

# Zeroing in

Net Zero disruption and opportunity  
at a local level

Scott Corfe  
Amy Norman

**SMF**

**Social Market  
Foundation**

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## CONTENTS

Acknowledgements	4
About the Authors	4
Executive Summary	5
Chapter One - Introduction	7
Chapter Two – Opportunities Arising From Net Zero	9
Chapter Three – Disruption From Net Zero	22
Chapter Four – Bringing The Analysis Together	32
Chapter Five – Implications For Policymakers	36
Annex	43
Endnotes	47

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## ABOUT THE AUTHORS

### **Scott Corfe**

Scott Corfe joined the Social Market Foundation in 2017 and is our Research Director. As well as managing the SMF's research team, he authors research on a wide range of topics including consumer markets, taxation, low pay, housing and technology.

Before joining the SMF, he was Head of Macroeconomics and a Director at the economics consultancy Cebr, where he led much of the consultancy's thought leadership and public policy research.

Scott's expert insights are frequently sought after in publications including the Financial Times, the Guardian, the Times and the Daily Telegraph. Scott has appeared on BBC News, Sky News, Radio 4 and a range of other broadcast media.

### **Amy Norman**

Amy joined the SMF research team in April 2020. Her research is largely focused on public policy relating to education and skills, Net Zero, and local-level economic trends.

Prior to joining, Amy worked at an education charity advising on the delivery of the free schools policy and governance challenges across the academies sector. Amy holds a MSc in International and Social Public Policy from the London School of Economics and Political Science and a BSc Hons in Sociology and Anthropology from Oxford Brookes University

## EXECUTIVE SUMMARY

In this Social Market Foundation (SMF) report, we present new analysis of the local-level risks and opportunities associated with decarbonisation and efforts to reach “net zero” by 2050. This includes through the creation of a Net Zero Disruption Index and Net Zero Opportunity Index measure for every local authority in Britain. These two indices are combined to categorise local authorities across the country.

The report concludes with a series of policy recommendations, which has been informed by desk research, discussions with stakeholders and three roundtable discussions convened as part of the study.

### Key findings

- **The North West, Wales, the North East and the Midlands rank highly on our Net Zero Opportunity Index score.** For these top-ranking regions, the key opportunities include proximity to renewable energy sites, proximity to a decarbonising industrial cluster, and proximity to a top university for STEM research with associated innovation opportunities.
- **Although scoring well for net zero opportunity, the North of England is relatively more likely to face disruption from the transition to net zero than the South of England.** The devolved administrations of Scotland and Wales also face relatively high levels of disruption from the transition.
- **London, in particular, faces relatively low levels of disruption from the transition to net zero.** London’s well-developed public transport system means that transport emissions per capita are far lower than other regions. According to the National Travel Survey for England, some 45% of London households did not own a car or van in 2018/19, close to double the 24% seen in the rest of England.

In addition to a low reliance on cars, relatively high median salaries mean that the costs associated with net zero are more manageable for households in the capital. Furthermore a relatively low proportion of jobs in London are in carbon-intensive industries.

- **Most (66% of) local authorities in Britain that face relatively high levels of disruption from the transition to net zero also face relatively high levels of opportunity from, for example, new job creation and the formation of new decarbonisation business clusters.** That is to say, they are well-placed to stand to gain from net zero, even though they face challenges.

### Policy recommendations

- **Empower local authorities with new revenue and capital-raising abilities to support the transition to net zero.** At present, local government in the UK has very limited revenue-raising powers and is one of the most centralised countries in the developed world, limited its ability to act on net zero. Data from the OECD in 2018 shows that sub-central government account for just 5% of total tax revenue in the UK, compared to 14% in France, 32% in Germany and nearly 50% in Canada

- **Put green at the heart of Apprenticeship Levy reform to drive local green skills agendas.** Currently, employers can choose to transfer up to 25% of their unused levy funds to help other businesses or organisations pay for apprenticeship training, rather than have it recouped by government. In order to support small businesses in the transition to net zero, the UK government should consider increasing the transfer allowance to 50% with the conditions that the receiving organisation is an SME, and training and apprenticeship opportunities are designated as necessary for 'green work'.
- **Introduce a Rural Net Zero Strategy to ensure the countryside is not left behind.** Our research indicates that rural areas face particular challenges from the transition to net zero. This includes high levels of car dependency, a lack of electric vehicle charging infrastructure and distance from emerging decarbonisation industrial clusters.
- **Provide tailored support to small businesses to help them decarbonise.** The UK government should develop a *Help to Green* package of support, modelled on the Help to Grow scheme. A Help to Green scheme would provide industry-specific advice on how a small and medium-sized enterprise (SME) can reduce its emissions through low-carbon technology as well as subsidies on the up-front costs of purchasing some of the recommended options. As part of the scheme, combined and local authorities in partnership with Local Enterprise Partnerships (LEPs) should coordinate 'green mentor' opportunities to match business leaders from large firms with SMEs to share knowledge on going green.

## CHAPTER ONE - INTRODUCTION

The UK Government has set out ambitious targets with respect to decarbonisation. This includes a ban on the sale of new petrol and diesel vehicles from 2030<sup>1</sup>, a pledge to cut CO2 emissions by 78% by 2035 compared with 1990 levels<sup>2</sup>, and an ambition for the country to be “net zero” on carbon emissions by 2050.<sup>3</sup>

Achieving this requires enormous changes which will affect households, businesses and government. Gas central heating will need to be replaced with alternatives such as heat pumps. The public will need to get used to electric vehicles and indeed wider usage of public transport over private automobile ownership. Businesses in carbon-intensive sectors such as manufacturing will need to rethink industrial processes. And government has to put in place a system of support and incentives to encourage behavioural change.

With this change comes opportunity. In addition to tackling global warming, net zero will create jobs in sectors such as home heating, carbon capture & storage and renewable energy. New business clusters are forming, focused on green industries, and there is a real role for net zero in government plans to narrow regional economic inequalities.

But change also creates challenges. While jobs will be created from net zero, some in carbon-intensive industries will be lost, requiring individuals to reskill for new careers. Government also has not been clear on how much of the financial cost of net zero will be borne by households and businesses directly, raising important questions of affordability.

Much of what is required to get to net zero will need to be undertaken at the local level, with local authorities, mayoral authorities, Local Enterprise Partnerships and businesses having, potentially, a strong role to play here. While local authorities are directly responsible for just 2-5% of local emissions, it has been estimated that they can influence around a third of emissions in their area through leadership and placemaking - highlighting how much could be achieved through well-coordinated local-level initiatives.<sup>4</sup>

Critically, the challenges arising from net zero, and the opportunities created, differ by locality. In this Social Market Foundation (SMF) report, we present new analysis of the local-level risks and opportunities associated with decarbonisation. This includes through the creation of a Net Zero Disruption Index and Net Zero Opportunity Index measure for every local authority in Britain. These two indices are combined to categorise local authorities across the country.

The report concludes with a series of policy recommendations, which has been informed by desk research, discussions with stakeholders and three roundtable events convened as part of the study.

The structure of the report is as follows:

- **Chapter 2** explores the extent to which local authorities are well-placed to take advantage of the opportunities emerging from net zero, such as new job creation and business formation.

- **Chapter 3** explores likely local-level disruption and challenges associated with decarbonisation.
- **Chapter 4** brings the preceding analysis together to categorise local authorities according to anticipated levels of disruption and opportunity.
- **Chapter 5** sets out a series of policy recommendations.

## CHAPTER TWO – OPPORTUNITIES ARISING FROM NET ZERO

This chapter focuses on the economic and employment opportunities that may arise from the transition to a net zero economy, particularly at the local level. The analysis considers how enabling factors such as industry, innovation and infrastructure will allow local authorities to take better advantage of these opportunities in our Net Zero Opportunity Index.

Opportunities for job creation and revenue in the net zero economy are already being realised across the UK. In 2019, the low-carbon and renewable energy economy (LCREE), as estimated by ONS, employed over 410,000 workers, generating a revenue of £42.6 billion and an export value of over £7 billion in low-carbon goods and services.<sup>5</sup> Currently, many of these markets are still in their infancy, but as the UK progresses towards its climate targets, their development is estimated to deliver billions of pounds sterling in economic output (Gross Value Added) and hundreds of thousands of green jobs.<sup>6</sup>

The Energy Innovation Needs Assessments' (EINAs) analysis of the UK's future energy system estimates that the GVA opportunity of decarbonising the domestic market could be as great as £27 billion in 2050, with an additional £26 billion from export-related opportunities. The Committee for Climate Change's Sixth Carbon Budget also recognises the potential for job opportunities in growth areas, including buildings, low-carbon energy, transport, and manufacturing.<sup>7</sup> More specifically, the CCC outlines the need for jobs in renewables, low-carbon hydrogen, electric vehicles, carbon capture utilisation and storage (CCUS), building retrofits and more.<sup>8</sup> A developing body of research has sought to quantify the scale of job opportunity that may be required in these highlighted areas. Estimates indicate there may be 200,000 new jobs for housing retrofit<sup>9</sup>, 260,000 new roles in low-carbon energy<sup>10</sup>, 80,000 new jobs in electrification of transport<sup>11</sup>, and 80,000 jobs supported by CCUS<sup>12</sup>. Investment from the Government's Ten Point Plan for a Green Revolution alone is estimated to also create and support up to 250,000 green jobs across the net zero economy by 2030.<sup>13</sup>

A 'green job' is challenging to define – different organisations use a range of definitions, as noted by the ONS.<sup>14</sup> This report adopts the ONS' definition for low-carbon jobs, as used in the Low Carbon and Renewable Energy Economy (LCREE) survey: "*economic activities that deliver goods and services that are likely to help the UK generate lower emissions of greenhouse gases, predominantly carbon dioxide*".<sup>15</sup> Employment opportunity in the net zero economy is often considered as comprising job creation and job transition. First, there is potential for new green occupations to be created in existing and emerging green sectors, such as wind-turbine technicians or hydrogen engineers. Second, there is significant opportunity for existing occupations to undergo reskilling or upskilling as they transition to new lower-carbon technologies, such as domestic heat installers or automotive manufacturing workers.<sup>16</sup> The Place-based Climate Action Network's Just Transition Jobs Tracker identifies that one in five jobs in the UK (around 6.3 million workers) will require skills which may experience demand growth (10%) or reduction (10%), where the latter group will likely require upskilling or reskilling.<sup>17</sup>

## A local approach

Much of the public discussion around the economic opportunities of net zero occurs at the national level. However, beneath the aggregate, the geographic distribution of benefits and opportunities is unlikely to be homogenous across the UK.

