CHAPTER TWO

Energy

In light of both the push to decarbonisation and the surge in energy prices, the UK government, the energy regulator, and energy sector participants alike are searching for solutions to tackle the challenge of investing in the energy system and the need to decarbonise to meet national and international obligations.

At the local level, there is a role for councils to play – one that involves a mix of investment and convening powers. Beyond this, local energy networks have been identified by government as an important facilitator of net zero.

Key points

Driving decarbonisation

- Decarbonising the energy sector, particularly in the current economic context, depends on expanding investment in renewable energy and a associated major national push to create the necessary skills provision.
- Local authorities can use their own financial and landowning capacity alongside their abilities as conveners of stakeholders to drive investment in renewable generation, whilst also working with training providers and employers to create skills pathways to meet this demand.
- However, policy alignment over incentives is needed between further education and local government: the Local Skills Improvement Plans announced in the Levelling Up White Paper are a positive step in this direction.
- District heat networks, as part of broader regional energy strategies, can help meet energy demands whilst reducing emissions at a local level by consolidating generation for an area in a single powerplant.

Achieving clean growth

- There are multiple different areas relating to clean energy where providing a skills uplift and raising supply-side demand could lead to an increase in high-quality, high-skilled employment.
- In the long term, district heat networks can reduce energy bills for both commercial and residential properties.

2.1 The current national picture

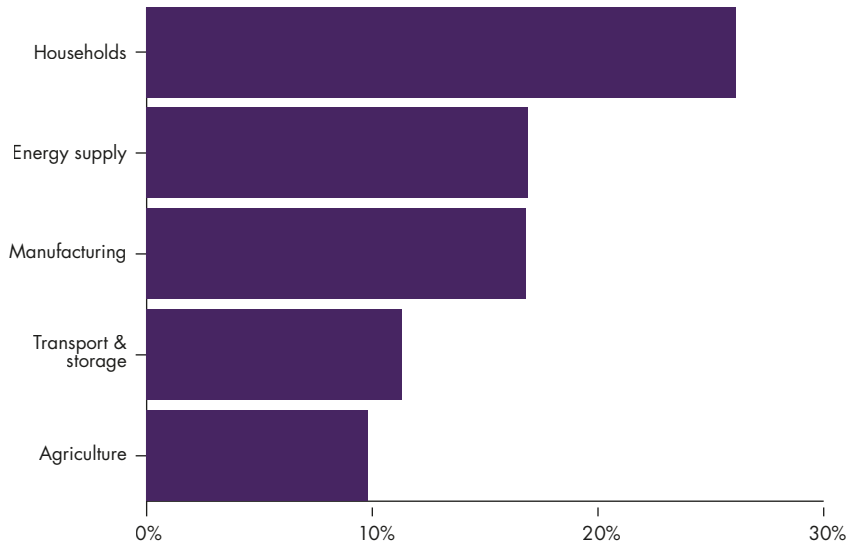
A transformative shift in the generation, storage, and transmission of energy is required to prevent catastrophic global heating, a goal that has come into line over the course of 2022 with the national security interests of western states who can no longer afford to be dependent on Russian energy. The cost-of-living crisis is in many respects a manifestation of this dependency and should be seen as a major incentive to transition away from fossil fuels and towards clean, renewable sources of energy. This is a major challenge, the scale of which is intensified by multiple factors nationally, the most acute being a lack of suitable skills across the multiple sectors and industries that are vital contributors to decarbonising energy.

2.1.1 Moving to renewable energy

Energy supply is the second-largest emitter of greenhouse gases in the UK at

23 percent, according to government statistics tracking domestic emissions[39]. In June 2019, the UK became the first country to sign into law a net zero carbon emissions target, building on its previous 80 percent reduction target established by the Climate Change Act 2008. Moving the UK energy system from fossil fuels to low-carbon alternatives is a key part of the net zero carbon equation. This is being enabled by a transition from a passive to an actively managed energy system with increased deployment of distributed energy resources and disruptive technologies[40].

Figure 6. Contribution to UK emissions
Main sectors



Source: ONS

Since the passing of the Climate Change Act, huge steps have been taken in reducing emissions and accelerating clean growth. Since the passing of the Act:

- The use of coal has fallen drastically from providing 33 percent of all electricity generated in 2008 to just one percent in 2020[41].
- Electricity from renewables accounted for a record 43.1 percent during 2020,

39 BEIS (2018) – 2018 UK Greenhouse Gas Emissions
40 Gudde et al (2021) – The role of UK local government in delivering on net zero carbon commitments
41 BEIS (2021) – UK Energy in Brief 2021

more than six percent higher than in 2019[42].

- England's renewable capacity grew from 21.8TW in 2008 to 120.5TW in 2019, a more than five-fold increase.
- The power sector has cut its emissions by more than half over the last 10 years, which has meant the majority of greenhouse gas emissions reductions have come from the power sector.

The energy sector has been the focus of the majority of clean growth policies to date. Just a few years ago, power was generated in 50 or so large fossil fuel and nuclear power plants. As of December 2020, renewable production generated 40.2 percent of total electricity produced in the UK, around six percent of total UK energy usage[43], with many renewable energy generators largely connected at the edge of the grid. Power regularly flows up the distribution network to the national transmission grid and many households, landowners, and businesses produce their own power 'behind the meter', reducing their reliance on the electricity network.

