA consistently shows that 70 per cent of people are satisfied with the services their council delivers (Ipsos MORI 2013, LGA 2014). Moreover, a recent IPPR report (Cox and Jeffery 2014), which drew upon evidence from the latest Future of England Survey, found that trust in local councils is increasing (see figure 1.3).

Local authorities are also highly trusted on energy issues specifically. Research commissioned by DECC (2013a) found that consumers, including vulnerable consumers, were more likely to take part in energy schemes if they were organised by their local authority, which they viewed as a ‘trusted intermediary’. Experiences with energy efficiency and collective switching schemes show that local authorities can use their trusted brands, local knowledge and existing contact points with their residents (for example, service centres, council tax bills and relationships with residents of local authority-owned housing stock) to effectively engage low-income consumers on energy issues (Platt et al 2013).

Some local authorities have already begun to explore how they can leverage their trusted brands and customer outreach capabilities to help their residents access lower tariffs through collective switching schemes. These involve groups of consumers acting collectively to increase their bargaining power in order to get better prices from suppliers. Local authorities, using government grants issued through the Cheaper Energy Together scheme (DECC 2013f), have taken on the role of establishing a collective switching scheme, finding potential customers, and working with a broker to negotiate prices with energy suppliers.

While collective switching schemes have been a positive area of experimentation for local authority engagement in the energy market, their potential is limited. One problem is that the local authority has no control over the actual tariffs that their residents pay. Additionally, these schemes do not address the route to market barriers that smaller-scale generators face. Also, some local authority officers have suggested that the income generated from running schemes has not been enough to cover costs.

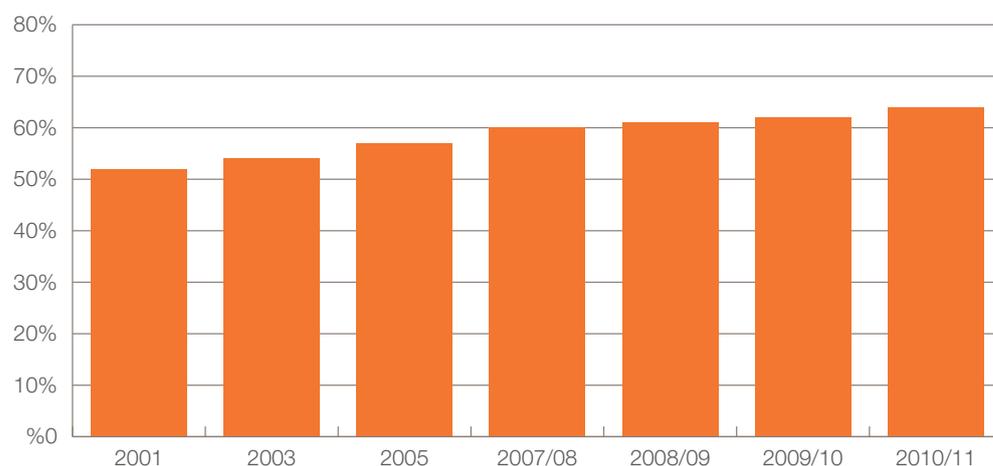
The logical next step for cities is to move beyond collective switching in order to become more directly engaged in the business of supplying energy. Not only would this enable a city to support local generation projects, it would also give them greater control over tariffs that are offered to consumers to ensure they are paying a fair price. An additional benefit for cities is an ongoing income stream. This will be particularly attractive for many authorities since local government funding has been cut substantially over recent years and is set to fall further. The extent to which income generation is possible at the same time as keeping bills low will largely depend on the model a city chooses for engaging in energy supply and how effective they are at delivery, as is described below.

Survey evidence suggests that the public would support local authorities becoming energy suppliers, particularly if this was linked to local generation projects. A Yougov poll, commissioned by energy supplier Ovo Energy (2014), found that three times as many consumers (32 per cent) believe a 'local supplier conducting a community energy project' would be more likely to give them a fair deal on their bills than a large energy retailer (11 per cent) (see figure 1.4). Over a third (37 per cent) of respondents to the survey said that they'd prefer to buy from a community energy company if the price and service was the same as they could get from other retailers.

---

**Figure 1.3**

Percentage of respondents who stated that they had 'a lot' or 'a fair amount' of trust in local councils and parliament, 2001–2010/11 (%)

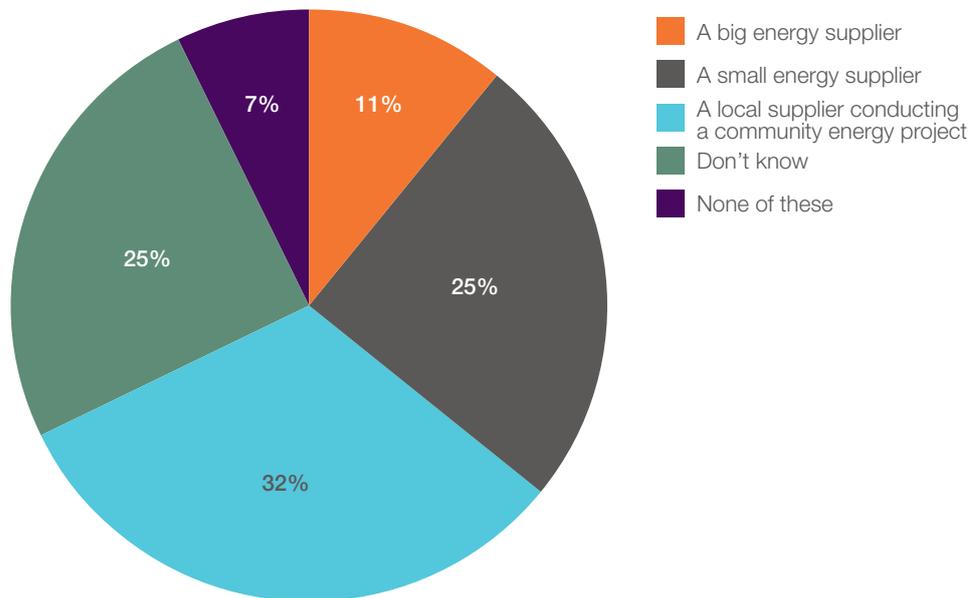


Source: CLG 2011: 10

---

**Figure 1.4**

Who would give the fairest deal on consumer energy bills?



Source: Ovo Energy 2014

### 1.5 Energy supply business model options for cities

There is clearly a strong case for cities to engage in the energy supply market. This could enable cities to unlock barriers to growth in DG, thereby generating jobs and growth, while at the same time enabling them to reach out to low-income consumers and exert control over the tariffs they are paying to ensure that they are fair. It could also provide a new source of income for cities.

Some cities are already aware of the opportunities and are making plans to engage in energy supply. **We recommend that other cities investigate the case for following their lead.** A city should engage in energy supply as a way to coordinate and enhance its existing initiatives on energy, particularly efforts to tackle high energy costs and encourage local generation. In some instances cities could seek to work together in partnership. Local considerations are vital and a city should engage with industry, consumer outreach organisations and the district network operator in making its decision.

For cities that are interested in the potential of entering the energy supply market, the following five options exist – several of which are already being explored by leading local authorities.

1. **Fully licensed supplier:** a city sets up and runs an independent supplier, taking full responsibility for delivering all operational aspects of the business and meeting all regulatory licence conditions. Nottingham city council is the first city to pursue this approach and has issued a tender for relevant supplies and services.
2. **Joint venture:** a city works with one or more third parties to set up and run an independent supplier, sharing responsibility for operational delivery and meeting licence conditions.

3. **Licence lite:** a city becomes a ‘junior supplier’ with responsibility for some aspects of operational delivery and meeting licence conditions, while a ‘senior supplier’ takes on the remaining responsibilities. The GLA is the first organisation to trial this approach and has recently invited tenders from potential senior suppliers.
4. **Partnership:** a city establishes a partnership with an existing supplier in which energy is provided using the supplier’s licence, and delivery of operational aspects of the supply business is shared. While not a local authority, Guinness Housing Association recently established such an arrangement with Spark Energy for providing energy to their housing residents (McCabe 2014). Ovo Energy has indicated that numerous local authorities have inquired about establishing a partnership arrangement through their ‘Ovo Communities’ offering.
5. **White label:** a city licenses use of their brand to an existing supplier who uses it to market to customers in the local area.