A small but growing body of recent research has sought to identify the scale and nature of green job creation at a local level. Local Government Association (LGA)-commissioned research from Ecuity Consulting estimates that as many as 694,000 direct jobs could be employed in the LCREE in England by 2030, rising to 1.18 million by 2050. The greatest proportion of these jobs is expected to be created in the North West (14.5%), Yorkshire and the Humber (14.3%) and the South East (13.9%). At the local level, South Ribble, Leeds, and City of London are expected to see the greatest number of jobs created by 2050.<sup>18</sup>

WPI Economics' research for Green Alliance also maps opportunities for job creation at a parliamentary constituency level. The report focuses on opportunities related to natural environment enhancement as a nature-based solution to decarbonisation, highlighting evidence that suggests that woodland restoration/creation can create between 22-114 jobs per hectare. WPI's own analysis finds that 112,000 hectares of the best land for tree planting are located in red wall constituencies.<sup>19</sup>

This chapter explores the relative scale of economic and employment opportunity that local authorities may benefit from in the transition to a net zero economy. This level of opportunity will probably depend on a range of enabling factors related to local infrastructure within an area. This may include a local area's industrial make-up, labour force, research and innovation capacity, education providers, natural capital, housing stock, transport networks, and more. Reflecting time and data constraints, the scope of this report is focused on the opportunities related to a local area's industrial and sectoral make-up; labour force skill level; and, research and innovation capacity.

### Industrial and sectoral make-up

Certain areas of the UK will benefit from a greater concentration of opportunity in specific sectors and industrial clusters, such as automotive manufacturing in the Midlands, green finance in the South East, or low-carbon power and CCUS in Merseyside, Humberside, Scotland and South Wales. The government-convened, independent Green Jobs Taskforce identifies 26 potential employment opportunities and skills needs for the transition to net zero in its recent report.<sup>20</sup> Across these opportunity categories, 19 are considered to be relevant UK-wide, such as public transport, heat networks, climate change adaptation and more. In comparison, the remaining seven opportunities are predicted to have stronger geographical effects, predominantly related to low-carbon energy, CCUS, and automotive manufacturing.<sup>21</sup>

The Taskforce's report also draws upon the European Centre for Development of Vocational Training's three key groups of skills influences for green occupations, highlighting again the sectoral and industrial nature of the transition to a net zero economy – as shown in Table 1. These groups reflect green occupation categories outlined by the ILO, referenced earlier in the chapter.

**Table 1: Green job categories**

Established green sectors expected to grow	Emerging sectors predicted to grow	Sectors experiencing significant transition
Offshore wind, electricity networks, smart system technologies, buildings retrofit, building fabric energy efficiency, modern methods of construction for retrofit and new build.	Hydrogen and CCUS, climate resistance and adaptation.	Automotive, heating and cooling, heat pump installers, circular economy and waste prevention.

Source: Green Jobs Taskforce, European Centre for Development of Vocational Training

Cross-referencing the listed job creation and transition opportunities with the CCC’s outlined growth areas and job needs, our analysis homes in on opportunities in **renewable energy for job creation in existing sectors; industry decarbonisation (CCUS and hydrogen) for job creation in emerging sectors; electric vehicle (EV) manufacturing and repair, and low-carbon heat manufacturing and installation for job transition**. While the Taskforce identifies heat as a UK-wide employment opportunity, qualitative research undertaken as part of this project indicated that supply-side and demand-side factors, such as skills gaps and housing stock, will influence the scale of opportunity in different local areas.

### Skills of the local labour force

A local area’s labour force and skill level will also play a role in their ability to take advantage of the employment opportunities that arise from the transition to a net zero economy.

Given the challenges in defining a green job, it is also difficult to predict what precise ‘green skills’ will be required for these jobs. Research from international organisations, such as the International Labour Organisation (ILO), as well as UK-based organisations, such as Onward, provides insight into the nature of the skills needs in the transition to a net zero economy. The findings identify two key groups of skills: high skill level in science, technology, engineering and maths (STEM), and low and medium skill level in technical qualifications. The ILO indicates that new green occupations will predominantly be high-skilled (e.g. energy consultants and climate scientists), whereas transitioning occupations will largely be low- and medium-skilled (e.g. retrofit installers, and heating and cooling technicians).<sup>22</sup>

The greatest proportion of green jobs is estimated to be concentrated in the latter group of reskilling or upskilling existing occupations for transition.<sup>23</sup> Onward’s recent analysis also finds that of the 1.7 million jobs they estimate to be created in net zero industries by 2030, 1.3 million are in occupations which currently require strong low and medium level technical qualifications.<sup>24</sup>

The CCC highlights that, at a national level, skills gaps are most prominent in heat pump and energy efficiency installation. Research from the CITB finds that of the jobs required in the construction and buildings sector by 2050, the strongest weighting is for NVQ Level 3 skills and below.<sup>25</sup> As a result, local labour forces with strong low and medium skills may be better positioned to support the majority of green jobs, including transitioning jobs. Our analysis homes in on **the proportion of total employees in an area with NVQ Level 2 and Level 3 qualifications.**

### Scope for research and innovation

Reaching a net zero economy will also require further research and innovation to develop low-carbon technologies at scale and at a lower cost. As part of the Prime Minister's Ten Point Plan for a Green Industrial Revolution, the Government has committed to increase research and development (R&D) investment to 2.4% of GDP by 2027 as well as a £1 billion Net Zero Innovation Portfolio for priority areas.<sup>26</sup>

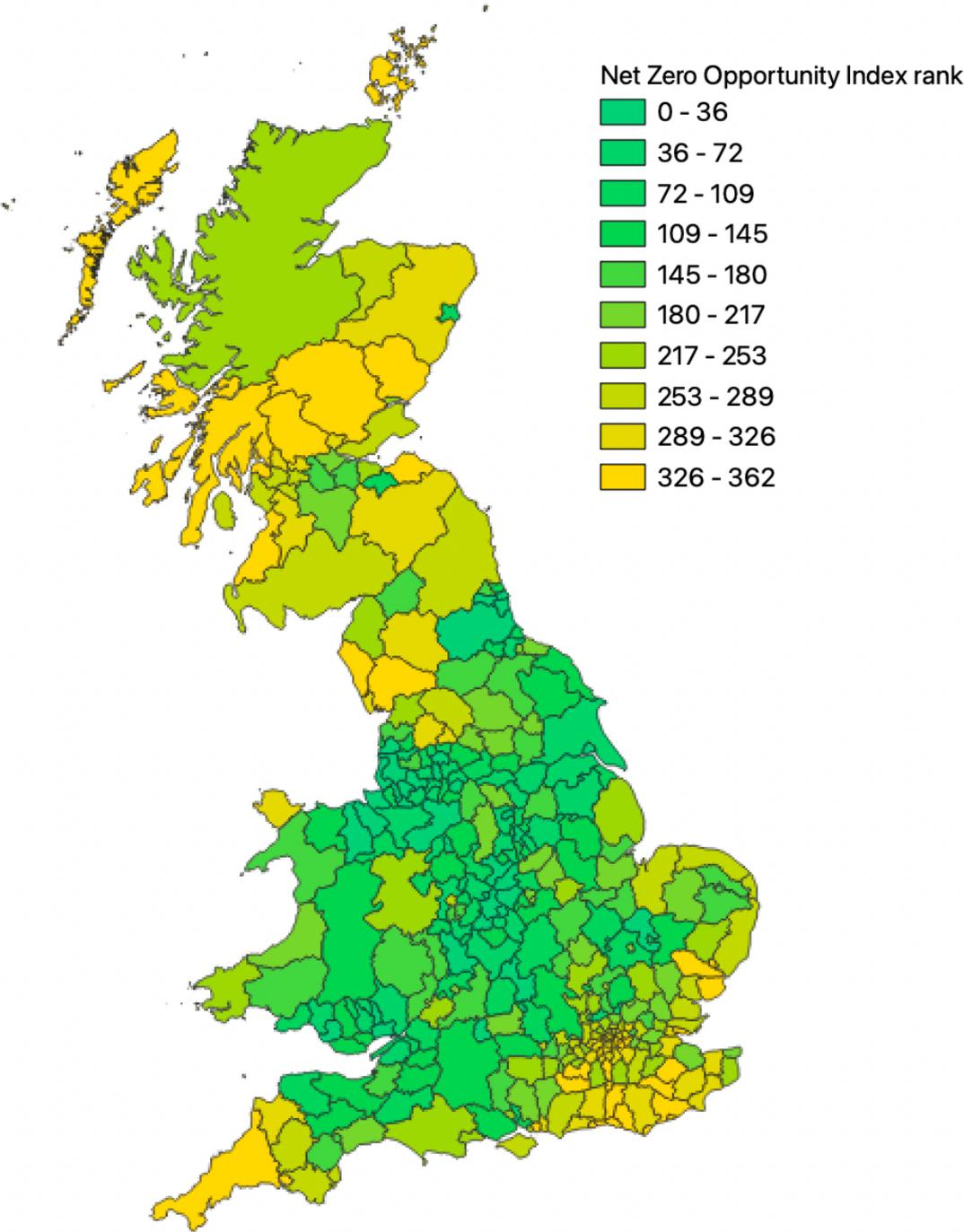
At the local level, our qualitative research with stakeholders identified a wide coalition of research institutes and innovation centres that are working across the private and public sector with local and regional actors. These institutes ranged from universities, to training centres and colleges across various specialisms including manufacturing, construction, transport, engineering, heat pumps, hydrogen, and CCUS. Due to the constraints of capturing the scale and breadth of this activity, our analysis homes in on **the top ranked universities for STEM research.**

### Findings by region

The overall Net Zero Opportunity Index findings are presented in the map below. The map illustrates that economic and employment opportunities will be most strongly concentrated in the North of England, Midlands and parts of Wales. This largely reflects the sectoral and industrial make-up of these regional economies, which have a stronger manufacturing presence than London and the South East.<sup>27</sup>

This suggests that net zero, done right, could play a key role in narrowing regional economic disparities and “levelling up” parts of the UK where, for example, wages are relatively low and good job opportunities are scarce.