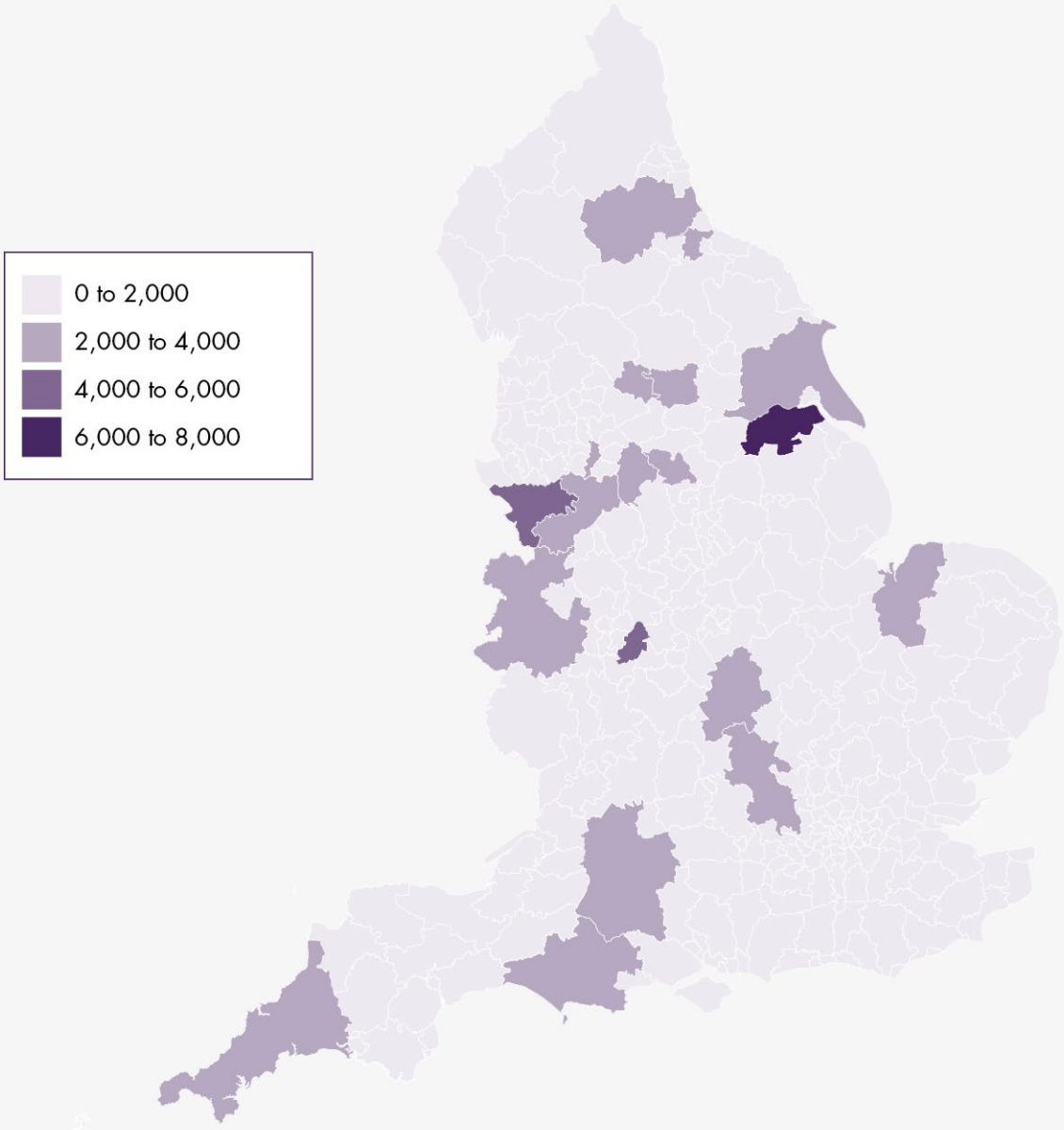
In 2021, the energy sector committed to investing in and delivering a net zero power system by the 2030s[44] while keeping bills down for customers and maintaining security of supply. While doing so, the sector recognised that realising this ambition will depend on government action and policies to deliver on the most ambitious emissions reduction targets of any major economy – from ensuring costs are spread fairly across the population to unleashing the billions of pounds of investment needed to fund this transformation.

42 BEIS (2021) – UK Energy in Brief 2021

43 BEIS (2022) – Energy Trends UK, April to June 2022

44 Energy UK – Towards net zero emissions: The energy industry's commitment to the climate, customers and jobs

Figure 7: GHG Emissions (tonne CO_2 equivalent)



Source: BEIS

In the Energy White Paper, the UK government set out its long-term policy and commitments to put the country 'on course to net zero' whilst acknowledging that the short-term national policy agenda is critical with commitments 'to support a green recovery from COVID-19' and 'create a fair deal for consumers'[45].

However, commitment to investing in renewable energy at the national level was called into question by the major changes to the government in August and September of 2022. Former Prime Minister Liz Truss pledged to introduce a temporary moratorium on the green energy levy and lift the ban on fracking and offshore oil & gas developments[46]. The logic for this decision was that the UK needs to secure its own energy supply in the short term and to plan renewable alternatives in the long term[47]. Overall, the focus on intensifying fossil fuel production adopted by the government in September 2022, particularly the potential of fracking for shale gas, is out of step with public opinion[48]. These steps caused alarm and led to suspicions that the net zero imperative may be abandoned.

On the other hand, the September 2022 energy support package did confirm that Energy Company Obligation and the latest wave of the Social Housing Decarbonisation Fund will remain unaffected and continue to run. Truss also confirmed that hydrogen blending as part of the UK's gas network will get the go-ahead next year, albeit in a 'limited and temporary' role[49]. Likewise, the alteration of the planning procedure for onshore wind, bringing onshore windfarms into line with all other planning applications, is a positive step in the transition to renewable energy.

The UK's position on renewable energy is therefore something of a mixed picture — one that is in pressing need of clarification. Investing in renewable energy and its associated technologies has major growth implications – particularly around the proliferation of highly skilled jobs and their associated training pathways. Local government has an important role to play across the piece: in providing land and channelling investment to renewable energy; in convening the local public and private sector around green skill provision; and in the operation of more efficient and greener district heat networks.

45 BEIS (2020) – Energy White Paper
46 Prime Minister's Office (2022) – PM Liz Truss's opening speech on the energy policy debate
47 Energy Voice (2022) – Liz Truss to make announcement on dozens of new North Sea licences: Report
48 YouGov (2022) – While opposition has dropped, Britons remain against fracking for shale gas
49 Recharge News (2022 – UK aims to break renewables' price link with gas as Truss fires off black and green pledges

2.1.2 Green skills deficit

Government have recognised, through their Plan for Growth[50], that the UK skills system is no longer fit for purpose and lags internationally, especially in areas of increasing importance such as green skills. There is a clear demand for a trained workforce in the energy sector including in retrofit, renewable power generation, and Carbon Capture, Utilisation and Storage (CCUS) to name a few. The Climate Change Committee have highlighted the importance of preparing early for this green skills demand, however a key challenge highlighted relates to the pace of change required and the fact that 'current [training] institutions are not equipping enough people with the required skills'.