The appendix to this report includes a detailed analysis of the pros and cons of the different options, which will assist cities in determining the appropriate model they might pursue. We compare them against seven key criteria:

- ease of set-up
- start-up costs
- risks
- operational complexity
- income generation potential
- control
- ability to promote local generation and set local tariffs.

Table 1.1 summarises this analysis using a traffic light system in which green indicates ‘positive’, yellow ‘average’ and orange ‘negative’. It will be up to cities to determine for themselves which of the models to adopt, taking into account how much risk they are willing to take on for a particular level of reward, and what their key objectives are.

**Table 1.1**

Comparative strengths and weaknesses of the five options for cities to engage in the energy supply market

	Fully licensed supplier	Joint venture	Licence lite	Partnership	White label
Ease of set-up	Orange	Yellow	Yellow	Green	Green
Start-up costs	Orange	Yellow	Yellow	Green	Green
Operational complexity	Orange	Yellow	Yellow	Green	Green
Risks	Orange	Yellow	Green	Green	Yellow
Income generation potential	Green	Yellow	Yellow	Yellow	Orange
Control	Green	Green	Yellow	Yellow	Orange
Ability to promote local generation and set local tariffs	Green	Green	Green	Green	Orange

Given the range and complexity of options that are available, **organisations that support cities and other local authorities, including the Association for Public Service Excellence, the LGA and the Local Government Innovation Unit, should prioritise supporting authorities to understand the various energy supply business models that are available.**

In addition, national government should do more to support local authorities. DECC recently established a Community Energy Unit to support the growth of community energy, but this does not provide support to cities and local authorities. Therefore, **a new, discrete Local Authority Energy Unit should be established in the department.** The unit would bring together expertise in energy supply, heat delivery, energy efficiency programmes renewable energy deployment, and access to finance that is currently held within different areas of the department, providing a one-stop shop of information and resources for cities and local authorities.

Within the support provided to the cities a particular emphasis should be placed on financing, because cities can be central to efforts to ensure that Britain's overall low-carbon investment needs are achieved, as we explain in the following chapter.

## 2. THE ROLE FOR CITIES IN INVESTING IN ENERGY

A vast amount of investment is required in the UK's energy market. The private sector utilities, which have been the largest investors in the sector since privatisation, are unable to bring forward this level of investment, and so mobilising alternative sources is critical to meeting the UK's carbon reduction targets.

Cities have the capabilities to raise substantial levels of finance and become major players in decarbonising the power sector by 2030 and the wider economy by 2050. Innovative activities by Woking local authority and the Lancashire pension fund are already demonstrating what could be possible. Large-scale city investment in low-carbon infrastructure would benefit Britain as a whole and would also produce benefits for the cities themselves, particularly if investments are made in local energy infrastructure.

### 2.1 The investment challenge

Many existing power stations are reaching the end of their operational lives and much of the electricity network will need extending or upgrading. Some existing power stations will be closed down because they do not meet the requirements of the EU's Large Combustion Plant Directive which limits air pollution, or its successor, the Industrial Emissions Directive. Many of the closing plants must be replaced with new generating capacity which is in line with the UK's legal obligation to reduce carbon pollution by 80 per cent in 2050 compared to 1990 levels, and an EU target for 20 per cent of energy to be generated from renewable sources by 2020.

Although it has not been set in law, both the Labour party and the Liberal Democrats have committed their support for the Committee on Climate Change's proposal that the power sector must be almost completely decarbonised by 2030 (CCC 2012b). The 2013 Energy Act commits the next government to make a decision on enacting the 2030 target by 2016. The CCC calculates that this will entail the development of 50–60GW of new baseload generating capacity (that is, generating capacity that is always on) between now and 2030 (ibid).

DECC (2014e) estimates that investment totalling £100 billion is required in the power sector alone by 2020 (for new low-carbon generating assets and supporting infrastructure). Shaun Kingsbury, chief executive of the Green Investment Bank, has claimed that £20 billion needs to be invested annually in green infrastructure more broadly. The Energy Bill Revolution (EBR 2014 forthcoming) estimates that as much as £125 billion is required for building energy efficiency improvements. Mobilising this level of investment is very challenging. Earlier this year the environmental audit committee warned of a 'green finance gap' with current levels 'running at less than half of the level needed to deliver the decarbonisation implicit in national and international targets'. The committee suggests that 'a significant scale-up is needed' (HOC 2014).

### 2.2 The collapse of the utility business model

One problem is that the major private sector utilities, which would be expected to be important sources of investment, do not have strong enough balance sheets to deliver the scale of investment that is required. Indeed, the market value of Europe's top 20 utilities has halved in the past six years (Schoenberg 2014), while their credit

ratings are being downgraded. The limitations of the utilities have been recognised by government.

*'If we are to meet our long-term carbon and security of supply objectives, we need to reform the market now, and make investment in low-carbon generation in the UK more attractive... This is particularly important as the existing 'Big Six' energy companies are unlikely to be able to finance all the investment at the scale and pace required.'*

DECC 2011: 16

The collapse in the market value of private sector utilities and the related reduction in their capacity to invest have occurred as some DG technologies have rapidly reduced in cost and investors have become more aware of the threat that DG, combined with efforts to improve energy efficiency, poses to the existing utility business model.

The observed cost reductions have been most dramatic for solar PV where, globally, the price of solar modules has fallen by 22 per cent for every doubling of installed capacity (called the 'learning rate') since 1972, with the price reduction running at 40 per cent since 2008 (see figure 2.1). Citibank states that this rate of reduction has 'exceeded all expectations' (Citibank 2013: 48) and it points out:

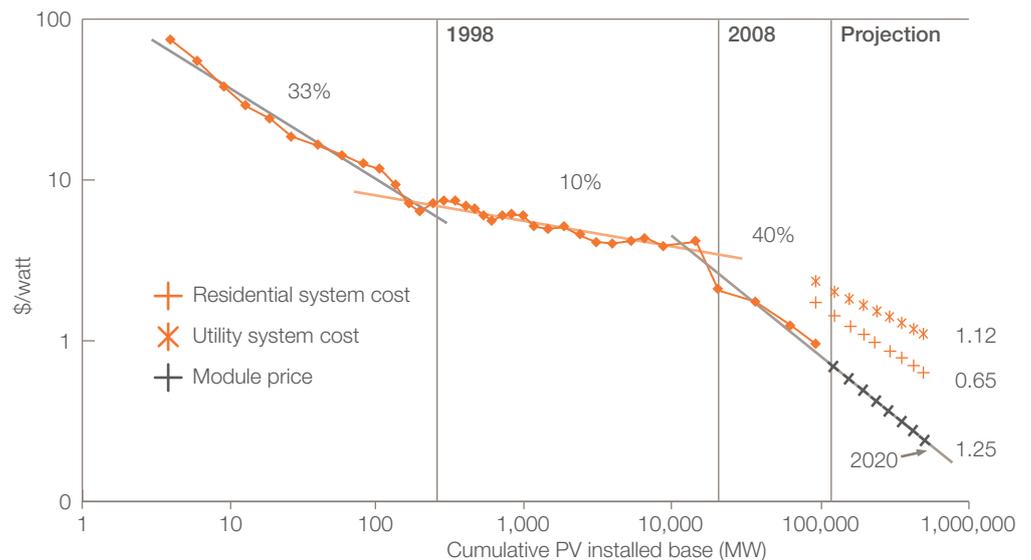
*'the key point about the future is that these fast "learning rates" are likely to continue, meaning that the technology just keeps getting cheaper.'*

Citibank 2013

Citibank forecasts that the cost of solar PV will fall by another 27 per cent by 2020. Bloomberg New Energy Finance claims that the cost of a unit of electricity generated by ground mounted solar PV fell by 54 per cent between 2010 and 2013 (Chase 2014).