Figure 1: Net Zero Opportunity Index (lower rank = relatively more opportunity)



Source: SMF analysis

The trends we describe above are further demonstrated in the table below, listing the sub-index scores at a regional level.

Table 2: Net Zero Opportunity sub-index measures, by region (population-weighted average of local authority data)

	Proximity to nearest renewable energy site (KM)	Proximity to nearest decarbonising industrial cluster (KM)	% of jobs in EV and low-carbon heat related SIC codes	% of working age population with NVQ2 or 3	Proximity to nearest top 20 university for STEM research (KM)	Average Opportunity Index rank
North East	32.6	43.6	2.2%	37.5%	21.2	101
North West	21.4	42.6	1.9%	35.0%	26.1	82
Yorkshire and the Humber	45.7	68.4	2.0%	35.2%	22.9	137
East Midlands	21.1	67.9	1.7%	35.9%	26.0	108
West Midlands	31.3	27.8	3.2%	35.4%	58.0	104
East of England	32.3	162.6	1.9%	34.8%	48.5	208
London	32.9	175.1	0.9%	22.5%	9.7	283
South East	60.4	185.4	2.1%	33.2%	38.5	249
South West	35.3	103.9	1.9%	35.5%	70.6	179
Wales	22.8	39.2	2.7%	34.6%	68.1	99
Scotland	27.7	190.1	1.6%	26.8%	37.5	255

Source: SMF analysis

The North West, Wales, and North East rank in the top three for their population-weighted average Opportunity Index scores. These findings indicate that these regions may see relatively higher levels of economic and employment opportunity in the transition to net zero, as measured by our Index, in comparison to other regions such as London, Scotland, and South East, that rank in the bottom three. This is not to say that areas in the lower ranking regions will not benefit from some level of opportunity. All regions score relatively well in at least one opportunity sub-index measure.

The regions that rank highly overall do so because they score relatively well in at least three out of five of the sub-index measures. For the top-ranking regions, the key measures include proximity to renewable energy sites, proximity to a decarbonising industrial cluster, and proximity to a top university for STEM research. The North West, for example, stands to benefit from the economic and employment opportunity associated with four solar photovoltaics sites currently under construction, the recently approved UKRI North West Hydrogen and Energy Cluster, as well as two top universities for STEM research (University of Manchester and University of Liverpool).

In comparison, London ranks relatively lowly in industrial decarbonisation opportunity and low- and medium-skills opportunity, due to the sectoral make-up of the capital, which comprises more services and high-skilled workers. However, the capital ranks highly for opportunity related to research and innovation as it is home to four top-ranking universities for STEM research (Imperial College London, University College London, King's College London and Queen Mary University of London).

The Government's recent Industrial Decarbonisation Strategy set a vision for achieving the world's first low-carbon industrial sector. As part of this, the strategy allocates £171 million to green tech projects such as CCUS and hydrogen across six regional cluster projects in Scotland, South Wales, the North West, Humber, Teesside and the Black Country. These projects aim to support existing industry to decarbonise and encourage the growth of new, low-carbon industries, providing long-term certainty for investment as well as opportunity for job creation and job transition in the tens of thousands. The Net Zero Tees Valley project, for example, plans to capture up to 10 million tonnes of carbon dioxide emissions, equivalent to the annual energy use of over three million UK homes, and creating up to 5,500 direct jobs.<sup>28</sup> The North West Hydrogen and Energy Cluster based in Merseyside is also estimated to create at least 33,000 new jobs.<sup>29</sup> As a result, these regions are set to see greater levels of industrial opportunity in the transition to a net zero economy, in comparison to East of England, London, South East, and South West.

## Net zero industrial opportunity in Yorkshire and the Humber

In our roundtable discussion with expert stakeholders in Yorkshire and the Humber, as part of this research, it was argued that the region will see high levels of opportunity from the transition to a net zero economy. One key theme that arose from speaking with regional officials, academics, and businesses was how well-placed the region is geographically to benefit from renewable energy (wind power) from the east coast for electrolysis to create green hydrogen, as well as CCUS from the storage capacity in the North Sea. The region's industrial capacity, particularly centered around Humberside, also enables it to capitalise on net zero opportunities by utilising existing infrastructure to invest in new technology at scale.

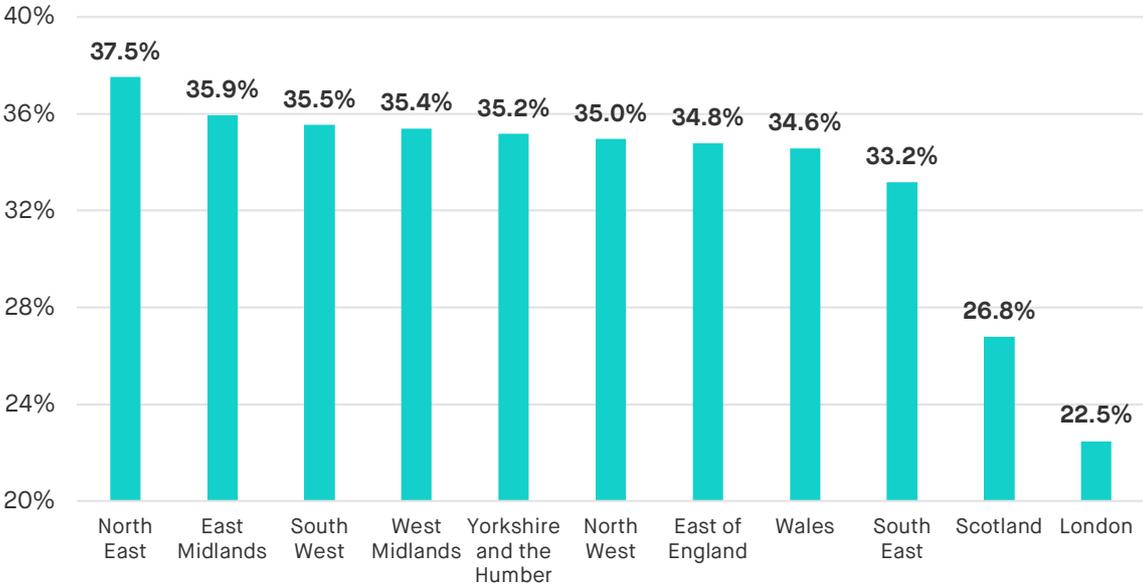
Decarbonising Yorkshire and the Humber's industry is critical to meeting net zero targets for the region and the UK. Industrial and commercial (excluding agriculture) emissions accounts for just under half (47%) of the region's total emissions. The region has already worked to lower industrial emissions, with a 45% reduction between 2005 and 2018. However, the Humber region still faces the challenge of reducing the 40% of the UK's industrial emissions that it creates and supporting workers to transition.<sup>30</sup>

Humberside will be home to new net zero projects that aim to reduce the industrial cluster's emissions, such as the Zero Carbon Humber Partnership and Humber Zero. Both cluster projects bring together key businesses in the area (Drax, Equinor, Mitsubishi and more) to deliver a range of renewable technologies with a total public investment of £33 million.<sup>31</sup> With operations due to begin by 2026-27, they are estimated to protect and create thousands of jobs in the region. Zero Carbon Humber, the larger project of the two, is estimated to protect 55,000 existing jobs and create 49,000 new ones as well as supporting reskilling and upskilling opportunities.<sup>32</sup> Humber Zero is expected to create 2,500 jobs in construction, 200 permanent jobs, and safeguard 20,000 direct and indirect jobs on the River Humber's South Bank.<sup>33</sup>

The regional picture for low and medium skills is different than the industry and infrastructure pattern. As shown in Figure 2, there is relatively little variation in the low and medium skill level between most of the regions. The North East has the greatest proportion of NVQ Level 2 and 3 skilled workers at 37.5% of the working age population. Between the East Midlands (35.9%) and Wales (34.6%) on the chart, there is just over one percentage point difference in the proportion of relevant skills, including South West (35.5%), West Midlands (35.4%), Yorkshire and the Humber (35.2%), North West (35%), and East of England (34.8%). London has the lowest proportion of individuals with low and medium skills due to a higher proportion of high-skilled workers employed in the capital's professional services. As a result, most regions aside from London and

Scotland will be relatively balanced in their ability to meet the skills needs of the majority of green jobs (requiring low and medium skills) in the transition to a net zero economy. However, we recognise that this sub-index measure does not capture more specific skills gaps, such as low-carbon heat installation or retrofit, highlighted as one of the UK’s most prominent green skills gaps by the CCC.<sup>34</sup>

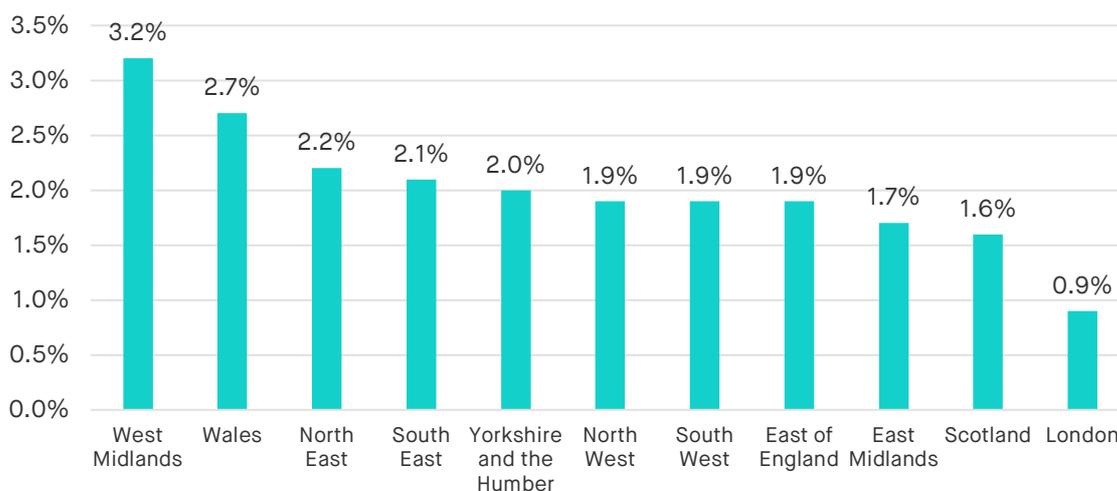
**Figure 2: % of working age population (ages 16-64) with a highest qualification of NVQ Level 2 or Level 3, by region**



Source: SMF analysis, Annual Population Survey

The scale of relative opportunity for job transition in key areas of EV manufacturing and repair, and low-carbon heat manufacturing and installation reasonably reflects the manufacturing landscape in Britain.<sup>35</sup> The West Midlands has the highest proportion of jobs in these relevant SIC codes at 3.2% of total employment in the area, followed by Wales (2.7%). This is predominantly due to the prominence of automotive manufacturing and maintenance in the regional and devolved economies, as highlighted by the Green Jobs Taskforce.<sup>36</sup> The South East also ranks relatively well for transition opportunity with 2.1% of regional employment largely consisting of jobs in vehicle maintenance and repair, and heat installation. Given that 85% of UK homes are currently heated by gas boilers, retrofitting homes and installing low-carbon alternatives, such as heat pumps, is largely considered a nation-wide opportunity.<sup>37</sup> However, the North West, North East, and London may see relatively lower opportunity for transition and greater skills gaps for low-carbon heat installation due to installers comprising smaller proportions of the overall regional employment.