This situation has created a 'skills mismatch'. The Industrial Strategy Council has forecast that the UK's projected demand for skills, including those relating to net zero, will continue to increase over this decade while their supply will be constrained[51]. This is something that risks stunted economic growth at a time when the country is looking to recover from COVID-19. Therefore, to rectify the skills system, the CCC have recommended strong government intervention, working closely with stakeholders across industry and the private sector as well local government in ensuring the correct provision of green skills required.

It has been estimated that 429,000 retrofitters will be needed to meet 2050 net zero targets[52]. However, 'retrofitters' is a category comprising of countless different trades with thousands of businesses of differing scale supplying the market. It is not as simple as upskilling those working in construction – and even if it were, the current repair, maintenance, and improvement (RMI) workforce is almost half the amount required for targets to be met by 2050. A 'retrofitter' is everything from assessors, coordinators, designers, to installers, and every role in between. A report by Energy Systems Catapult identified advice & customer care, low-carbon heating installation, property assessment, and technology integration as critical skills gaps in the face of rising demand[53]. Beyond this, there are capability gaps – poor retrofitting examples tend to be the result of skills gaps within an organisation or trade going unaddressed prior to taking on work, or gaps in knowledge amongst property owners and managers.

The same Energy Systems Catapult report found that market development, stimulating skills demand, and increasing the capacity and skills provision across

50 HM Treasury (2021) – Build Back Better: our plan for growth
51 Localis (2021) – Plan for Local Growth
52 Sumpton (2022) – The retrofit skills gap and what's needed to decarbonise the UK's housing stock
53 Energy Systems Catapult (2022) – Foresighting Skills for Net zero Homes

the supply chain should be medium-term priorities for the sector, and that central and local government should act to facilitate these same priorities. The recent Green Deal and Green Homes Grant failed to do so, instead only stimulating consumer demand and thus placing more pressure on an industry that is fundamentally lacking in enough skilled or qualified people to meet such demand effectively. The Green Homes Grant, a £1.5bn programme, was scrapped six months after launch — failing to retrofit 10 percent of its planned 600,000 homes. As Ian Preston, Director of Household Energy Services at the Centre for Sustainable Energy, notes[54], the thousands of businesses that are part of the retrofit supply chain are unlikely to take on apprentices or invest in training if demand is dependent on government schemes that can be withdrawn at any time with little warning – only serving to entrench skills gaps further.

2.1.3 Energy decarbonisation in the 2022 context

Progress towards decarbonising the energy sector has been positive. Of note[55]:

- New competitions have been launched to develop and improve the delivery of some key low-carbon power technologies such as floating offshore wind, innovative energy storage technologies and a biomass feedstock programme;
- The government has begun consulting on the phase-out of coal generation;
- A new scheme has been introduced to kickstart a just transition in the North Sea oil and gas industry;
- And the government has stopped financially supporting the fossil fuel energy sector abroad.

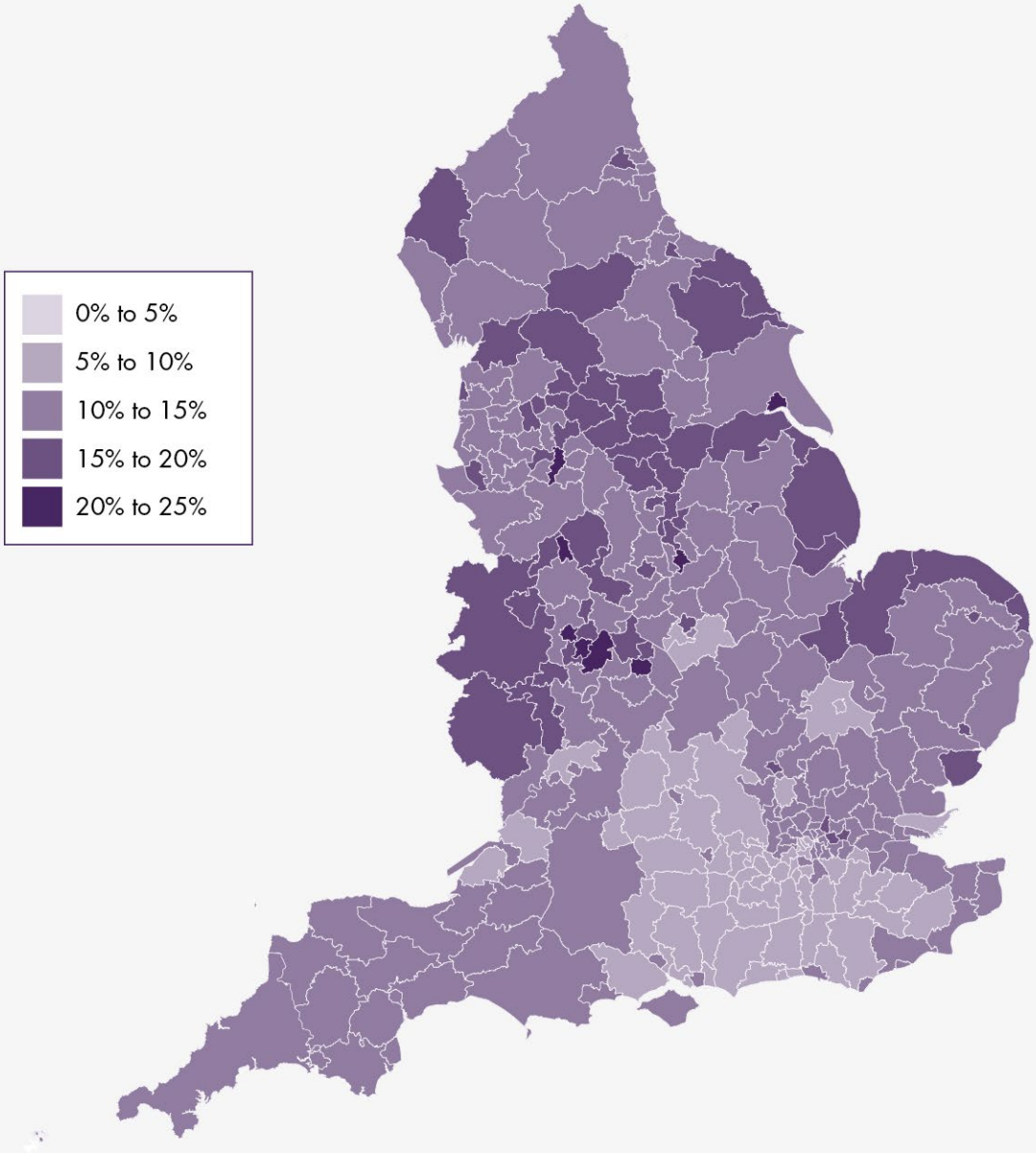
However, attention must be turned to 2022 and the cost-of-living crisis. The Energy Price Guarantee of £2,500 still translates to a 96 percent increase on the prices households paid last winter, with Money Saving Expert highlighting that many will continue to struggle to pay[56]. However, overall the intervention has been welcomed as something needed to save households from disaster. Beyond this avoidance of emergency, however, lies the need to fully decarbonise and achieve energy self-sufficiency.