**Figure 2.1**

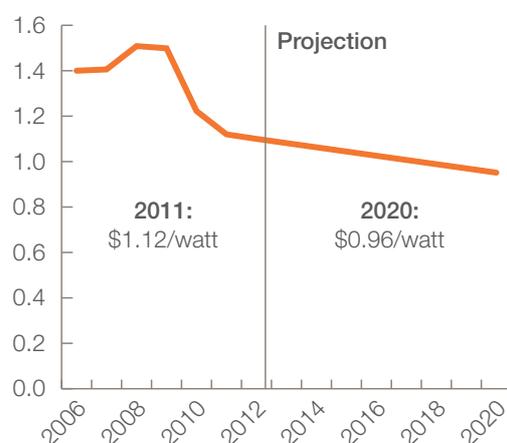
The cost of ground mounted solar PV generated electricity



Source: Citibank 2013

Onshore wind has also experienced significant cost reductions, estimated to be over 7 per cent a year since 1984. As a result it is now one of the cheapest renewable technologies (Citibank 2013). Costs have fallen to such a degree that onshore wind costs are now approaching the average wholesale electricity price in many countries including Italy, Spain, China and Britain; it has already surpassed the wholesale electricity price in Brazil (ibid). As with solar, industry analysis suggests cost reductions will continue, with the expectation that this will continue to occur at about 7 per cent a year. Figure 2.2 shows how the cost of turbines, the major cost element in developments, is expected to fall over time (ibid).

**Figure 2.2**  
Forecast for average wind turbine costs,  
by average turbine price (\$/w)



Source: Citibank 2013

Private sector utilities are likely to struggle to prosper in DG markets because the diversity of the technologies, the potential for them to be sited in a wide variety of locations, and their inherently small size lend themselves to development by smaller and more nimble companies. Moreover, in markets such as Germany where penetration of DG is high, it has been observed that DG eats directly into the market share of the incumbent utilities by decreasing the usage of existing generation assets (ibid).

Citibank suggests that the rise of DG, combined with the development of smarter and more efficient energy systems, will lead to the size of market that is open to the utilities halving over the next two decades (ibid). In fact, it has gone so far as to claim that a series of changes in the energy system is 'causing the rationale of the prevailing utility business model to come under severe pressure and potentially, ultimately, crumble' (Citi Research 2013: 18).

### 2.3 Why cities should become major investors in energy

So if the utilities are unable to make the necessary investments in low-carbon power and heat generation, as well as energy efficiency, where is the required level of investment going to come from? Cities or groups of combined authorities at the city-region level present a viable and scalable alternative that combine the benefits of community ownership with the ability to deliver economies of scale. They are relatively well resourced and have recently been given, or are about to be given, increased powers over their own revenue streams through the city deals process (DPMO et al 2011). Moreover, there are additional options open to these authorities

to raise finance that could completely transform the energy sector if channelled towards low-carbon projects.

Our interest in the opportunity for city-led investment arises from, first, how this would mobilise substantial levels of investment for low-carbon activity, and second, how this would broaden the recipients of consumer-funded subsidies for low-carbon generation.

As it stands, foreign-owned companies look set to be a major beneficiary of these subsidies. In 2012 just 12.3 per cent of installed offshore wind capacity and 20 per cent of nuclear power in the UK, both sectors being prioritised by the government, was attributable to British companies (Rutledge 2012). The figure was still low but higher for onshore wind at 37 per cent. Moreover, 50.4 per cent of offshore wind generation and 69 per cent of nuclear generation was attributed to nine foreign governments, with a small proportion attributable to German municipal authorities. With private utilities increasingly unable to invest, it is expected that state-backed energy companies will continue to be the primary investors in these large-scale technologies and therefore a key beneficiary of the UK's energy-bill-levied subsidies (Rutledge 2012, Atherton 2014).

To some extent ownership doesn't matter since the individual developments will still provide jobs in the UK. But at the margin, foreign owners are more likely to use supply chains, employ management, make investments and carry out research and development from their country of origin. Their shareholders are also likely to be foreign, meaning that any dividends will go overseas.

In addition, the profile of who benefits from low-carbon generation subsidies is important because if political support for the subsidies is to be maintained, the public must be convinced that the money is benefiting the UK in general and their communities in particular. This is borne out by DECC's public attitudes survey, in which 81 per cent of respondents in March 2014 said they would support a renewable development if it provided some direct benefit to communities in which they are located (DECC 2014f).

Direct investment by cities in low-carbon generation is one way to ensure more benefits from subsidies remain within the UK and reduce the risk of a public backlash against paying for the subsidies.

## 2.4 Options for cities to raise finance for investment

Cities already have a number of options available for investing in energy infrastructure. This section sets out those options but also details some potential routes for raising significantly larger levels of finance. If mobilised, these routes would provide cities with the potential to pick up where the utilities are faltering, and deliver large volumes of the low-carbon infrastructure that the UK requires. This is a different future to the one set out by government and it is a step beyond where the majority of cities are currently viewing their own role.

The Public Works Loan Board (PWLB) is the most established route for raising finance. Local authority borrowing amounted to £84.5 billion as of 31 March 2013 – and three quarters of this came from the PWLB (Brady et al 2014). It exists to lend money to local authorities and other prescribed bodies, and has traditionally been a very low-cost source of finance. Local authorities are only limited in how much they borrow by their own ability to service the debt so there are substantial funds available.

Nonetheless, the borrowing rates are set by HM Treasury which means there is an ongoing risk for local authorities that changes are made according to central government policy. For example, due to the Coalition government's wider drive to reduce the UK's structural deficit, in 2010 the PWLB rates were increased by

80 basis points over the yield on a UK gilt – this resulted in a substantial increase in the costs of financing projects. In addition to other changes to borrowing rules, the rate has now been reduced for authorities that lay out their spending plans in advance. The LGA (2012) argues that ‘councils need certainty when managing capital programmes if they are to make effective long-term funding decisions. With six changes in borrowing rules in three years, councils find it harder to make such plans’ (ibid: 5).

Cities could also take advantage of the recent increase in crowdfunding platforms such as Abundance and Trillion Fund. These platforms allow individuals to aggregate investments in energy projects, particularly DG projects where the levels of required investment are achievable for many small-scale investors. This substantially increases the number of beneficiaries of low-carbon energy compared to the current utility-based model of energy investment. Cities could potentially raise finance through this route, or invest in schemes using this model of investment.

Another potential source of funding is the European Union. Bristol, for example, has secured a £2.5 million technical assistance grant under the European Investment Bank’s European Local Energy Assistance (ELENA) programme to develop investment programmes in energy efficiency and renewable energy projects. On the back of this there is a £140 million investment plan for the city. In addition, the 2014/2020 Horizon programme of structural funds offers a source of match-funding, and it includes a specific and dedicated tranche of funding for low-carbon activity.

Grants of this kind can have a catalytic effect through stimulating further investment but they can only provide stop–start support and they often dictate what the grant should deliver. There are two further ways in which cities could mobilise funds to invest in energy projects with greater independence: bonds and pension savings.

### **1. Collective local authority bond agency**

Until the 1980s, local authority (or municipal) bonds were a relatively common way for authorities to raise finance for one-off projects and for local residents to receive a stable return. This became less popular as the PWLB rates dropped and central government placed stricter controls on authorities’ borrowing. The increase in the PWLB rate announced in 2010 has changed this dynamic, and bonds are once again a potentially attractive route.

The GLA issued £600 million in bonds for the Crossrail project in 2011, which worked out to be 17 basis points cheaper than it would have been for the GLA to secure the same finance through the PWLB at the October 2010 rates (Cox and Schmuecker 2013).

This saving was made possible by the size of the deal – each issuance can cost up to £50,000 in fixed costs – and it is unlikely to be cost effective for authorities engaging in smaller projects to enter into their own issuances. The LGA and the Welsh LGA have looked at the potential for local authorities to use their collective buying power on the bond markets to spread administrative costs and gain access to lower-cost borrowing (Brady et al 2014). They are progressing plans for a local-authority-owned collective agency that issues general municipal bonds for infrastructure projects and allocates finance to individual authorities as required.

If the rates provided by the PWLB end up undercutting the rates of the new collective agency, there will be an incentive for local authorities to go for the cheaper loans. But this ignores the greater independence and flexibility that would be associated with issuing their own bonds, which is why local authorities are already examining this model. The creation of this new asset class could also help raise the ambition of local authority treasurers by encouraging them to examine what other local authorities are doing in relation to infrastructure investments, free from central government control.