**Figure 3: Jobs in transitioning SIC codes (related to EV manufacturing and repair, and home heat manufacturing and installation) as a % of total employment in area, by region**



Source : SMF analysis, Business Register and Employment Survey

### Findings by local authority

The tables below show the authorities ranked in the top 20 and bottom 20 in terms of Net Zero Opportunity Index score. At a local level, each local authority that ranks in the top 20 for the Opportunity Index does so because of its unique combination of sub-index rankings – as shown in Table 3.

Knowsley, in the North West of England, ranks first in our Net Zero Opportunity Index, meaning that the transition to a net zero economy will likely bring the highest economic and employment opportunity to the area out of all local authorities in Britain, based on our measure. The local authority ranks third in Britain for the highest proportion of workers that are employed in existing roles that are well positioned for transition, with over one in ten working in automotive, heating and cooling manufacturing and installation. Additionally, Knowsley stands to benefit from its proximity to the North West Net Zero industrial cluster project in Merseyside and the tens of thousands of jobs that it is estimated to create. Given that nearly half of the local authority ranks in the 10% most deprived in the English indices of deprivation, net zero may also provide Knowsley with opportunity for economic “levelling up”.<sup>38</sup>

Sunderland is the second high-opportunity local authority from the transition to net zero opportunity. Similarly to Knowsley, the area ranks well due to the proportion of workers in key economic areas for transitioning existing occupations – at 10.5% of the total employment in the area, Sunderland ranks fifth of all the local authorities in Britain for this measure. Sunderland also benefits from a high proportion of low and medium skills across the area whereby nearly one in five (37.5%) of the working age population have the relevant skill level for green jobs.

Overall, the North West of England has seven local authorities in the top 20, followed by East Midlands with four and Wales with three. Scotland, London, South East, and South West do not have any local authorities in the top 20 Opportunity Index.

**Table 3: Local authorities ranked in the top 20 for net zero opportunity**

		Proximity to nearest renewable energy site (KM)	Proximity to nearest decarbonising industrial cluster (KM)	% of jobs in EV and low-carbon heat related SIC codes	% of working age population with NVQ2 or 3	Proximity to nearest top 20 university for STEM research (KM)	Average Opportunity Index rank
Knowsley	North West	17.4	8.6	10.5%	37.5%	11.5	1
Sunderland	North East	26.2	33.8	9.2%	42.1%	13.3	2
Halton	North West	6.3	18.3	2.3%	39.6%	19.8	3
North West Leicestershire	East Midlands	3.3	47.3	2.9%	35.0%	13.2	4
Torfaen	Wales	18.3	22.9	4.4%	40.5%	40.8	5
North Warwickshire	West Midlands	20.8	28.2	9.6%	39.8%	34.7	6
Cheshire East	North West	18.5	50.2	3.9%	41.0%	33.6	7
Kingston upon Hull, City of	Yorkshire and the Humber	4.2	14.2	3.2%	38.4%	53.1	8
South Derbyshire	East Midlands	12.9	46.4	4.6%	34.9%	21.6	9
Tamworth	West Midlands	19.1	25.6	2.6%	39.7%	34.6	10
Flintshire	Wales	26.0	25.8	3.7%	37.1%	22.9	11
Wirral	North West	21.9	8.6	1.5%	39.2%	6.0	12
Sefton	North West	10.1	9.9	1.2%	40.3%	11.4	13
Tameside	North West	6.7	58.1	1.4%	42.0%	10.4	14
Hinckley and Bosworth	East Midlands	12.6	42.7	3.1%	32.9%	21.5	15
East Cambridgeshire	East of England	7.4	147.6	2.1%	44.4%	20.4	16
Gateshead	North East	14.2	49.7	1.9%	35.3%	7.1	17
Bridgend	Wales	7.1	21.2	4.7%	36.7%	70.8	18
St. Helens	North West	12.7	17.3	1.5%	38.3%	20.1	19
Chesterfield	East Midlands	28.8	88.4	2.9%	40.2%	28.8	20

Table 6 lists the bottom 20 ranked local authorities in our Net Zero Opportunity Index. Overall, local authorities in the South East account for nine of the local authorities in the bottom 20, followed by Scotland with six and the East of England with three.

Argyll and Bute, located on Scotland's west coast, ranks lowest on our Opportunity Index, primarily due to its distance from key net zero opportunities highlighted in our sub-index measures, such as industrial cluster decarbonisation plans, and current under-construction renewable sites (solar, onshore and offshore wind). While areas of Scotland will benefit from opportunity related to new renewables sites and the approved Net Zero Roadmap industrial cluster, these projects are primarily located along the east coast. Additionally, the area ranks relatively low for skills opportunity due to a lower proportion of the area having low- and medium-level skills. It is possible the area may be overqualified for a majority of green jobs given nearly half (49%) of the area has NVQ Level 4+ qualifications, six percentage points above the UK average (43%).

Brighton and Hove ranks second lowest on our Opportunity Index, and the lowest for the South East Region due to the sectoral and skills make-up of the local economy, which is characterised by highly-skilled workers (53% with NVQ Level 4+) in creative and digital technologies. This means that it also stands to benefit less from energy and industrial decarbonisation opportunities, in comparison to other areas in Britain.

No local authorities in the North East, North West, Yorkshire and the Humber, West Midlands, East Midlands, London, and Wales were ranked in the bottom 20 authorities in our Opportunity Index.

We acknowledge that our Net Zero Opportunity Index is unlikely to capture every aspect of economic and employment opportunity for local areas in the transition to net zero – in part reflecting data limitations. The Government's own Ten Point Plan for a Green Industrial Revolution also notes the opportunities related to natural capital protection and enhancement, green finance, active transport, aviation and shipping, and more. The CCC's most recent Progress Report also highlights the opportunities for job creation from climate adaptation in flood defence, infrastructure resilience, and habitat restoration.<sup>39</sup> However, we believe the sub-index measures are a useful gauge of relative levels of key opportunity areas with the data available for every local authority in Britain.

**Table 4: Local authorities ranked in the bottom 20 for net zero opportunity**

	Region	Proximity to nearest renewable energy site (KM)	Proximity to nearest decarbonising industrial cluster (KM)	% of jobs in EV and low-carbon heat related SIC codes	% of working age population with NVQ2 or 3	Proximity to nearest top 20 university for STEM research (KM)	Average Opportunity Index rank
Argyll and Bute	Scotland	84.4	249.0	1.2%	27.8%	84.4	362
Brighton and Hove	South East	103.4	229.0	0.8%	31.5%	103.4	361
Orkney Islands	Scotland	62.5	165.9	1.1%	25.8%	62.5	360
Na h-Eileanan Siar	Scotland	152.7	293.4	2.0%	25.2%	152.7	359
Tunbridge Wells	South East	63.5	235.3	1.5%	22.1%	63.5	358
Copeland	North West	72.6	122.2	0.8%	30.6%	72.6	357
Rother	South East	65.2	250.9	1.8%	28.1%	65.2	356
Eastbourne	South East	92.4	252.5	1.8%	31.7%	92.4	355
Tendring	East of England	71.3	218.8	1.8%	29.3%	71.3	354
Waverley	South East	73.5	182.1	1.3%	23.3%	73.5	353
Adur	South East	103.4	222.5	1.7%	32.7%	103.4	352
Shetland Islands	Scotland	245.3	328.6	1.7%	37.1%	245.3	351
Ipswich	East of England	64.1	200.5	1.5%	32.8%	64.1	349
Hastings	South East	68.1	259.2	1.4%	37.0%	68.1	349
Plymouth	South West	53.6	151.3	1.1%	32.8%	53.6	348
Southend-on-Sea	East of England	57.2	217.8	0.9%	35.7%	57.2	347
Worthing	South East	105.2	221.0	1.2%	40.2%	105.2	346
Stirling	Scotland	35.3	209.7	1.2%	26.4%	35.3	345
Inverclyde	Scotland	36.4	256.1	0.7%	30.7%	36.4	344
Mid Sussex	South East	80.1	211.8	1.8%	32.2%	80.1	343

## CHAPTER THREE – DISRUPTION FROM NET ZERO

While net zero will bring with it a host of opportunities – not least aversion of further damaging climate change – it will disrupt all aspects of society, requiring significant behavioural changes on the part of businesses, households and government. This includes through:

- **Transport disruption** – given the necessary shift to low/no carbon vehicles.
- **Disruption to the built environment** – for example, with the shift away from gas central heating to greener alternatives such as heat pumps. Building design and urban planning will need to be rethought to aid decarbonisation.
- **Disruption to businesses and workers** – with job losses in some carbon intensive industries, as well as a need for workers in such industries to reskill and pivot towards different roles (e.g. manufacturing and repairing electric vehicles rather than internal combustion engine vehicles).
- **Disruption to government** – with net zero implying significant borrowing costs for government, as well as a loss of tax revenues from carbon-intensive sources – such as the circa £30bn per annum raised from fuel duty on petrol and diesel.