The Johnson government launched the British energy security strategy[57], following the invasion of Ukraine, to set out plans to make the UK more energy-independent

54 CSE (2022) – Staring into the retrofit skills gap
55 Green Alliance (2021) – Net zero policy tracker: April 2021 update
56 Money Saving Expert (2022) – What to do if you're struggling to pay your energy bills
57 HM Government (2022) – British Energy Security Strategy

and accelerate the production of home-grown power. A major focus in the strategy is to make 95 percent of electricity low-carbon by 2030. Overall, it follows the path of upscaling the production of clean energy. For example, as part of its 'heat pump first' approach, government has announced a Heat Pump Investment Accelerator Competition to speed up their production. Alongside this, plans include expanding nuclear power and offshore wind, as well as solar and hydrogen power.

Figure 8: Households in fuel poverty (%), 2020



Source: BEIS

2.2 Local authority powers and capacity

Local authority powers and capacity to drive decarbonisation – energy

Power	District/Unitary	County/Unitary	LEP
Soft power	• Can work as place leaders to attract investment in renewable energy projects.	• Can bring together local partners, FE colleges and businesses to develop plans addressing the green skills gap. • Can work as place leaders to attract investment in renewable energy projects.	• Key convener of business and skills advisory panels.
Hard power	• NPPF consideration of local areas suitable for renewable generation. • Local plan power to set quotas for renewable generation in new developments. • Ability to develop own renewable generation assets through investment. • Can apply for funding for heat network delivery projects.	• Forthcoming Local Skills Improvement Plans will formalise and increase the role of county/ unitary authorities in building up green skills. • Ability to develop own renewable generation assets through investment.	• Develop Regional Energy Strategies across economic areas.

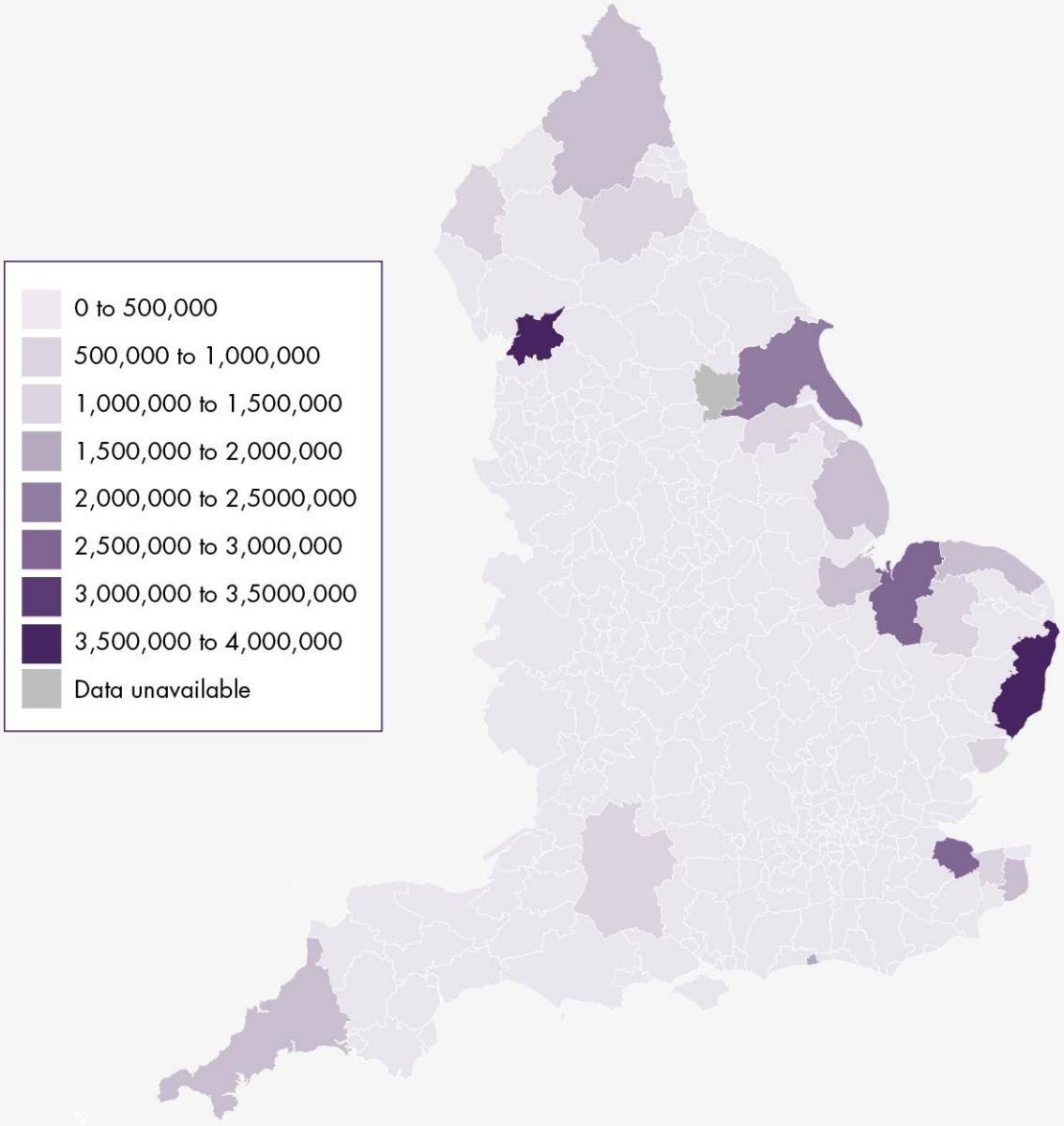
2.2.1 Land, investment, and renewable energy