If this agency becomes a reality it could be a new source of low-cost finance to cities, and all local authorities, for low-carbon energy projects. A further development of this concept could be for the agency to issue 'green bonds' that specifically cover low-carbon projects. The advantage of this approach is that a collective agency would provide low-cost finance to projects that are too small to warrant their own bond issues or to projects that are developed by authorities who do not want the complexity and expense of their own issuance. A precedent for this has been set by the city of Johannesburg which is the first in the world to raise finance for infrastructure through green bonds. The city plans to raise \$138 million to finance low-carbon buildings and buses with cleaner emissions<sup>4</sup> (Brand 2014).

Another potential source of funding is for local authorities to apply to the Green Investment Bank (GIB). The GIB has identified that £3 billion is needed to retrofit all of Britain's street lights and produce annual cost savings of £200 million (GIB 2014). They are providing funding for local authorities that want to upgrade their street lighting, starting with Glasgow. They are able to ensure that the repayment schedule is flexible so that cost savings always exceed the debt servicing costs. However, the ability of the GIB to lend is limited because it is not yet allowed to borrow.

**Cities should back the LGA's plans to create a collective agency for the issue of local authority bonds, including green municipal bonds of the kind already used in South Africa. Clear and transparent rules governing the market should be established to instil investor confidence. Fiscal rules should be designed to ensure that local debt of this kind does not count against legitimate targets to bring current spending back to balance in the medium term.**

**Cities should work with the GIB on discrete low-carbon infrastructure projects where there is a clear rate of return on investment. In addition, the bank should be given borrowing powers immediately so that it can expand its portfolio of work.**

## 2. Local authority pension funds

Another way in which cities could invest in the energy sector is by directing their pension funds into low-carbon infrastructure projects. The degree of oversight that different authorities and their employees have over where funds are allocated varies but it is possible to either invest in infrastructure directly or to steer fund managers towards particular companies and projects.

There are 101 local government pension schemes that manage a total of £150 billion of assets in the UK (NAPF 2013). If even a small proportion of this total was ringfenced for low-carbon projects it could have a huge impact on Britain's energy investment needs. As the box below shows, this is already happening with the Lancashire County Pension Fund, although they still also invest in fossil fuels.

---

### Lancashire pension fund investment

Lancashire County Pension Fund is proactively seeking investments in the low-carbon sector. The fund has invested in the following projects (Share Action 2014):

- £84 million in recovery of methane from landfill gas sites and coal mines for generation of electricity
- £50 million in biomass electricity generating plants

---

4 The precedent in South Africa is being managed by Standard Chartered, which has significant expertise in bond issuance. The corporate green bond market is growing rapidly, with the Climate Bonds Initiative (2014) estimating that it will reach \$40 billion this year and a \$100 billion in 2015, compared to \$10.98 billion in 2013. It is estimated that the total universe of climate-themed bonds outstanding in 2013 totalled \$346 billion (Climate Bonds Initiative 2013).

- £17 million in a separate Solar Energy Fund
- £12 million investment in Westmill Solar, a UK solar cooperative.

In addition, the pension fund has recently made a £30 million commitment to a clean energy fund focussed on wind energy assets, and is actively considering further opportunities in anaerobic digestion, solar and wind projects (LCPF 2013). It is promoting the installation of solar PV across all suitable roofs in its £435 million commercial property portfolio, with 17 installations currently agreed with tenants, representing a £3 million investment in solar.

However, the fund has a total value of approximately £4 billion, including investments of £7 million in oil giant Total, £4.2 million in Centrica, £1.2 million in GDF Suez and approximately £10 million in Shell, BP and Exxon. Since 60–80 per cent of coal, oil and gas reserves of publicly listed companies have been shown to be unburnable if the world is to have a chance of not exceeding global warming of 2°C, many of these investments could prove to be stranded assets (Carbon Tracker 2013). As such the investments are very risky for the fund's members.

---

Pension funds typically invest in low-risk projects. This is common across many institutional investors, with the OECD (Della Croce 2011) reporting that infrastructure investment represents just 1 per cent of total assets on average across OECD pension funds. The OECD report outlines that:

*'Infrastructure investments are attractive to institutional investors such as pension funds and insurers as they can assist with liability driven investments and provide duration hedging. These investments are expected to generate attractive yields in excess of those obtained in the fixed income market but with potentially higher volatility. Infrastructure projects are long term investments that could match the long duration of pensions liabilities. In addition infrastructure assets linked to inflation could hedge pension funds liability sensibility to increasing inflation.'*

Della Croce 2011

That said, there is a rapidly growing number of infrastructure, and specifically low-carbon energy, projects of various sizes that are proven and generating stable returns. Refinancing these projects with resources from pension funds would release significant capital that could be recycled back into developing new schemes.

Catalysing investment by pension funds into projects that support the transition to a low-carbon economy is an objective of the Principles of Responsible Investment (PRI), which was established by the United Nations in 2006. The PRI aim to encourage institutional investors globally to integrate environmental, social and governance (ESG) factors into their investment decision-making processes and ownership practices in a manner that is aligned with their fiduciary duties. Over 1,200 investment institutions have signed up to the PRI with assets under management of more than \$34 trillion, including nearly 40 pension funds and other asset owners in the UK.

Responsible investment principles are increasingly being adopted in domestic legislation around the world. The Code for Responsible Investing in South Africa (CRISA), which came into force in 2012, is now held up as one of the leading instruments, along with those in Denmark and France among others. CRISA gives guidance on how institutional investors should undertake their investment activities. While the application is voluntary, institutional investors are expected to adopt the principles and practice recommendations in the code on an 'apply or explain' basis.

Britain is sometimes held up as the first country in the world to encourage its institutional investors to integrate responsible investment principles into their investment decisions. But the Pensions Act 1999, which underpinned this approach, is now outdated. **For the good of all institutional investors, including local authority pension funds, the UK government should echo the European Commission and encourage all UK pension funds to adopt the PRI. Responsible investment principles should be enshrined in domestic legislation as they have been in many other countries.**

**In the meantime, local authority pension funds should, on an individual basis, sign up to the PRI. They should ensure that the investment managers they appoint are taking ESG factors into account by writing this requirement into their investment manager agreements and requiring them to report back on how they are managing these factors across all assets within their portfolios.**

# CONCLUSION

Cities have a crucial role to play if the British economy is to thrive in the 21st century. Energy is a central element of this, in which the ‘trilemma’ of affordability, security of supply and decarbonisation must be achieved.

Around the world cities are spearheading the transformation that must occur in the energy sector. The example of Munich, with its target to supply the entire municipality of 1 million people with renewable electricity by 2025, is just one of many.

This report has shown how cities in Britain could transform efforts to create a cleaner, smarter and more affordable energy system, provide an alternative to the big utilities, and boost their local economies in the process. Some cities in Britain are already starting to play a substantive and innovative role in the UK’s energy market. We want more British cities to engage in energy markets and for the pioneers to go further.

Building on the work of leading municipal authorities, this report has outlined leading-edge actions that cities *can take now* within the energy sector, without requiring new powers from government. Further actions by national government have been identified which would enable cities to do more.

We have looked in detail at two areas of activity for cities: first, engaging in the energy supply market, and second, raising finance for investment in low-carbon energy generation.

We have shown that cities would be trusted by consumers to engage in the energy supply market and how, by doing so, cities could take control of the tariffs paid by low-income consumers to ensure that they are fair. At the same time cities could unlock barriers to growth for local electricity and heat generators, known as ‘distributed generation’, which would generate jobs and growth, and a new source of income for cities. We set out a range of options that are available for cities wishing to get involved in energy supply, with key considerations for each.

Following this, we identified how the worsening financial position of the major utilities severely challenges the UK’s ability to raise the required levels of investment in low-carbon infrastructure. Cities, we argued, could be a valuable new source of investment which would help maximise the benefits to the UK from generation subsidies. We set out a number of options that cities could pursue in order to raise finance.

Britain’s cities are already arguing for more powers from national government so that they can expand their role as the powerhouses of the British economy. At the same time, the energy system is being radically transformed by the need to decarbonise and the emergence of new, clean energy technologies.