The Committee on Climate Change has estimated that the cumulative net zero investment costs for the whole economy between now and 2050, plus the operating costs of emissions removals, stand at £1.4 trillion (in 2019 prices).<sup>40</sup>

Government has not said how much of that cost it expects to bear, meaning there is currently huge uncertainty over the financial implications for households and businesses. Households in the UK will almost certainly bear at least some of the costs associated with the shift towards net zero – such as through the purchase of electric vehicles, investing in home insulation and installing a heat pump. Businesses will also need to invest in reskilling and new technologies, or in the case of firms involved in sectors such as oil extraction, pivot towards a different business model. Local and central government also needs to up its game as an enabler of change with respect to decarbonisation.

Critically, the scale of financial and behavioural disruption is likely to vary significantly across Britain. The ability of households to afford the costs of home and transport decarbonisation will depend on local-level incomes. The nature of local economies will also determine the extent to which jobs and businesses will need to change as a result of efforts to decarbonise the economy. Furthermore, the relative size of different sources of CO<sub>2</sub> emissions – such as those from industry, households and transportation – varies across the country, meaning the focus of decarbonisation – and the appropriate policy response – will differ by geography.

### Net Zero Disruption Index

To gauge the relative exposure of different local authorities to these challenges, we have constructed a Net Zero Disruption Index which attempts to capture these elements of disruption across local authorities in Britain, producing a ranking of the *relative* scale of disruption likely to occur.

The Index consists of five equally weighted sub-components:

- **Disruption to transport** – as measured by data on transport emissions per capita
- **Disruption to household energy usage** – as measured by per capita household gas/fuel emissions
- **Whether households can afford the changes demanded by net zero, without further government subsidy** – measured by median employee earnings.
- **The percentage of jobs in carbon-intensive sectors (sectors with above-average carbon-intensity, calculated by dividing the level of carbon dioxide emissions by industry Gross Domestic Product).**
- **The percentage of businesses in carbon-intensive sectors (sectors with above-average carbon-intensity, calculated by dividing the level of carbon dioxide emissions by industry Gross Domestic Product).**

More information on these measures and the data sources used to compile them can be found in the appendix of this report.

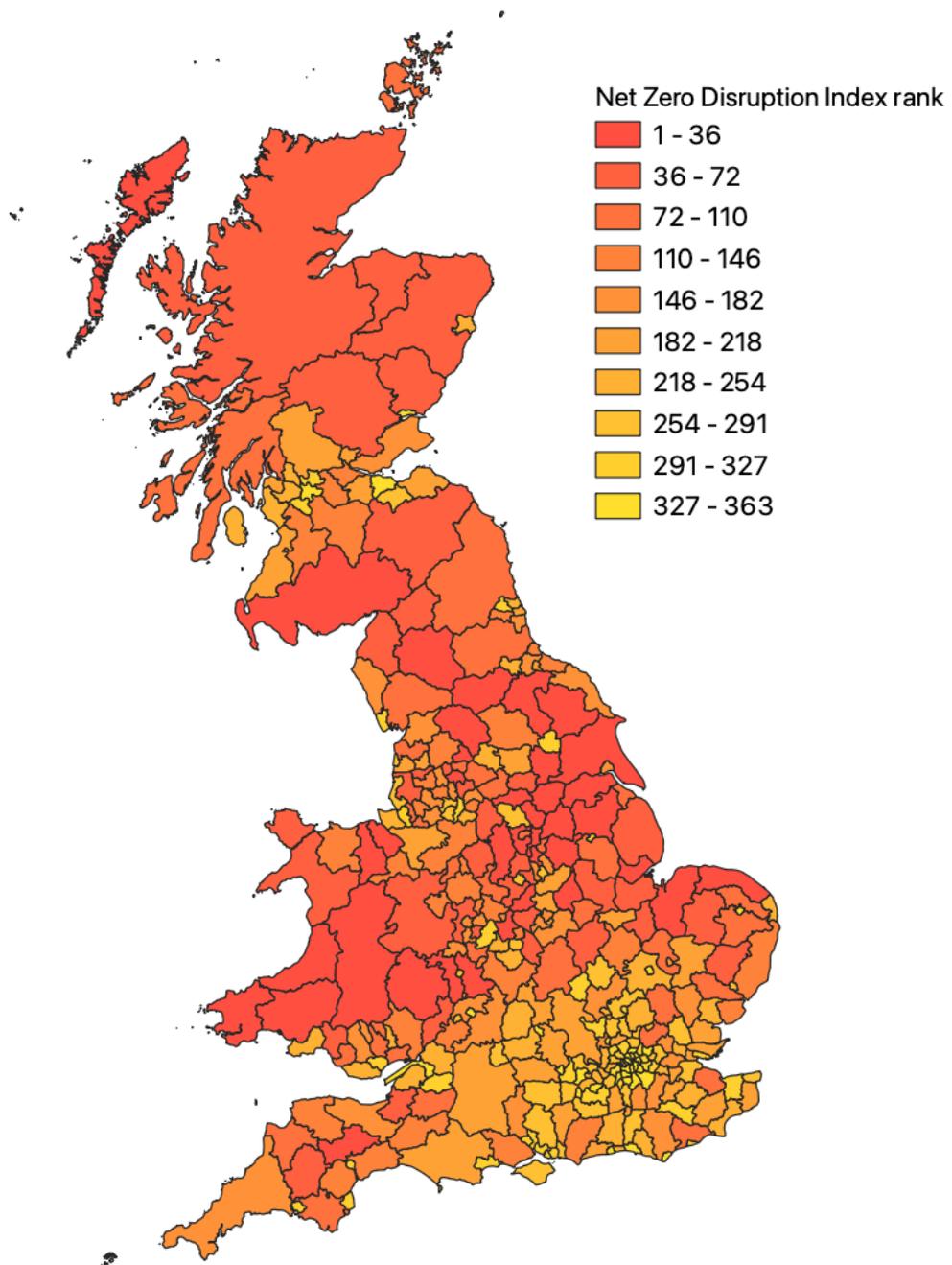
We acknowledge that this measure of net zero disruption is unlikely to capture every aspect of the challenges local areas will face in reaching net zero, though we believe the measure is a useful gauge of relative levels of disruption. We have used data that are available for every local authority in Britain, allowing us to rank authorities and draw comparisons.

Overall Net Zero Disruption Index findings are presented in the map below. One conclusion from this visualisation is that the North of England and Midlands are relatively more likely to face disruption from the transition to net zero than the South of England. The devolved administrations of Scotland and Wales also face relatively high levels of disruption from the transition.<sup>i</sup>

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<sup>i</sup> Unfortunately, data limitations mean that we are unable to find directly comparable data for Northern Ireland, for the purposes of this analysis.

Figure 4: Net Zero Disruption Index (lower rank = relatively more disruption)



Source: SMF analysis

The drivers of this trend can be seen when examining the sub-index scores at a regional level, as shown in the table below. London, in particular, faces relatively low levels of disruption from the transition to net zero. Overall, Yorkshire & the Humber, the East Midlands, and Wales face the highest levels of disruption from the transition to Net Zero, on our headline Disruption Index measure.

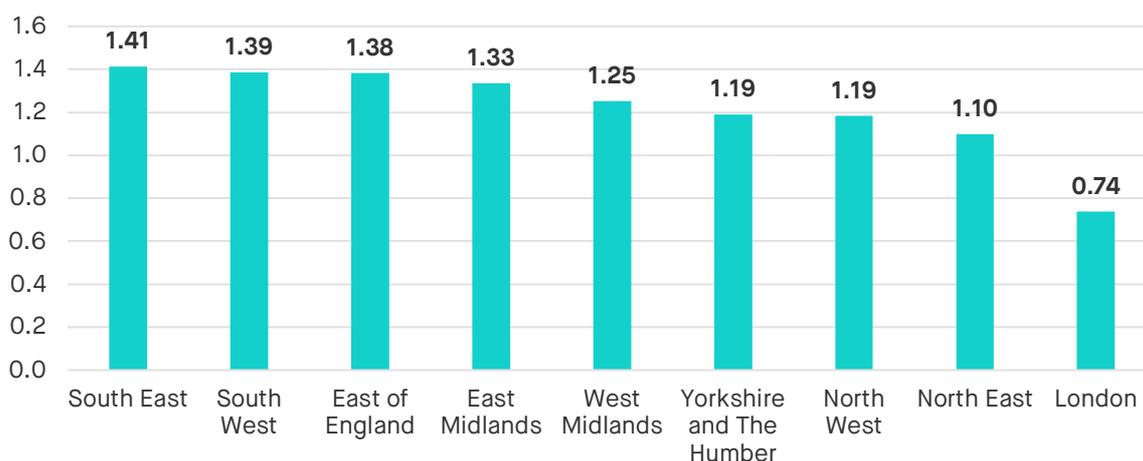
Table 5: Net Zero Disruption sub-index measures, by region (population-weighted average of local authority data)

	Transport emissions per capita	Household gas/other fuel emissions per capita	Median employee income (£)	% of jobs in carbon intensive industries	% of businesses in carbon-intensive industries	Average Disruption Index rank
North East	1.7	1.2	£23,314	12%	15%	163
North West	1.9	1.1	£24,395	12%	16%	182
Yorkshire and the Humber	2.0	1.2	£23,914	12%	18%	128
East Midlands	2.1	1.2	£24,243	14%	19%	124
West Midlands	2.1	1.1	£24,646	12%	19%	164
East of England	2.3	1.0	£26,868	10%	18%	197
London	0.9	0.9	£32,629	6%	15%	323
South East	2.1	1.0	£27,954	7%	15%	256
South West	2.1	1.0	£24,112	10%	16%	213
Wales	2.0	1.2	£23,663	13%	16%	128
Scotland	2.0	1.2	£25,925	12%	13%	192

Source: SMF analysis

London's well-developed public transport system means that transport emissions per capita are far lower than other regions. According to the National Travel Survey for England, some 45% of London households did not own a car or van in 2018/19, close to double the 24% seen in the rest of England. These data suggest London has 0.7 cars or vans per household, while the East of England, South East and South West have about twice as many (1.4).