Local authorities of all configurations are at the forefront of actualising the national net zero agenda at the level of place and helping translate it into something relatable to residents and communities. There are a number of factors that enable them to take the necessary steps forward and increase the provision of renewable energy on the local level.

In terms of powers, while combined authorities have little control over energy

markets or related infrastructure, they do have the ability to plan for and build the provision of energy infrastructure into their strategic plans for the authority area. These larger, subregional authorities are well suited to attract private investment into the area to be directed toward innovative, green energy-related technologies. They have core powers in areas such as economic development, skills, and transport. Therefore, they are able to provide investor confidence through setting a strategic direction for how funding will be used in these areas and what expected results could be. Additionally, they are able to use their role as subregional coordinators to convene private investors as a way of maximising collective spend for innovative, net-zero technology.

Figure 9: Renewable electricity generation (MWh)



Source: BEIS

The picture for counties, districts, and unitaries is different in that they do not have any significant powers on their own to drive change in this area, although there is potential for them to also drive some inward investment towards renewable energy and related technologies in their area. Holding key convening powers, local authorities can work with distribution network operators, neighbouring authorities and across their wider strategic partnerships to prepare local energy plans for the area with the intention of switching to renewable and low-carbon electricity. They can also work with investors and to develop project pipelines for the complex interaction of power, building heat demand, hydrogen, biogas, and the electrification of transport.

Planning policy has created a regulatory framework through which local planning authorities can work, on their own and together, to tackle the causes and consequences of climate change when considering proposals for developments. Specifically, paragraph 97 of the NPPF requires local authorities to consider appropriate local areas for renewable and low-carbon energy sources. Another opportunity for local authorities to act on increasing renewable energy provision is through the use and increase of their own asset ownership. The LGA have released guidance[58] on the opportunities for authorities looking to explore this. They highlight four options for councils looking to own renewable energy assets. These include developing a project on owned land, on third party land, acquiring project rights from a commercial developer, or a fully built and commissioned project.

Each option will have its advantages and challenges depending on a range of factors including whether the council in question is a borough, county, district, or unitary. For example, with self-developing on owned land a potential advantage is the fact that the project will be contained within the geographical boundary of the authority. This could be particularly advantageous for county councils and would simplify any need for strategic planning. Ultimately, investment will be key to the success of any of these renewable energy assets. As such, local government pension schemes will play a big role as net zero investors – particularly given government plans for their increased role in investing in local infrastructure projects, as laid out in the Levelling Up White Paper.

2.2.2 Local energy networks

A smarter, more flexible electricity network is key to reaching the government's net zero target by 2050, driven by decarbonisation, digitalisation, and

58 LGA, Local Partnerships (2020) – Renewable energy good price guidance

decentralisation. Energy networks are already facing unprecedented change as the country is moving from a traditional one-way power system to a more decentralised system with network connection points multiplying and energy feed-in further fragmenting. Localised energy networks will be key to the transition to net zero.

Following the publication of the Clean Growth Strategy, government has worked with local authorities, particularly combined authorities, in developing regional energy strategies[59]. This initiative has been funded by BEIS through Local Enterprise Partnerships across England and developed alongside local state stakeholders including from academia, business, industry and community groups. Overall, as stated in the Sheffield City Region Energy Strategy[60], they are designed to give confidence to businesses looking to invest in low-carbon energy generation regionally.

District authorities have been recognised as key to supporting the delivery of smart local energy systems due to their status as local planning authorities, their relationships with communities and their knowledge of local areas. De-monopolising major utility companies allows businesses to start trading in locally produced, cleaner, flexible forms of heating, cooling and power and is a more efficient way of managing a community's energy needs. These networks can take advantage of local conditions such as:

- Development of hydrogen for industrial use
- Presence of underground mine water sources or industrial heat available for district heating developments
- Wind power connected to distribution networks

Closely related to this is the increasing importance of Local Area Energy Planning[61] and forming strategic relationships with stakeholders including the District Network Operators in order to meet local net zero goals and contribute to national efforts. The importance of DNOs collaborating with local authorities is increasingly being recognised, as a means to understand what a low-carbon energy market transformation will look like and mean for each individual place and their circumstances. Working on this level of strategic planning will enable and empower local authorities to identify where a lack of correct infrastructure is standing in the way of achieving net zero locally and addressing this through commissioning for it.

59 Gudde et al (2021) – The role of UK local government in delivering on net zero carbon commitments
60 Sheffield City Region – Sheffield City Region Energy Strategy
61 Energy Systems Catapult (2022) – Local Area Energy Planning

A heat network[62], also referred to as district heating, is a system of insulated pipes that distribute heat from a central source to a number of properties within a given area. Networks can cover a wide range, including an entire city, or supply a local cluster of buildings. The use of district heating eliminates the need for boilers or electric heaters in individual buildings. For this reason, government has come to see them as an important part of not only carbon reduction, but also cutting down energy bills for people. In 2013, the government established the Heat Networks Delivery Unit aimed at addressing certain capacity and capability challenges identified by local authorities as barriers to heat network deployment across the country. It provides grant funding and expert guidance to councils who are engaged in developing heat network projects in their area. The unit is in its 12th round of funding and has so far helped 250 unique projects across 170 borough, county, district, and unitary authorities.