There is a clear opportunity for cities to be at the forefront of the changes that are happening in the energy sector. They can achieve this by engaging in energy supply and investing in low-carbon infrastructure. Through these actions cities can make the energy system work better for consumers, demonstrate that they have the ingenuity, skills and capacity to take on more powers, and raise their influence at the national level.

## Summary of recommendations

### Recommendations for cities

- Cities should consider engaging in the energy supply market where this can support efforts to tackle energy affordability and promote local generation.
  - Local authority organisations, including the Association for Public Service Excellence, the LGA and the Local Government Information Unit, should prioritise supporting local authorities to understand the various business models that are available.
- Cities should explore opportunities for investing in low-carbon energy development.
  - Cities should work with the Green Investment Bank on discrete low-carbon infrastructure projects where there is a clear rate of return on investment.
  - Cities should back the LGA's plans to create a collective agency for the issuance of local authority bonds, including green municipal bonds of the kind already used in South Africa. Clear and transparent rules governing the market should be established to instil investor confidence.
  - Local authority pension funds should, on an individual basis, sign up to the Principles for Responsible Investment (PRI). They should ensure that the investment managers they appoint are taking environmental, social and corporate governance (ESG) factors into account by writing this requirement into their investment manager agreements and requiring them to report back on how they are managing these factors across all assets within their portfolios.

### Recommendations for central government

- A Local Authority Energy Unit should be created within DECC that brings together guidance for cities and local authorities relating to energy supply, heat delivery, energy efficiency programmes, renewable energy deployment, and access to finance. This unit should harmonise the expertise and advice that is currently held within different areas of the department.
- The UK government should echo the European Commission and encourage all UK pension funds, including local authority pension funds, to adopt the PRI. Responsible investment principles should be enshrined in domestic legislation as they have been in many other countries.
- Fiscal rules should be designed to ensure that local debt for capital expenditure from local authority bonds or green municipal bonds does not count against legitimate targets to bring current spending back to balance in the medium term.
- The Green Investment Bank should continue to work with cities on low-carbon energy projects, and it should be given borrowing powers immediately.

## REFERENCES

- Aberdeen City Council [ACC] (2013) *A Hydrogen Economy for Aberdeen City Region*, Aberdeen. <http://aberdeeninvestlivevisit.co.uk/nmsruntime/saveasdialog.aspx?IID=233&SID=232>
- Atherton P (2014) 'How will investors work with uncertainty?', presentation at Cornwall Energy Conference 'Energy Markets at the Crossroads', 2 June 2014, London
- Brady A, Andersson L and Breedon F (2014) *The UK Municipal Bonds Agency: Establishment of a Local Government Collective Agency for the issue of Local Authority Bonds*, London. <http://www.local.gov.uk/documents/10180/11531/MBA+Report+Final.pdf/037bbcf0-e7f5-4f06-946e-98e7e824ce49>
- Brand (2014) 'Johannesburg Plans Meetings in May to Market Debut Green Bond,' *Bloomberg* online, 17 April 2014. <http://www.bloomberg.com/news/2014-04-17/johannesburg-plans-meetings-in-may-to-market-debut-green-bond.html>
- Bristol Green Capital (2014) 'European Green Capital Award', Bristol. <http://bristolgreencapital.org/european-green-capital-award/>
- C40 (2011) 'De-centralizing energy generation in Woking, U.K. slashed the city's CO2 emissions by 82%', case study, 9 November 2011. [http://www.c40.org/case\\_studies/de-centralizing-energy-generation-in-woking-uk-slashed-the-citys-co2-emissions-by-82](http://www.c40.org/case_studies/de-centralizing-energy-generation-in-woking-uk-slashed-the-citys-co2-emissions-by-82)
- C40 (2012) *An 'Alternative Approach for Cities: C40 Cities Climate Leadership Group Submission to Rio+20*, London. <http://www.uncsd2012.org/content/documents/244C40%20Submission%20to%20Rio20.pdf>
- C40 (2014) 'Munich Aims for 100% Green Energy by 2025', London. <http://cityclimateleadershipawards.com/mayors-voices-munich-mayor-hep-monatzeder/>
- Carbon Culture (2014) 'Cardiff Council on CarbonCulture', London. <http://www.carbonculture.net/orgs/cardiff-council/>
- Carbon Tracker (2013) *Unburnable Carbon 2013: Wasted capital and stranded assets*, London. <http://carbontracker.live.kiln.it/Unburnable-Carbon-2-Web-Version.pdf>
- Centre for Cities (2013) *'Cities Outlook 2013'*, London. [http://www.centreforcities.org/assets/files/2013/CITIES\\_OUTLOOK\\_2013\\_FINAL.pdf](http://www.centreforcities.org/assets/files/2013/CITIES_OUTLOOK_2013_FINAL.pdf)
- Chase J (2014) *H1 2014 Levelised Cost of Electricity – PV*, London: Bloomberg New Energy Finance. <https://www.iea.org/media/workshops/2014/solarelectricity/BNEF2LCOEofPV.pdf>
- Citibank (2013) *Energy Darwinism: The Evolution of the Energy Industry*, London. <https://ir.citi.com/Jb89SJMmf%2BsAVK2AKa3QE5EJwb4fV5UUplD0iCiGOOk0NV2CqNI%2FPDLJqxidz2VAXXAXFB6fOY%3D>
- Citi Research (2013) *'Pan-European Utilities – The Lost Decade: Where Next?'*, London.
- Climate Bonds Initiative (2013) *Bonds and Climate Change – the State of the Market in 2013*, London. [http://www.climatebonds.net/files/uploads/2013/08/Bonds\\_Climate\\_Change\\_2013\\_A4.pdf](http://www.climatebonds.net/files/uploads/2013/08/Bonds_Climate_Change_2013_A4.pdf)
- Climate Bonds Initiative (2014) 'Green bonds market 2014', data table [on Climate Bonds Initiative homepage]. <http://www.climatebonds.net/>

- Committee on Climate Change [CCC] (2012a) *Energy prices and bills – impacts of meeting carbon budgets*, London. [http://www.theccc.org.uk/wp-content/uploads/2012/12/1672\\_CCC\\_Energy-Bills\\_bookmarked.pdf](http://www.theccc.org.uk/wp-content/uploads/2012/12/1672_CCC_Energy-Bills_bookmarked.pdf)
- Committee on Climate Change [CCC] (2012b) 'The need for a carbon intensity target in the power sector', letter to the environment secretary, 13 September 2012, London. <http://www.theccc.org.uk/wp-content/uploads/2013/02/EMR-letter-September-12.pdf>
- Core Cities (2013) *Core Cities Growth Prospectus: Competitive Cities, Prosperous People*, Manchester. [http://www.corecities.com/sites/default/files/images/publications/Competitive%20Cities,%20Prosperous%20People\\_%20Final%20Draft.pdf](http://www.corecities.com/sites/default/files/images/publications/Competitive%20Cities,%20Prosperous%20People_%20Final%20Draft.pdf)
- Cornwall Council [CC] (2013) *Sustainable Energy Action Plan (SEAP) for a Green Cornwall*, Truro. <http://www.cornwall.gov.uk/media/3626665/SEAP-2013-final.pdf>
- Cornwall Council [CC] (2014) 'Cornwall Revolving Loan Fund for Community Renewables', webpage. <http://www.cornwall.gov.uk/environment-and-planning/green-cornwall/green-communities/cornwall-revolving-loan-fund-for-community-renewables/?page=32253>
- Cornwall Energy (2013) 'Assessment of routes to market for community energy projects', Norwich.
- Cox E and Jeffery C (2014) *The Future of England: The Local Dimension*, Newcastle: IPPR North. [http://www.ippr.org/assets/media/publications/pdf/England-local-dimension\\_Apr2014.pdf](http://www.ippr.org/assets/media/publications/pdf/England-local-dimension_Apr2014.pdf)
- Cox E and Schmuecker K (2013) *Beyond Banks and Big Government: Strategies for Local Authorities to Promote Investment*, Newcastle: IPPR North. [http://www.ippr.org/assets/media/images/media/files/publication/2013/12/Beyond-Banks-Big-Govt\\_MAR2013\\_10545.pdf](http://www.ippr.org/assets/media/images/media/files/publication/2013/12/Beyond-Banks-Big-Govt_MAR2013_10545.pdf)
- Deans M (2013) 'Local Authorities Retention of Business Rates', presentation to Renewable Energy Association Planning Conference, April 2013, London. [http://www.r-e-a.net/upload/events\\_-\\_planning\\_conf\\_-\\_mdeans.pdf](http://www.r-e-a.net/upload/events_-_planning_conf_-_mdeans.pdf)
- Della Croce R (2011) "Pension Funds Investment in Infrastructure: Policy Actions", OECD working papers on finance, insurance and private pensions no 13: Paris: OECD Publishing. <http://dx.doi.org/10.1787/5kg272f9bnmx-en>
- Department for Communities and Local Government [CLG] (2011) *Citizenship Survey 2010/11*, London. <http://www.tedcandle.co.uk/publications/066%20DCLG%20citizenship%20cohesion%20survey%20March%202011.pdf>
- Department of Energy and Climate Change [DECC] (2011) *Planning our electric future: a White Paper for secure, affordable and low-carbon electricity*, London. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/48129/2176-emr-white-paper.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48129/2176-emr-white-paper.pdf)
- Department of Energy and Climate Change [DECC] (2012) *The future of heating: A strategic framework for low carbon heat*, London. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/48574/4805-future-heating-strategic-framework.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48574/4805-future-heating-strategic-framework.pdf)
- Department of Energy and Climate Change [DECC] (2013a) *Learning from the DECC Local Authority Competition 2012/13: A case study approach*, London. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/275108/DECC\\_-\\_Learning\\_from\\_the\\_Local\\_Authority\\_Competition\\_2012-13\\_-\\_a\\_case\\_study\\_approach\\_-\\_FINAL\\_REPORT\\_100913.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/275108/DECC_-_Learning_from_the_Local_Authority_Competition_2012-13_-_a_case_study_approach_-_FINAL_REPORT_100913.pdf)
- Department of Energy and Climate Change [DECC] (2013b) *Electricity Market Reform Delivery Plan*, London. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/268221/181213\\_2013\\_EMR\\_Delivery\\_Plan\\_FINAL.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/268221/181213_2013_EMR_Delivery_Plan_FINAL.pdf)