**Figure 5: Number of cars or vans per household (2018/19)**



Source: National Travel Survey

### Case study: Curbing transport-related emissions in the West Midlands

As part of this research we hosted a regional roundtable discussion with industry, government, academia and charities in the West Midlands. This discussion highlighted some of the challenges faced by this part of the country in reaching net zero.

According to statistics from the Department for Business, Energy and Industrial Strategy, about two fifths (39.7%) of CO<sub>2</sub> emissions in the West Midlands come from transport, making it a bigger emitter of CO<sub>2</sub> than domestic energy use (26.8%) and industry (33.5%).

As such, decarbonising transport has to be a key focus of the region's efforts to reach net zero, requiring both increased use of public transportation and a shift towards electric vehicles.

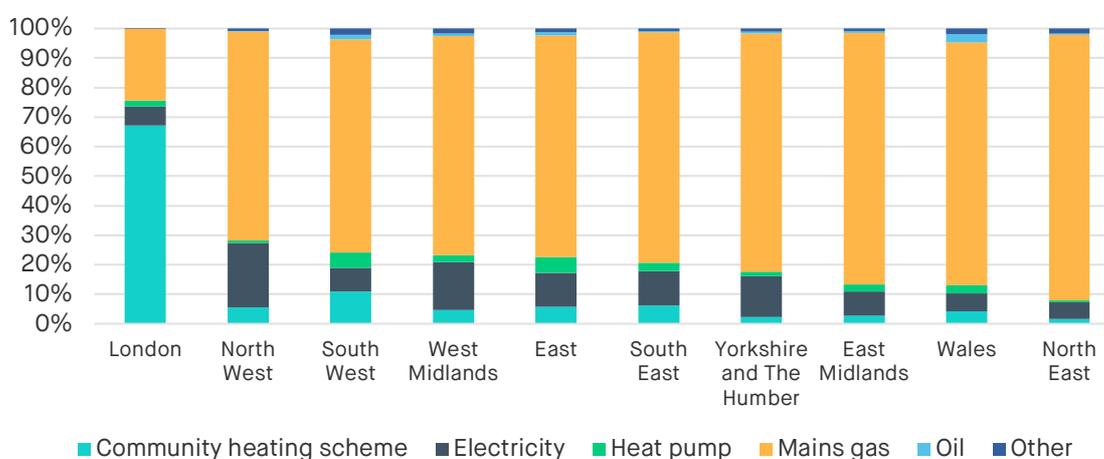
Transport for West Midlands (TfWM) has recently published a green paper to drive engagement with people, businesses and other key stakeholders across the region on what its new Local Transport Plan (LTP) should look like.<sup>41</sup> "Tackling the climate emergency" is stated as one of the five motives for change in the green paper, alongside creating a fairer society, supporting local communities and places, becoming more active and sustaining economic success.

The UK has signed the Paris Agreement and is committed to global efforts to prevent this environmental breakdown by reducing carbon emissions to net-zero by 2050. The West Midlands Combined Authority is committed to these efforts and has adopted its own “WM2041” carbon ambition, developing plans to decarbonise the region by 2041. The first of these plans is published and runs from 2021- 2026.<sup>42</sup>

In addition to a low reliance on cars, relatively high median salaries mean that the costs associated with net zero are more manageable for households in the capital. Furthermore a relatively low proportion of jobs in London are in carbon-intensive industries, reducing the prospect of the region being exposed to job-shedding in such industries. In contrast, relatively low salaries in Wales and the North East of England raise questions about the affordability of household decarbonisation in these regions. The East and West Midlands have a relatively high proportion of jobs and businesses in carbon-intensive industries, suggesting that decarbonisation of industry and workforce reskilling for green jobs will be a particular challenge in these regions.

The North of England, Scotland and Wales, with their relatively cooler climates compared with the South of England, have relatively higher household emissions associated with gas and other fuels used for home heating. Another consideration is different regions’ reliance on gas and oil to heat homes – something we do not capture explicitly in our Disruption Index given the lack of directly comparable data for Scotland, Wales and England. Office for National Statistics data for new builds in England & Wales in 2019 show that 76% of new dwellings in London were using district heating schemes, electricity or heat pumps as the main method of home heating. This compares with just 8% of new builds in the North East of England, where 90% of new dwellings were still using mains gas as the main form of central heating, despite the need to transition towards net zero.

**Figure 6: Proportion of new dwellings by main fuel type or method of heating used in central heating by country and region, England and Wales, financial year ending 2019**



Source: ONS Energy Performance Certificate statistics for new and existing flats and houses

### Case study: Decarbonising homes in the North West

According to statistics from the Department for Business, Energy and Industrial Strategy, some 28% of CO<sub>2</sub> emissions in the North West come from domestic use of gas, electricity and other fuels. While green energy projects such as the Mersey Tidal Power Project could deliver enough energy for up to one million homes<sup>43</sup>, like much of the country the region has a lot of older buildings that are very carbon inefficient. The UK has the oldest housing stock in Europe<sup>44</sup>, highlighting the challenge regions, including the North West, face in decarbonising home heating.

One policy option discussed at a North West roundtable discussion hosted as part of this research was the case for devolving apprenticeship levy funding to better enable metro mayoral authorities to lead on the reskilling of local labour forces. This could include through a focus on green jobs, such as those involved in home insulation and retrofitting.

Steps are already being undertaken to decarbonise the North West's housing stock. For example, Liverpool City Region Combined Authority and its industry partners recently announced plans to build or retrofit more than 16,000 homes as part of its drive to slash carbon emissions.<sup>45</sup> Using so-called modern methods of construction (MMC), over the next decade the programme will aim to retrofit 10,000 homes across the city region and build a further 6,500 homes. All the work will be done with the aim of slashing carbon emissions. It will also be an opportunity to create a new skilled workforce.

The announcement marked the beginning of the first phase of the Liverpool City Region National Centre of Excellence in Modern Methods of Construction for Homes project. It is one of the key projects in the city region's £9bn Building Back Better economic recovery plan.

### Findings by local authority

The tables below show the authorities ranked in the top 20 and bottom 20 in terms of Net Zero Disruption Index score.

Bolsover ranks first in our Net Zero Disruption Index, meaning that it faces the highest level of disruption on our measure. Bolsover faces particular challenges with low incomes in the region – median employee wages are the 15<sup>th</sup> lowest across local authorities in Britain. Per capita CO<sub>2</sub> emissions from gas and other fuels for home heating stand at 1.8 tonnes per annum, more than any other local authority in Britain.

Eden, a relatively rural local authority in the North West of England, is the second most disrupted local authority. The car dependence associated with rurality contributes to it having the second highest per capita transport emissions in Britain, after North Warwickshire. It also has the third highest per capita CO<sub>2</sub> emissions from household gas and fuel usage. A relatively high proportion of jobs in the district – 27% - are in carbon-intensive industries. This is the 15<sup>th</sup> highest proportion in Britain.

Figure 7: The 20 most disrupted local authorities in Britain

		Transport emissions per capita (t CO2)	Household gas/other fuel emissions per capita (t CO2)	Median employee income	% of jobs in carbon intensive industries	% of businesses in carbon-intensive industries	Overall Disruption Index rank
Bolsover	East Midlands	4.1	1.8	£21,325	15.1%	21.2%	1
Eden	North West	9.4	1.7	£24,317	27.3%	19.2%	2
Ryedale	Yorkshire and the Humber	3.5	1.4	£23,586	28.5%	19.2%	3
Hambleton	Yorkshire and the Humber	4.8	1.3	£22,694	21.9%	17.2%	4
North Lincolnshire	Yorkshire and the Humber	2.9	1.2	£22,726	29.7%	21.3%	5
Powys	Wales	2.5	1.5	£22,534	26.6%	17.7%	6
Bassetlaw	East Midlands	3.2	1.3	£22,839	23.6%	18.9%	7
North West Leicestershire	East Midlands	4.9	1.3	£24,324	16.3%	20.3%	8
North East Derbyshire	East Midlands	2.4	1.4	£24,241	24.5%	20.5%	9
Craven	Yorkshire and the Humber	2.6	1.4	£20,611	16.0%	17.0%	10
Dumfries and Galloway	Scotland	4.0	1.4	£22,233	24.2%	14.7%	11
Ashfield	East Midlands	1.7	1.4	£22,590	20.2%	19.8%	12
Barnsley	Yorkshire and the Humber	1.9	1.4	£22,372	14.9%	20.1%	13
Rotherham	Yorkshire and the Humber	2.3	1.3	£21,363	12.7%	19.4%	14
Newark and Sherwood	East Midlands	3.4	1.2	£23,281	16.2%	19.1%	15
Flintshire	Wales	2.5	1.3	£23,389	18.5%	17.8%	16
Rossendale	North West	1.8	1.3	£21,428	18.2%	17.8%	17
Doncaster	Yorkshire and the Humber	3.0	1.3	£24,604	12.2%	21.4%	18
Wychavon	West Midlands	4.1	1.1	£24,582	19.3%	21.8%	19
Carmarthenshire	Wales	2.3	1.4	£23,669	17.5%	17.6%	20

Local authorities in London account for the nine least disrupted districts in Britain with Islington the least disrupted local authority. The district has both the lowest transport-related CO2 emissions in the country, and the lowest proportion of jobs in carbon-intensive industries.

Cambridge is the only local authority outside of London in the ten least disrupted parts of Britain. Relatively high wages, low transport-related emissions and a low proportion of jobs in carbon-intensive industries mean Cambridge scores relatively well on our headline disruption measure.

No local authorities in the Midlands, North of England, Scotland or Wales make it into the list of the 20 least disrupted authorities in Britain.