Local planning authorities are in a prime position to ensure the provision of district heat networks by setting requirements for them in new developments within local plans[63]. This can go a long way to ensure authorities are building climate change mitigation into their forward planning for the local area. One option that could be considered would be to set out local requirements for decentralised energy through targets. This could be expressed through expected energy generation as megawatt-hours per year.

2.2.3 Convening powers and green skills

The green skills gap is perhaps most acute in the energy sector. As enablers and communicators, local authorities can support local people and community energy organisations to install renewable generation for on-site use, and link this to energy efficiency behaviour. They can also work with employers and training providers to assess and improve skills availability for the low-carbon and renewable energy sector.

Local authorities can lead coordination amongst different local state stakeholders to identify the skills demand and availability for this sector. They have a key role in ensuring that the local labour market is responsive to the needs of a net zero economy whilst also harnessing place potential in doing so. This is especially the case for those borough, county or unitary councils who also hold the responsibility of being a local education authority. Working with further education providers and industry employers to increasing training opportunities can be seen as part of their

62 BEIS – What is a heat network?

63 RTPI, TCPA (2018) – Rising to the climate crisis: A guide for local authorities on planning for climate change

wider duty to stimulate economic growth and increase employment opportunity.

Adequately addressing the skills mismatch must be done through a localised lens, especially in light of how the impact of the transition to net zero on local labour markets will depend on their ability to match vacancies with the relevant skills. Such an approach would entail targeted and tailored measures for place that reflect their individual circumstances, particularly in understanding the green skills context of each local labour market, especially where and how skills in renewable energy can best fit in.

A necessary part of working through a localised lens will entail close strategic coordination and convening between every relevant part of the local state. This includes local authorities, further education providers, local businesses and employers, industries, and Local Enterprise Partnerships. For this collaboration to be truly effective, the institutional architecture of further education institutions needs to be reformed in order to promote trust and collaboration with wider business, industry, and employers. Doing this through further devolving the education budget would mean stakeholders being able to focus specifically on the green skills needs of their local economy.

Elsewhere, the Levelling Up White Paper announced the full rollout of Local Skills Improvement Plans. These will be employer led and are designed to encourage increased coordination between local employers and skill providers to tailor the provision of skills to local need. In particular, they will set out the current and future skills needs and how best to adapt provision to increase the prospects of the local labour market. They hold enormous potential in fixing the national skills mismatch, whilst equally increasing the availability of green skills in localities that are responsive to local opportunity and circumstance.

2.3 Achieving clean local growth in the energy sector

Opportunities	Barriers
• Through investment in their own **renewable energy generation capacity**, councils can directly contribute to the decarbonisation of the national grid. • Local authorities can work with **community energy projects** to help local groups deliver energy on a smaller scale. • **District heat networks** can reduce carbon emissions and, in the longer term, the energy bills of residents. • **Green skills** can be built up locally in a strategic way through the convening of skills providers and businesses around a long-term project pipeline.	• The **long-term nature of investments** in heat networks can present a barrier to council involvement, particularly in smaller authorities where capacity is lower. • The **architecture of the Further Education college system**, incentivised largely around competition, creates a barrier to holistic local collaboration on skills.

Creating market conditions for clean local growth in the energy sector

Local authorities have an important role to play in providing market confidence and bringing in the investment needed to accelerate the decarbonisation and clean growth of their local economy. Creating the right market conditions for clean local growth in the energy sector will entail:

- Working with FE colleges, skills providers, and businesses to help facilitate the provision of green skills in the local labour market. Particularly using the Local Skills Improvement Plans as an opportunity for tailored and targeted provision.
- Using council financial and landowning capacity, as well as position of leader and convener of the local state, to direct investment in local renewable energy generation.

- Using local planning powers to set quotas for the use of renewable energy in new developments.

2.3.1 Renewable energy

The role of local authorities in driving forward renewable energy provision will have to be underpinned by local leadership and innovation. Already there are several councils across the UK that are leading in this area, with the likes of Herefordshire, Shropshire, and Calderdale having estimated annual energy capacities ranging from over 2,500 – 4,400 MW[64]. In all three cases, the most common type of renewable energy produced is from solar PV.

Councils demonstrating local leadership in the use and adoption of renewable energy will be vital in setting an example for other local state and community stakeholders to do the same. As highlighted by the LGA[65], councils are one of the biggest consumers of electricity. Therefore, by investing in renewable generation to meet their consumption need, a strong signal will be sent to other anchors including businesses, local education and healthcare establishments, as well as residents, to also transition.

Relatedly, local authorities can apply this leadership to encouraging locally innovative solutions to scaling up renewable energy provision in their area. For example, Sharenergy[66] is an organisation that is aimed at helping grow community energy both locally and across the UK. This is done through building local capabilities and bringing together community members to develop energy projects, with capital raised through selling shares. Examples of projects include the Whalley Community Hydro that generates green electricity from the power of the River Calder in Whalley. Local authorities have a crucial role in working with such groups to increase the scale of innovation.

Looking at the innovation present within authorities themselves, recently Telford & Wrekin Council partnered with British wind turbine company Alpha 311 to attach turbines to streetlights on the A442[67]. The aim behind this is to generate enough electricity through wind generated by passing vehicles to power the lights, with whatever remaining going back into the national grid. This initiative builds on the council's strong track record of climate-related innovation and its high ranking as one of the top three UK local authorities for climate change action planning.