- Department of Energy and Climate Change [DECC] (2013c) *Updated Energy And Emission Projections 2013*, London. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/239937/uep\\_2013.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239937/uep_2013.pdf)
- Department of Energy and Climate Change [DECC] (2013d) 'Renewables Obligation banding levels: 2013-17, data table, London. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/211292/ro\\_banding\\_levels\\_2013\\_17.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/211292/ro_banding_levels_2013_17.pdf)
- Department of Energy and Climate Change [DECC] (2013e) *Fuel Poverty: a Framework for future action*, London. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/211180/FuelPovFramework.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/211180/FuelPovFramework.pdf)
- Department of Energy and Climate Change [DECC] (2013f) *Helping Customers Switch: Collective Switching and Beyond*, London. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/253862/Helping\\_Customers\\_Switch\\_Collective\\_Switching\\_and\\_Beyond\\_final\\_\\_2\\_.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/253862/Helping_Customers_Switch_Collective_Switching_and_Beyond_final__2_.pdf)
- Department of Energy and Climate Change [DECC] (2014a) *Supporting Independent Renewable Investment: Offtaker of Last Resort – Consultation Document*, London. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/278893/OLR\\_Consultation\\_\\_11\\_Feb.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/278893/OLR_Consultation__11_Feb.pdf)
- Department of Energy and Climate Change [DECC] (2014b) 'Combined Heat and Power Focus – CHP Benefits – Decc's Free Resource supporting the development of CHP', webpage. <http://chp.decc.gov.uk/cms/chp-benefits/?phpMyAdmin=ff232c1d3b302ac6e951f554eeeeaefdf>
- Department of Energy and Climate Change [DECC] (2014c) *Community Energy Strategy: Full Report*, London. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/275163/20140126Community\\_Energy\\_Strategy.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/275163/20140126Community_Energy_Strategy.pdf)
- Department of Energy and Climate Change [DECC] (2014d) *Annual Fuel Poverty Statistics Report, 2014*, London. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/319280/Fuel\\_Poverty\\_Report\\_Final.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/319280/Fuel_Poverty_Report_Final.pdf)
- Department of Energy and Climate Change [DECC] (2014e) *Energy Investment Report April 2014*, London. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/305860/DECC\\_Energy\\_investment\\_report\\_Web\\_Final.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/305860/DECC_Energy_investment_report_Web_Final.pdf)
- Department of Energy and Climate Change [DECC] (2014f) 'Wave 9: Headline Findings,' spreadsheet, London. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/306900/wave\\_9\\_excel\\_summary\\_tables\\_quarterly\\_headline\\_findings.xlsx](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/306900/wave_9_excel_summary_tables_quarterly_headline_findings.xlsx)
- Department of Trade and Industry [DTI] (2007) *Meeting the Energy Challenge: A White Paper on Energy*, London. <http://www.berr.gov.uk/files/file39387.pdf>
- Deputy Prime Minister's Office [DPMO], HM Treasury and Department for Communities and Local Government (2011) *Unlocking Growth in Cities*, London. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/7523/CO\\_Unlocking\\_20GrowthCities\\_acc.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7523/CO_Unlocking_20GrowthCities_acc.pdf)
- Edelman (2014) 'Energy – Edelman Trust Barometer 2014, UK Data', webpage. [http://www.slideshare.net/Edelman\\_UK/energy-trust-barometer-2014](http://www.slideshare.net/Edelman_UK/energy-trust-barometer-2014)
- Energy Bill Revolution [EBR] (2014 forthcoming) *The macro-economic effects of improving energy efficiency and tackling fuel poverty*, London
- Enviroenergy (2014) 'About Us', webpage. <http://www.enviroenergy.co.uk/about-enviroenergy/>
- Greater London Authority [GLA] (2012) 'Request for Director Decision – DD897', London. <http://www.london.gov.uk/sites/default/files/DD897%20License%20Lite%20%28signed%29%20PDF.pdf>