**Figure 8: The 20 least disrupted local authorities in Britain**

		Transport emissions per capita (t CO2)	Household gas/other fuel emissions per capita (t CO2)	Median employee income	% of jobs in carbon intensive industries	% of businesses in carbon-intensive industries	Overall Disruption Index rank
Islington	London	0.5	0.7	£41,329	1.4%	9.4%	363
Camden	London	0.5	0.7	£34,525	2.9%	8.5%	362
Tower Hamlets	London	0.8	0.4	£36,605	1.6%	9.9%	361
Hackney	London	0.5	0.7	£32,241	3.0%	11.1%	360
Southwark	London	0.6	0.6	£33,682	4.4%	9.1%	359
Lambeth	London	0.7	0.8	£36,369	4.2%	9.5%	358
Wandsworth	London	0.6	0.9	£41,100	3.8%	10.0%	357
Hammersmith and Fulham	London	0.8	0.9	£37,204	2.8%	10.6%	356
Westminster	London	1.1	0.7	£41,029	2.0%	11.6%	355
Cambridge	East of England	0.8	1.0	£31,673	1.4%	8.6%	354
Lewisham	London	0.7	0.8	£31,480	4.4%	11.2%	353
Brighton and Hove	South East	1.0	0.9	£27,865	3.7%	8.6%	352
Kingston upon Thames	London	1.2	1.0	£36,170	3.1%	11.3%	351

<b>Oxford</b>	<b>South East</b>	0.9	0.9	£26,313	2.5%	8.9%	350
<b>Reading</b>	<b>South East</b>	0.8	0.9	£27,992	4.3%	11.8%	349
<b>Kensington and Chelsea</b>	<b>London</b>	1.0	1.1	£37,503	2.3%	10.0%	348
<b>Worthing</b>	<b>South East</b>	0.8	1.0	£26,583	3.6%	12.2%	347
<b>Cheltenham</b>	<b>South West</b>	0.8	1.0	£28,370	3.6%	11.4%	346
<b>Watford</b>	<b>East of England</b>	1.0	1.0	£29,639	2.8%	14.0%	345
<b>Rushmoor</b>	<b>South East</b>	1.5	0.9	£32,236	4.2%	13.2%	344

Source: SMF analysis

## CHAPTER FOUR – BRINGING THE ANALYSIS TOGETHER

The previous two chapters have explored the relative levels of disruption and opportunity arising from the transition to net zero, at a local authority level of geography, through the presentation of a Net Zero Disruption Index and Net Zero Opportunity Index.

In this chapter, we bring the findings from these two index measures together to provide a categorisation of local authorities in the UK. This is important; we cannot consider opportunity and disruption in isolation. Some parts of the UK may have limited opportunities arising from the transition to net zero, but also face relatively low levels of disruption and thus be relatively unaffected. Other parts of the country face both limited opportunities and significant disruption, with such local authorities particularly exposed, in a negative way, by the transition to net zero.

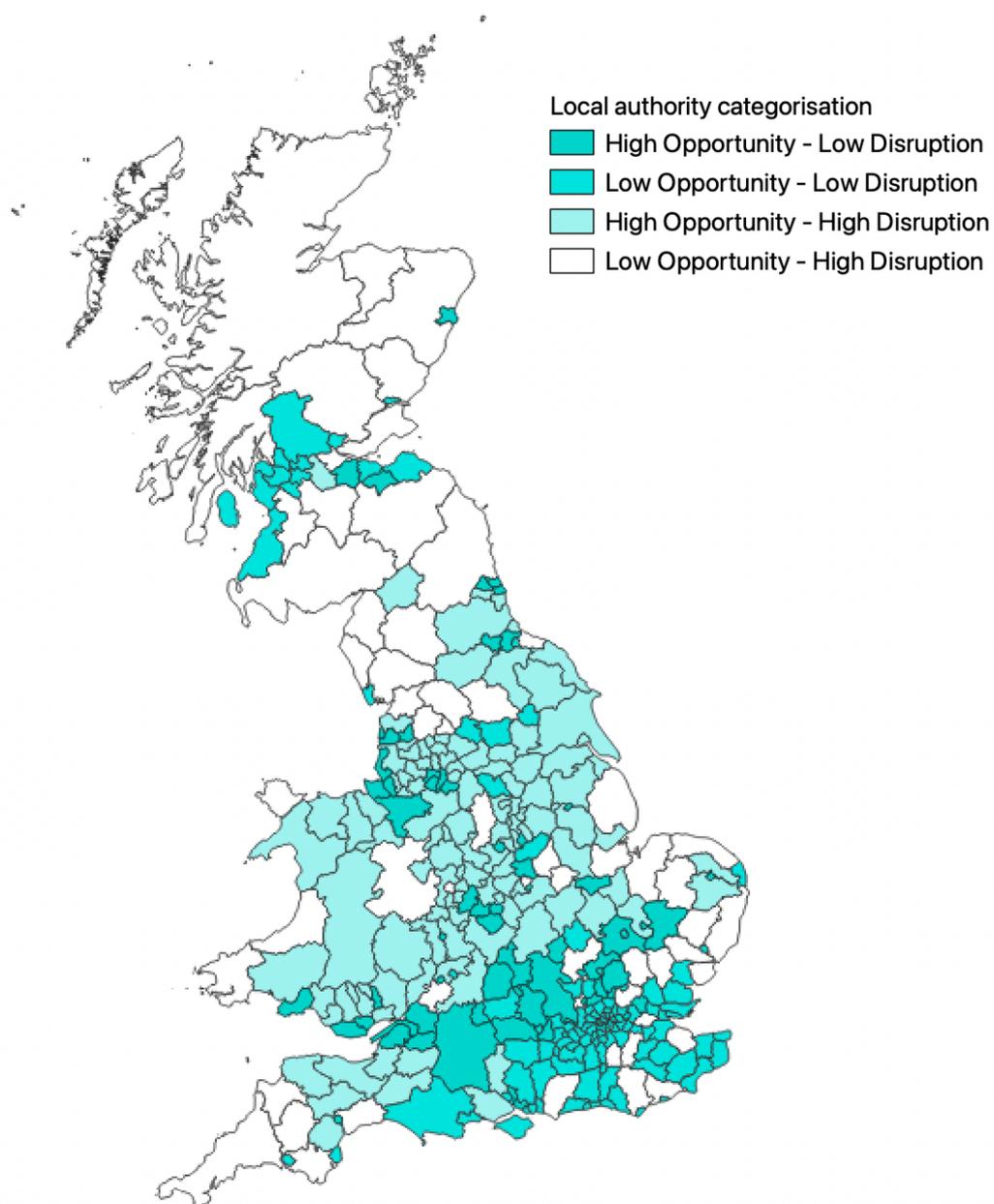
### **Local authority categorisation**

For ease of presentation, we place local authorities into four categories with respect to the transition to net zero:

- Low disruption – high opportunity areas
- Low disruption – low opportunity areas
- High disruption – high opportunity areas
- High disruption – low opportunity areas

An authority is classified as “low” disruption or opportunity if it ranks in the bottom half in terms of its index scores for these measures, and “high” disruption or opportunity if it ranks in the top half. This categorisation is presented in the map below.

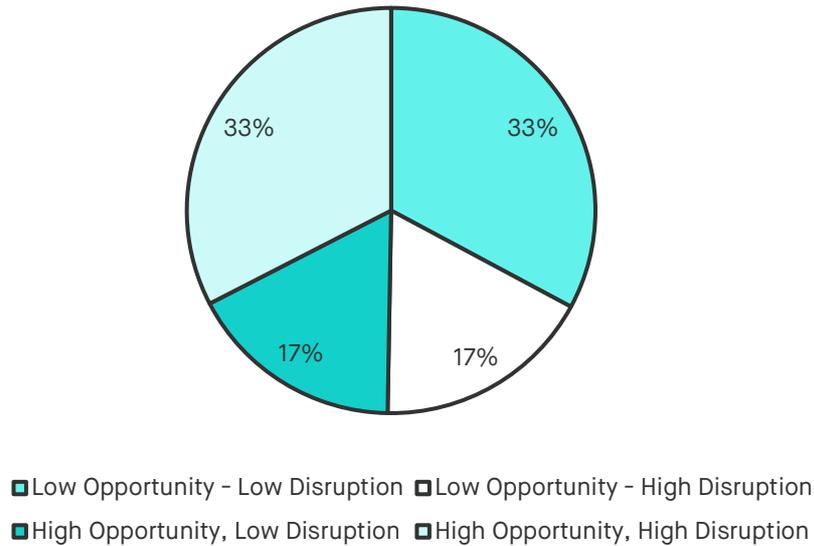
Figure 9: Net zero disruption and opportunity categorisation



Source: SMF analysis

An important finding from this analysis is that most (66% of) local authorities in Britain that face relatively high levels of disruption from the transition to net zero also face relatively high levels of opportunity from, for example, new job creation and the formation of new decarbonisation business clusters – that is to say, they are well-placed to stand to gain from net zero, even though they face challenges.

**Figure 10: Proportion of local authorities in category, Great Britain**



Source: SMF analysis

Some 17% of local authorities in Britain sit within our most challenging category of Low Opportunity - High Disruption. While a relatively small proportion, that still means there are 62 local authorities that sit within this category, dispersed across Britain from the Outer Hebrides to Cornwall.

**Figure 11: Proportion of local authorities in category, by region/country**



Source: SMF analysis

Some 17% of local authorities sit within our least challenging category of High Opportunity – Low Disruption. The proportion of local authorities in this category is greatest in the North East, at 42%, including authorities such as North & South Tyneside, Darlington and Stockton-on-Tees.

### Cast Study: Net Zero and Scotland

Our analysis suggests Scotland may face particular challenges in the shift towards net zero. In part, this reflects the relative rurality of much of Scotland, as well as the importance of carbon-intensive industries – such as fishing and oil extraction – in some parts of the country.

The highest per capita CO<sub>2</sub> emissions in Scotland are in Falkirk, standing at 14.9 tons per annum according to data from the Department for Business, Energy and Industrial Strategy. This is the 11<sup>th</sup> highest per capita CO<sub>2</sub> emissions in Britain.

Over 70% of emissions within this local authority are associated with industry, much higher than the 37% seen across Britain as a whole. Grangemouth, within the authority, is Scotland's largest deep sea container port. Grangemouth's major industry is chemicals with BP, Ineos, Syngenta, Avecia and Rhom & Haas, located in the area. Other key sectors in the Falkirk area include vehicle manufacturing, timber processing, tourism and leisure. Warehousing and distribution are key growth areas<sup>46</sup>.