64 Green Match (2022) – Top 30 UK Local Authorities by Renewable Energy Capacity
65 LGA (2020) – Renewable energy good practice guidance
66 Sharenergy – Sharenergy helps communities to set up and own renewable energy societies
67 Shropshire Star(2022) - Wind turbines to make electricity from passing cars on Telford's A442

In addition to this, local innovation in renewable energy storage is evident through the Energy Superhub Oxford. Oxford City Council, working in a consortium with other local state partners, has aided the ESO in the introduction of a cutting-edge hybrid battery system which will underpin local and national clean power systems and support the UK's transition towards a zero-carbon energy system. Specifically, the hybrid battery system combines a 2MW/5MWh vanadium flow battery from energy storage leader Invinity Energy Systems with a 50MW/50MWh lithium-ion battery from global technology company Wärtsilä to deliver an innovative energy storage solution that can balance the intermittency of renewable energy. The battery system stores renewable energy at times of high supply and will provide essential flexibility to the UK's grid as renewable energy is scaled up.

The capacity of local authorities to drive forward renewable energy touches upon their role as an area's trusted broker and their naturally ability to engage with residents. The process of shifting to renewable energy when looking at home heating can be overwhelming for residents, particularly given the numerous factors that need to be taken into consideration when making a decision. But local authorities can act as trusted brokers in bringing together all the information that is needed to make an informed decision and linking residents with accredited providers, such as through a one stop shop.

The Solar Together scheme[68] is a perfect example of this. The scheme is a group-buying programme that enables residents to install solar panels, battery storage and EV charging points on their properties at an affordable price. The benefit of such a scheme is that information is provided in one place. Interested residents can register their interest, after which an auction is held amongst accredited providers, who bid to provide the installation at an affordable price. Finally, these providers will contact residents with a personalised offer based on the specifications laid out by residents when first expressing an interest. The scheme is run by iChoosr who work closely with local authorities to promote it across the country.

2.3.2 District heat networks

Given their distribution across cities and towns, local authorities of all configurations will be a key stakeholder in making heat networks a national success. As the government have recognised, their involvement in the development and expansion of heat networks will be central in delivering green jobs and local economic growth. This is due to the fact that local authorities can incorporate heat networks with

68 Solar Together – Homepage

combined heat and power plants to drive regeneration and attract new businesses locally.

An example of a local authority implementing a heating network project is Woking Borough Council and their combined heat and power project[69]. In 2000 the council created an Energy Services Company called Thameswey Energy Ltd to build and operate a CHP energy station in the town centre. The installations have provided low-carbon heating, cooling, and electricity to a range of buildings in the town centre including council-owned civic offices, a local entertainment complex, a 120 mixed-tenure houses, as well as a number of other buildings.

As a special purpose vehicle, Thameswey Energy Ltd has been able to attract investment from external sources and has the independence to spend funds as it sees appropriate. More recently, Woking Borough Council set out a renewable energy plan[70] following their declaration of a climate emergency within which a stated aim is to work with Thameswey to further decarbonise their energy network as well as exploring how to expand the CHP network. It has benefitted the town through being a best practice example of local energy generation, with stakeholders from other councils coming to learn from Woking's experience. Additionally, it has proven to be an innovative method through which to reduce carbon emissions and diversify energy supplies meaning that the council does not have to rely on major energy companies. On the other hand, a barrier that has been recognised is the time taken gain a return on investment from the project.

Elsewhere, in 2019 Stoke-on-Trent embarked on the second phase of their district heat network[71]. The council followed up work carried out earlier in the same year, which saw 2km of pipework being installed around the city, and a further 1.4km of pipework were laid down. Overall, the second phase took 30 weeks to complete. Supporters of the project highlighted how in addition to supplying greener energy to the local area it would also provide young engineers the opportunity to learn the latest industry skills. However, as of 2022 the heat network is still not operational[72]. While 4km of pipework has been laid down in the Shelton area of Stoke-on-Trent, scrutiny committee members of the council were told that even when the network is fully functional, it will take a number of years for residents to be offered it and thus to feel the financial benefits of it. This has

69 ade – Woking Town Centre case study

70 Woking Borough Council (2021) – Renewable energy plan

71 Make It Stoke on Trent & Staffordshire (2019) – Work starts on Stoke on Trent's Sustainable Heating Network

72 Stoke on Trent Live (2022) - Cash-strapped Stokies will have to wait years for cheaper bills through council heating scheme

caused significant frustration with council members who have expressed concern over the lack of benefit to residents from the 10-year-long, £19m project.

This touches upon a central challenge that risks standing in the way of effective local involvement in heat network rollout: the high capital costs involved. This includes the construction and financing of networks that often have long investment payback times. Such costs can discourage their deployment if cheaper alternatives are available and readily accessible. This is a particular concern for those local authorities who might not have the expertise or familiarity with heat networks and can be put off by the costs.

A third recent example of a district council engaging in this area is Lancaster City Council, who have started work on a Heat Network Techno-Economic Feasibility Study to look at the feasibility of whether heat networks in the city could support residents and businesses. Funded by the Heat Network Delivery Unit, the study is expected to be finished by April 2023 and builds on previous studies commissioned by BEIS in 2019.

The new study will provide a more detailed examination of eight indicative clusters identified in the previous study. Specifically, it will address technical solutions for delivery on the clusters seen as having the most potential in the delivery of local heat networks. A significant aspect of the study being undertaken by the council is their consulting with local public and private sector organisations that are high users of energy. Overall, the study is underpinned by the ambition that, if feasible, a locally delivered network could have the potential to protect businesses and residents from price increases in the wholesale energy market, which has seen record hikes in the cost of gas and electric.

2.3.3 Green skills

The local role in skills delivery has been well recognised by a number of stakeholders and increasingly acknowledged by government. If planned and coordinated effectively, it has the potential to fix the national green skills deficit in a way that accords with each locality's place potential. It also has the benefit of boosting local economic growth and regional COVID-19 recovery at the same time.

One of the most well-known models being proposed for a holistic provision of skills on the local level comes from the LGA through their Work Local[73] vision for a devolved and integrated employment and skills service. The motivation behind this came from the recognition that the UK has one of the most centralised employment

73 LGA – Work Local

and skills systems in the developed world. At the same time, there is no joined-up approach between central government agencies including the Jobcentre Plus, the National Careers Service, and the Education and Skills Funding Agency on the provision of skills in a manner capable of meeting the needs of local labour markets.