- Green Investment Bank [GIB] (2014) *Low energy streetlighting: Making the switch. A market report by the UK Green Investment Bank*, London. <https://www.theilp.org.uk/documents/gib-market-report/gib-market-report-low-energy-streetlighting-feb-2014.pdf>
- Greener W (2010) 'Converting Waste to Energy in Nottingham City', Nottingham city council website. <http://chp.decc.gov.uk/cms/assets/pdf/Energy-from-Waste-Workshops-2010/5-Energy-From-Waste-Nottingham-5-October-2010-Antony-Greener-Converting-Waste-to-Energy-in-Nottingham-City.pdf>
- Greenpeace (2006) 'Decentralising energy – the Woking case study', London. <http://www.greenpeace.org.uk/MultimediaFiles/Live/FullReport/7468.pdf>
- Hitachi (2014) 'Commencement for: Smart Community Project in Greater Manchester', press release, 13 March 2014, Tokyo. <http://www.hitachi.com/New/cnews/month/2014/03/140313.pdf>
- House of Commons [HOC] Environmental Audit Committee (2014) 'Environmental Audit Committee – Twelfth Report: Green Finance – vol I: Conclusions', London: the Stationery Office. <http://www.publications.parliament.uk/pa/cm201314/cmselect/cmenvaud/191/19108.htm>
- Institute for Public Policy Research [IPPR] (2014) 'Energy tariff surcharge trebles over three years', press release, 25 March 2014, London. <http://www.ippr.org/news-and-media/press-releases/energy-tariff-surcharge-trebles-over-three-years>
- Ipsos MORI (2013) 'Consumer Engagement with the Energy market – Tracking Survey. Report Prepared for Ofgem', London. [http://www.ipsos-mori.com/DownloadPublication/1562\\_sri-localgov-laria-240513.pdf](http://www.ipsos-mori.com/DownloadPublication/1562_sri-localgov-laria-240513.pdf)
- Lancashire County Pension Fund [LCPF] (2013) 'Lancashire County Pension Fund Funding Strategy Statement (FSS)', Preston. <http://council.lancashire.gov.uk/documents/s37126/Funding%20Strategy%20Statement%20and%20Statement%20of%20Investment%20Principles%20Appendix%20A.pdf>
- Leeds City Council [LCC] (2013) *Report of the Director of Environment and Neighbourhoods: Report to Executive Board*, Leeds. <http://democracy.leeds.gov.uk/documents/s93298/Wrap%20Up%20Leeds%20report%20150413.pdf>
- Local Government Association [LGA] (2012) *Local authority bonds: A local government collective agency*, London. <http://www.maproductions.se/wp-content/2012/10/local-authority-bonds-LGA.pdf>
- Local Government Association [LGA] (2014) *Polling on resident satisfaction with councils – Full report: January 2014*. London. <http://www.local.gov.uk/documents/10180/11981/January+2014+Resident+Satisfaction+Polling+-+Final+Report.pdf/75ae9b61-2826-468c-a73f-616b926cc330>
- Markit (2014) 'UK economy: Cost of living, energy bills & interest rates top household financial concerns', press release, 30 May 2014. [http://www.markit.com/assets/en/docs/commentary/markit-economics/2014/may/GB\\_HFI\\_influences\\_1405\\_PR\\_final.pdf](http://www.markit.com/assets/en/docs/commentary/markit-economics/2014/may/GB_HFI_influences_1405_PR_final.pdf)
- McCabe J (15 May 2014) 'Social landlords prepare to enter energy markets', *Inside Housing* online. <http://www.insidehousing.co.uk/social-landlords-prepare-to-enter-energy-markets/7003704.article>
- National Association of Pension Funds [NAPF] (2013) *Local Government Pension Scheme 2013: investing in a changing world*, London. [http://www.napf.co.uk/PolicyandResearch/DocumentLibrary/~/\\_/media/Policy/Documents/0309\\_Local\\_Government\\_Pension\\_Scheme\\_2013\\_-\\_Investing\\_in\\_a\\_changing\\_world\\_An\\_NAPF\\_report\\_DOCUMENT.ashx](http://www.napf.co.uk/PolicyandResearch/DocumentLibrary/~/_/media/Policy/Documents/0309_Local_Government_Pension_Scheme_2013_-_Investing_in_a_changing_world_An_NAPF_report_DOCUMENT.ashx)
- O'Donnell S (2014) 'Miliband promises to give 30 billion pounds to local governments', *Bloomberg* online, 29 June 2014. <http://www.bloomberg.com/news/2014-06-29/miliband-promises-to-give-30-billion-pounds-to-local-governments.html>

- Office of Gas and Electricity Markets [Ofgem] (2008) *Energy Supply Probe – Summary of initial findings*, London. <https://www.ofgem.gov.uk/ofgem-publications/38437/energy-supply-probe-initial-findings-report.pdf>
- Office of Gas and Electricity Markets [Ofgem] (2009) *Distributed Energy – Final Proposals and Statutory Notice for Electricity Supply Licence Modification*, London. <https://www.ofgem.gov.uk/ofgem-publications/58104/definalproposals.pdf>
- Office of Gas and Electricity Markets [Ofgem] (2013) *The revenues, costs and profits of the large energy companies in 2012*, London. <https://www.ofgem.gov.uk/ofgem-publications/84640/css2012summarydocument.pdf>
- Office of Gas and Electricity Markets [Ofgem] (2014a) *State of the Market Assessment*, London. <https://www.ofgem.gov.uk/ofgem-publications/86804/assessmentdocumentpublished.pdf>
- Office of Gas and Electricity Markets [Ofgem] (2014b) 'Feed-in Tariff Scheme: Tariff Table 1 April 2014 –31 March 2015 Non-PV Only', London. <https://www.ofgem.gov.uk/ofgem-publications/87074/rpiadjustedtariffsnon-pvapril2014.pdf>
- Office of Gas and Electricity Markets [Ofgem] (2014c) 'Feed-in Tariff Scheme: Tariff Table 1 July 2014 PV Only', London. <https://www.ofgem.gov.uk/ofgem-publications/87468/fitpaymentratetableforpublication1july2014pvtariffs.pdf>
- Office of Gas and Electricity Markets [Ofgem] (2014d) 'Supply Market Indicator', London. <https://www.ofgem.gov.uk/gas/retail-market/monitoring-data-and-statistics/understanding-energy-prices-great-britain/supply-market-indicator>
- O'Nians, J (2013) '*Bristol Solar City: An Introduction*', webpage. <http://bristolsolarcity.com/wp-content/uploads/2013/05/10.20-Bristol-Solar-City.pdf>
- Ovo Energy [Ovo] (2014) *Community Energy White Paper April 2014*, Bristol. [http://www.ovoenergy.com/uploadedFiles/Content/Different\\_Approach/Community\\_Energy/community\\_energy\\_whitepaper\\_010514.pdf](http://www.ovoenergy.com/uploadedFiles/Content/Different_Approach/Community_Energy/community_energy_whitepaper_010514.pdf)
- Platt R, Aldridge J and Washan P, with Price D (2013) *Help to Heat: A solution to the affordability crisis in energy*, London: IPPR. <http://www.ippr.org/publications/help-to-heat-a-solution-to-the-affordability-crisis-in-energy>
- Platt R and Rosenow J (2014) *Up against the (solid) wall: What changes to the ECO mean for energy efficiency policy*, London: IPPR. <http://www.ippr.org/publications/up-against-the-solid-wall-what-changes-to-the-eco-mean-for-energy-efficiency-policy>
- Public Tenders (2014) 'Electricity market services – Licence Lite', London. <http://www.publictenders.net/node/2529627>
- Rutledge I (2012) *Who owns the UK Electricity Generating Industry – and does it matter?*, Chesterfield: Sheffield Energy Resources Information Service. [http://www.seris.co.uk/SERIS\\_%28Sheffield\\_Energy\\_Resources\\_Information\\_Services/Viewpoint\\_files/Who\\_Owns\\_UK-Generation\\_1.pdf](http://www.seris.co.uk/SERIS_%28Sheffield_Energy_Resources_Information_Services/Viewpoint_files/Who_Owns_UK-Generation_1.pdf)
- Scheerhout J (2012) 'People power slashes £171 off Greater Manchester families' fuel bills', *Manchester Evening News*, 30 November 2012. <http://www.manchestereveningnews.co.uk/news/greater-manchester-news/people-power-slashes-171-off-greater-698068>
- Schoenberg M (2014) 'Europe's utilities should embrace role in ICT and smart infrastructure', *Guardian*, 27 May 2014. [www.theguardian.com/sustainable-business/future-europe-utilities-business-model-ict](http://www.theguardian.com/sustainable-business/future-europe-utilities-business-model-ict)
- Share Action (2014) data provided in personal communication with IPPR, June 2014
- Wales P (2013) *Economic Review, November 2013*, Newport: Office for National Statistics. [http://www.ons.gov.uk/ons/dcp171766\\_333999.pdf](http://www.ons.gov.uk/ons/dcp171766_333999.pdf)

# APPENDIX: IN-DEPTH ANALYSIS OF OPTIONS FOR CITY ENGAGEMENT IN ENERGY SUPPLY

For cities that wish to get involved in energy supply, the following five options exist – several of which are already being explored by leading local authorities.

1. **Fully licensed supplier:** a city sets up and runs an independent supplier, taking full responsibility for delivering all operational aspects of the business and meeting all regulatory licence conditions.
2. **Joint venture:** a city works with one or more third parties to set up and run an independent supplier, sharing responsibility for operational delivery and meeting licence conditions.
3. **Licence lite:** a city becomes a ‘junior supplier’ with responsibility for some aspects of operational delivery and meeting licence conditions, while a ‘senior supplier’ takes on the remaining responsibilities.
4. **Partnership:** a city establishes a partnership with an existing supplier in which energy is provided using the supplier’s license and delivery of operational aspects of the supply business is shared.
5. **White label:** a city licenses use of their brand to an existing supplier who uses it to market to customers in the local area.

The following seven key criteria can be used to compare the models:

- ease of set-up
- start-up costs
- risks
- operational complexity
- income generation potential
- control
- ability to promote local generation set local tariffs.

Below we compare each of the business models according to the key criteria.