In light of this problem, the Work Local vision sees the power and funding to manage joined-up services for skills and education being devolved to combined authorities and councils working at a strategic level. This joined up service would provide place-specific support on employment, apprenticeships, education, skills, and business support for individuals and employers.

Out of the number of principles guiding the vision, the most pertinent include being driven by local opportunities and need as well as being underpinned by a common national framework for devolution. These principles will ensure that local areas are working toward a nationally recognisable goal but doing so in a way that is in accordance with their potential.

The vision was launched before the COVID-19 pandemic, and analysis done at the time suggested it could result in 8,500 more people in work with 6,000 people increasing their skills. More recently, following the publication of the Levelling Up White Paper, the LGA released the Work Local: Unlocking talent to level up[74] response. It set out a series of recommendations to government on how to improve its approach to skills provision and better tie this into the levelling up agenda.

Bristol City Council have been leading the local delivery of skills through their 'One Front Door'[75] one stop shop. The service delivers a job matching service to help employers, individuals, and support agencies match vacancies with local job seekers, including from the city's most deprived communities. The service is a part of the council's Employment, Skills and Learning team. It uses a coordinated approach that refers participants to local employment and skills providers using their existing Ways2Work network. This itself is a community of employment support and training organisations that link employment opportunities with people across Bristol and West of England.

A major focus for the service is on vulnerable and hard to reach people. Given this, it provides personalised employment support for those who might be experiencing complex challenges that prevent them from entering the job market. One Front Door is supported by an experienced steer group that is comprised of stakeholders from business and community organisations across the city.

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75 Bristol City Council – One Front Door

2.4 Case study: Crawley

In 2020, Crawley Borough Council began to build their own heat network, based in the borough's redeveloped town hall site. However, prior to this green light, the council embarked on a process of policy development with input from local stakeholders and the leveraging of certain powers by the council.

Planning for carbon reduction

A key initial driver was the council's ongoing carbon reduction plan. Within the developing plan were various projects, one of which was to assess the feasibility of providing a heat network – with the town centre as its primary node. Another driver, as well as eventually facilitating the eventual heat network project, was the council's local plan policy. More specifically, the local plan set out a hierarchy of considerations for new developments in the borough's town centre, the top of which was to provide a heat network where one did not already exist. This meant that developers would be required to acknowledge and respond to this when putting forward their plans for site developments.

There were some town centre sites the council had an active interest in – most notable of which was the town hall site. In 2017, the decision was made to build a new town hall on part of the old site dating back to the 1950s. The plan was to work with developers to provide a sizable residential space on the remaining part of the site. There were also multiple smaller, satellite sites where significant redevelopment was also planned, all of which were within a catchment area of the main town hall site.

Working with local stakeholders

In early developments taking place after the introduction of the local plan's hierarchy of considerations, it became clear that developers were struggling to justify the expenditure, time, and risk associated with adding a heat network. Moreover, implementing a heat network as part of development was an area of specialism that sat outside most developers' interests and experiences at the time. There was a recognition in the council that placing the onus predominantly on developers to provide heat network implementation was too impractical to be effective in achieving the goals laid out by the carbon reduction plan. This saw them look inward at their own developments and what

could be done to expedite the process on their own accord.

The council were successful in applying for funding to finance a pilot scheme for the town hall site. This included £150,000 to go towards feasibility fees and £1.25m for construction costs, within an overall capital cost of around £5m. This was quoted as fundamental to the early life of the heat network project, as prior to this, rates of return seemed very marginal, and developers were too risk-averse at the time. After finding a partner developer willing to work in collaboration with the council, it was decided that the project would be pursued in phases. Phase one would provide heat for the developing town hall site and phase two would be a residential development immediately adjacent to the site. The council was able to secure commitment within its ranks and from key developers on this phased basis.

As of September 2022, Crawley is putting together the feasibility for phase two of its district heat network project. As noted, the development on a site adjacent to the town hall site will be predominantly residential, with some mixed commercial and educational buildings, including Crawley College. This phase of the project has been identified as the most heat intensive in terms of take up. It is possible for the council to make such calls and plan accordingly due to the intricacy of its feasibility processes.

There are two key elements in this regard. On the one hand, the council looks at the heat demand, the business case, and the technical feasibility of expanding the heat network outwards, and how that would be designed and costed. On the other, the council is now considering the feasibility of options for changing the fuel source of the heat network away from gas toward lower or no carbon fuel sources, as part of the project's second phase. Options considered in this regard include ground source heat pumps.

Using the local plan

Amongst more obvious powers such as building standards and softer convening powers, it is the codification of the local plan that has proved the most cost-effective and useful power – as it has enabled the council to open the potential of the heat network and bring partners and customers on board through planning approval processes. It also allows for a positive pressure to be placed on developers to think broadly about the heat network and broader decarbonisation agenda. The result of such a set-up is that there are three key identified players in the proliferation of the heat network: Crawley Borough Council, BEIS with regard to funding, and a partner developer responsible for the contracting and leasing of the sites in question.

In terms of the internal buy-in for the project, Crawley was able to write up and secure commitment from the administration to make the heat network a pursued priority – which, in turn, started to drive and mould strategy and delivery structures. Much time was spent regarding the governance of the heat network project and the structures that the council needed to have in place.

By completion, the major redevelopment of the town hall site seeks to deliver up to 273 flats, a nine-story building containing a new town hall, and grade A commercial offices above, a new public square, public realm improvements, ground floor commercial space, and a district energy centre serving over 1000 residents, one municipal and several commercial buildings. Completion of the first phase alone is estimated to save 350 tonnes of carbon a year.

2.5 Recommendations to central government

- Commit to renewable energy and abandon plans to further extract fossil fuels from the North Sea.
- Produce legislation to bring forward the Local Skills Improvement Plans as laid out in the Levelling Up White Paper, with an emphasis on the delivery of new green skills for retrofit.
- Produce a comprehensive legal framework for Local Area Action Plans, as was scoped by Ofgem and BEIS in late 2021.