## 1. Ease of set-up

Regulatory conditions dictate that establishing a new energy supply business is burdensome and complex. Regulatory conditions which must be met include ensuring supply and demand is balanced, adhering to distribution and balancing codes and meeting consumer protection requirements. If energy is being supplied to households, the supplier must also ensure their marketing and sales activity, billing and change of supplier processes, complaint handling and redress procedures all meet with regulatory conditions. Cornwall Energy (2013) estimates that the process of addressing these conditions to establish a new supplier takes over a year. There are some service providers that offer a ‘supplier in a box’ solution through which a city could purchase a company with a pre-accredited supply licence. Such products can make the process of establishing a supplier much simpler but involve substantially higher costs.

As a ‘fully licensed supplier’ a city would have full responsibility for navigating the set-up process. The burden could be shared through the ‘joint venture’ model but additional work would be needed to establish the terms of the contract between the participating parties.

To establish a ‘licence lite’ arrangement there are a set of regulatory conditions that must be met as the junior supplier, including establishing a Supplier Services Agreement with a senior supplier. The model is not easy to set up since the GLA has been working on licence lite for three years and is only now seeking to find a senior supplier. However, the GLA is intending to produce standardised documents and contracts that other cities could take advantage of, which will be useful if the GLA’s efforts prove to be successful.

The ‘partnership’ model offers a simpler set-up option since an existing supplier will have already taken the steps necessary to meet the regulatory licensing conditions. The focus for the city will be on establishing contractual terms with the existing supplier and developing the capability to deliver on the operational tasks it intends to take responsibility for.

The ‘white label’ option presents the simplest set-up option as it only requires a contract to be established with an existing supplier.

## 2. Start-up costs

In part due to the high regulatory burden, the set-up costs for establishing a new energy supplier are high. Cornwall Energy (2013) estimates the cost to be in the region of £500,000, with additional costs incurred on an ongoing basis. A ‘supplier in a box’ solution could be expected to cost significantly in excess of this, potentially as much as £1 million. Under the ‘fully licensed supplier’ model, the city would have to meet all of these costs but they would be shared between participating parties under the ‘joint venture’ model.

Cornwall Energy estimates the cost of establishing a ‘licence lite’ arrangement, with its reduced regulatory conditions, to be in the region of £260,000 (ibid). As there are no regulatory conditions to be satisfied under the ‘partnership’ model, set-up costs would be lower but investment would be needed to establish facilities for delivering operational aspects of the business.

Set-up costs under the ‘white label’ scheme would be negligible.

## 3. Risks

The central risk with establishing a new supply business is that it will not be profitable and ultimately go bankrupt, incurring substantial financial losses and reputational damage for a city as a result. The risk of failure is significant because running a profitable energy supplier is far from easy. Several of the Big Six energy companies appear to regularly post losses in their retail businesses (Ofgem 2013), and most of the smaller retailers are reportedly not running at a profit.

To succeed, a new supplier has to build and maintain a significantly sized customer base by offering competitively priced tariffs while at the same time limiting its costs. Cornwall Energy (2013) has calculated that a new supply business should only be launched if a customer base of 20,000 customers can be built rapidly. There is a particular onus on a city-led supplier to ensure it offers competitively priced tariffs if it is supplying low-income households.

Both the ‘fully licensed supplier’ and ‘joint venture’ options face the highest risk of failure. The reputational risk to the city is the same for both models but the financial risk is shared with third parties under the ‘joint venture’ model.

While exactly how ‘licence lite’ will operate in practice remains to be seen, the risk of outright failure by the business is likely to be substantially lower than with ‘fully licensed supplier’ and ‘joint venture’ as it should ultimately be dictated by the business health of the ‘senior supplier’. However, the city will still have some responsibility for balancing, which means there could be a risk of high costs.

The risk of outright failure under the ‘partnership’ model is likely to be similar to ‘licence lite’. However, the risks of higher prices due to poor delivery should be significantly lower because the city can rely on the existing trading capabilities of the third party supplier.

The ‘white label’ model has similar advantages to the ‘licence lite’ and ‘partnership’ models for reducing risk, but gives rise to a new set of risks because the city has little control over the activities and operations of the supplier with which it is working.

#### 4. Operational complexity

Running an energy supplier is a very complex business, with tasks including meeting regulatory conditions, trading wholesale energy, and carrying out consumer-facing activities such as billing, customer service and customer acquisition.

Effective trading of wholesale energy trading is essential as wholesale costs are by far the single-largest cost that suppliers face (around 46 per cent of all costs). If trading is done inefficiently this will put substantial upwards pressure on the tariffs that a supplier can offer. A supplier must ensure that supply and demand match as closely as possible at all times, taking into account fluctuations in energy demand driven by weather and behaviour, and fluctuations in generation from renewable resources.

Even with these significant risks, a city may wish to engage in energy trading to ensure they have full control of their business or to maximise how much income they can generate. However, cities are likely to be most effective at delivering customer-facing activities of the supply business or activities that are delivered in local areas. It is in these elements – for example customer acquisition, customer service, meter reading and potentially billing – that cities have existing, relevant capabilities through the delivery of their existing duties and could potentially deliver at costs which are competitive, or even cheaper, than those of entirely private sector suppliers.

Under ‘fully licensed supplier’ a city could potentially take on all aspects of operational delivery of the business. However, in practice, this would be unlikely as it would make sense for some aspects to be outsourced to specialist service providers. In fact, for each of the models, except for ‘white label’ where the business is run entirely by an existing supplier, a city will share delivery of the various operational tasks with third parties. For ‘licence lite’ the responsibilities of the city (that is, the ‘junior supplier’) are dictated by the regulatory conditions. They focus primarily on customer-facing activities, although also include some responsibility for balancing supply and demand.

For the other models the precise way in which operational tasks are shared between the city and third parties will depend entirely on decisions by the city and the contractual arrangements they enter into. The key difference between the models is where ultimate responsibility for delivery lies. Under ‘fully licensed supplier’ the city has ultimate responsibility and will need to be effective at monitoring and managing all of their contractors. Under the ‘joint venture’ model the responsibility would be shared since the third parties would have jointly invested in establishing the supplier with the city and would therefore have taken on some of the delivery risk. Under ‘partnership’ the weighting of responsibility would shift more to the third party supplier.

One key advantage of the ‘partnership model’ when compared with ‘fully licensed supplier’ or ‘joint venture’ is that the business will be drawing on existing operational capabilities of the third party, rather than building them from scratch. This reduces

risk and also produces benefits from economies of scale, for example in relation to trading capabilities, which should help to keep costs down.

## 5. Income generation potential

As with all of the criteria discussed here, the income generation potential depends on how the responsibilities of meeting licensing regulations and delivering the supply business are divided between a city and third parties. As has been discussed, there is some flexibility with how this is done under the 'fully licensed supplier', 'joint venture' and 'partnership' models.

The income generation potential is greatest with 'fully licensed supplier', since in this model the city is taking on all of the responsibility for the business. However, it is important to restate that running a profitable energy retailer is far from easy. The income generation potential from 'white label' is the lowest because the model involves the least direct involvement by a city.

It is not yet clear what the income generation potential under licence lite will be, but we assume it could be in the region of the 'partnership' model.

## 6. Control

The 'fully licensed supplier' model offers the city greatest control over their business because they will retain ownership of the supply licence.

The 'joint venture' model also offers the city a high level of control as it part-owns the licence, although the level of control is shared with the third parties.

Under 'licence lite' the city has full control of all aspects of the business covered by its 'junior supplier' licence, but is dependent on the 'senior supplier' for many aspects of delivery.

Similarly to licence lite, under the 'partnership model' a city cedes a degree of control to a third party. An effective contractual agreement and relationships with the third party supplier will be required to mitigate any risks this poses.

The degree of control a city has under the 'white label' model is very limited.

## 7. Ability to promote local generation and determine local tariffs

In effect all of the models, except for 'white label', offer a city the opportunity to support local generation projects and offer bespoke local tariffs. With the 'fully licensed supplier', 'joint venture' and 'licence lite' models, this control is integral to the city's full or part ownership of the supply licence. In the partnership model this control should be integral to the contractual arrangement that is entered into with the third party.