Having said that industry emissions in Falkirk are relatively high, businesses operating in the authority are taking steps to decarbonise. Ineos and Petroineos have joined the Acorn project, a climate mitigation programme to establish carbon capture and hydrogen infrastructure. The project “makes use of oil and gas pipelines that are already in place, offshore geology that is ideal for permanently storing carbon dioxide, and a region that is embracing hydrogen as a fuel of the future.”<sup>47</sup>

Ineos and Petroineos have signed a memorandum of understanding (MOU) for their operations at Grangemouth – leading the way for one million tonnes of CO<sub>2</sub> to be captured and stored from the industrial hub a year by 2027.<sup>48</sup>

## CHAPTER FIVE – IMPLICATIONS FOR POLICYMAKERS

As part of our research, we presented the findings described earlier in a series of three roundtables with representatives from sub-national government, businesses, charities and academia. These discussions provided useful context for comparing emerging patterns across the data with local knowledge and expertise.

As we approach COP26, it is likely that further measures for reaching net zero will be announced, and more detail will emerge on how the Government plans to transition to a more sustainable, low-carbon economy. As the Government considers its options, we have identified a number of issues and areas for improvement to support local and regional governments in this transition:

- Central government’s targets for a net zero economy lack detail on how this will be achieved, particularly for sub-national actors delivering local and regional economic strategies.
- While sub-national governments are making progress on decarbonisation, additional powers and funding will probably be required to capitalise on net zero opportunities and to ensure a just transition for their communities.
- Sub-national actors would be well-placed to address skills gaps, if given the means (powers and funding) to deliver their own skills strategies.
- Rural areas face unique challenges and require additional support, particularly in relation to private transport and transitioning to EVs.
- Small businesses will probably face different challenges in decarbonising, particularly in meeting the costs of transition.
- Communication around net zero from central government is currently lacking, and policymakers need to find ways of bringing people along for the journey.

These findings help to build a strong case for localised policy approach to net zero. As noted in the introduction to this report, while local authorities are directly responsible for just 2-5% of local emissions, it has been estimated that they can influence around a third of emissions in their communities through leadership and placemaking.<sup>49</sup>

While our research findings are for Britain, our recommendations primarily focus on the UK government. However, some of these recommendations will apply to just England, and where that is the case, we make it explicit.

### Recommendations

We make the following recommendations to policymakers:

- 1. Empower local authorities with new revenue and capital-raising abilities to support the transition to net zero.**
- 2. Put green at the heart of Apprenticeship Levy reform to drive local green skills agendas.**
- 3. Introduce a Rural Net Zero Strategy to ensure the countryside is not left behind.**
- 4. Provide tailored support to small-and-medium sized enterprises (SMEs) to help them decarbonise.**

## **Empower local authorities with new revenue and capital-raising abilities to support the transition to net zero.**

Recent research from UK 100, a network of local government leaders, finds that central government is not recognising the critical role that local authorities can and will play in the transition to net zero. Their recent report *Power Shift* notes that there is limited mention of the role of local authorities in many key net zero strategy publications, with no clear framework differentiation between the responsibilities of national, regional, and local authorities in this transition.<sup>50</sup> Within the Prime Minister's Ten Point Plan for a Green Industrial Revolution, local authorities are only mentioned in relation to public and active transport, despite their key role in decarbonising heat, local energy, private transport, as well as waste management.<sup>51</sup>

One key area where local authorities require greater support is funding. Between 2010-11 and 2017-18 central government funding for local authorities fell by an estimated 49.1% in real terms.<sup>52</sup> After accounting for authority council tax revenues, this equates to a 28.6% real-terms reduction in spending power.<sup>53</sup> Most of the funding for councils comes through a few large grants. The nature of this grant funding tends to be small in size, restrictive over expenditure, uncertain over the long-term, and fragmented across services and departments.<sup>54</sup> Our discussions with stakeholders also indicate that there is a lack of trust between central and local governments, particularly when it comes to devolving funding or allocating greater amounts.

In order to plan for and invest in the transition to net zero, it will be crucial that local authorities are empowered with new funding mechanisms of devolved tax revenue and capital-raising powers for their own communities. This would enable local authorities to coordinate local skills, infrastructure, and support in line with local needs and targets.

### **Revenue-raising powers**

At present, local government in the UK has very limited revenue-raising powers and is one of the most centralised countries in the developed world. Data from the OECD in 2018 show that sub-central government account for just 5% of total tax revenue in the UK, compared to 14% in France, 32% in Germany and nearly 50% in Canada.<sup>55</sup> In evidence to the Housing, Communities and Local Government Committee, the Chartered Institute of Public Finance and Accountancy (CIPFA) highlighted how the impact of COVID-19 had exposed the weaknesses of local authorities limited funding sources of primarily council tax and business rates.<sup>56</sup> In order to mitigate the disruption and maximise the opportunities from net zero, local authorities will require more long-term stability from greater levels of devolved tax revenue. The UK government should consider a longer-term, more stable change to local government funding, such as through a devolved element of income tax or a broader range of local taxes.

### **Capital-raising powers**

Given the fiscal challenges for local authorities in raising capital, local government should explore the potential of green bonds to finance sustainable place-based investments in energy, transportation, and building solutions. A similar mechanism is considered a success in Sweden, where municipal green bonds accounted for 10% of the total Swedish krona bond market in 2018 within five years of being introduced. Between 2017 and 2020, green bond projects in Stockholm have avoided almost

40,000 tonnes of carbon dioxide emissions through investment in clean transportation and greener buildings.

Green bonds are debt instruments linked to investments aiming to reduce impact on the climate and environment and contribute to sustainable development. This means that issuers of green bonds use the borrowed capital to finance specific projects or assets classified as green. While the UK government has begun to explore this mechanism, issuing its first sovereign green bonds this year, few councils have capitalised on this opportunity for local funding. One local authority which has introduced a similar mechanism is West Berkshire Council, which used Community Municipal Investment developed by Abundance Investment to raise capital for solar panel installations on council-owned buildings.<sup>57</sup>

Local green bonds are not without their criticisms – previous research from the SMF highlighted concerns over their additionality (or added value), and the risk of ‘greenwashing’.<sup>58</sup> This is where allegedly sustainable activities, such as green bond issuance, are used by an organisation to make the public believe that the organisation is doing more to protect the environment than it really is. As a result, if green bonds are to be considered, measures should be put in place to ensure local governments hold each other to account over the rhetoric on green bonds to avoid discrediting the legitimacy of the green investment claims.

### **Put green at the heart of Apprenticeship Levy reform to drive local green skills agendas.**

The transition to net zero will see a decline in demand for skills in carbon-intensive industries, and an increase in low-carbon alternatives, as well as new technologies and occupations. In some sectors, this poses a challenge of reskilling and upskilling significant proportions of the workforce. While the Opportunity Index highlights areas that may benefit from a greater number of jobs better-suited for transition, ensuring these workers receive sufficient training depends on the delivery of skills provision in an area.

Our qualitative research found that sub-national actors are well-placed to plan and deliver strategies that build a pipeline of appropriately-skilled workers to deliver key decarbonisation targets for their economies and communities. One example of where local and regional authorities can lead on skills is for home retrofit. Due to the scale of the decarbonising home heat challenge and the skills gaps associated with retrofit, authorities would benefit from additional resources that enable them to plan and invest in skills for domestic heat timelines and support businesses. Currently, sub-national authorities have limited resources in terms of devolved skills budgets.

Although skills policy is devolved across the four nations of the United Kingdom and local partners (local authorities, colleges, and universities) deliver programmes in response to place-based skills needs, the reality of skills funding is much more complex. Central government still primarily holds the responsibility for collecting and distributing funds.<sup>59</sup>

In 2019, half of the Adult Education Budget (AEB) was devolved to the six Mayoral Combined Authorities and the Greater London Authority, while the other half was retained by the Education Skills and Funding Agency (ESFA) for areas outside of this remit. Since then, North of Tyne, Sheffield City Region and West Yorkshire have also

become responsible for administering the AEB. Unlike the AEB, Apprenticeship Levy funding is controlled by the Treasury, with unspent funds retained centrally after 24 months rather than by combined or local authorities. Recent research by the CIPD found that unspent funds totalled around £1 billion per year between 2019 and 2021.<sup>60</sup> The LGA notes that this mechanism hampers efforts to have a more joined-up and strategic approach to apprenticeship spending locally in England.<sup>61</sup> The devolved nations of Scotland, Wales and Northern Ireland are provided with a population-based share of the levy funding, with which they decide how to allocate this funding to their devolved responsibilities.

There is a case for policymakers to devolve the circa £2.4bn per annum English Apprenticeship Levy funding to combined authorities for a more place-based approach to skills and employment services. As a result, skills and training provision can be developed to meet regional and local economic needs and policy timelines for net zero. Following the existing 24 month period, unspent levy funds should be retained in the region or devolved nation where the levy was paid to and then be reallocated locally. The West Midlands Combined Authority has already launched a similar programme to connect SMEs and larger businesses so that funds can be transferred and therefore remain in the region, rather than returning to the Treasury.<sup>62</sup>

How this funding is reallocated should be decided by local authorities and Local Enterprise Partnerships (LEPs) as part of a Regional Skills Partnership. This would allow for local government and employers to play a role in planning for and delivering training in line with economic and skills strategies. The UK government should also allow the Regional Skills Partnerships more discretion to use unspent Levy funding on skills outside of the current apprenticeship terms, provided that the training is relevant for green jobs and skills.

Currently, employers can choose to transfer up to 25% of their unused levy funds to help other businesses or organisations pay for apprenticeship training, rather than have it recouped by government. In order to support small businesses in the transition to net zero, the UK government should consider increasing the transfer allowance to 50% with the conditions that the receiving organisation is an SME, and training and apprenticeship opportunities are designated as necessary for 'green work'.

Local and regional government, working with LEPs, should be granted a significant amount of flexibility in how 'green work' is defined – possibly through our proposed Regional Skills Partnerships. However, there is likely to be a need for some degree of oversight, with central government establishing some broad parameters about what constitutes green employment. The risk is that, without such parameters, the term 'green work' could be used with respect to a broad range of jobs – some of which may in fact be detrimental to the environment. SMF research has highlighted the risks associated with 'greenwashing', where organisations mislead households about their environmental credentials, to the detriment of trust and faith in genuinely green initiatives.<sup>63</sup>

**Introduce a Rural Net Zero Strategy with a key and active role for local authorities to ensure the countryside is not left behind.**

The Prime Minister has referred to the transition to net zero as being part of his mission to level up the country.<sup>64</sup> The findings of this report highlight a pattern of opportunity across areas in the north of England, which experienced greater economic scarring from deindustrialisation, such as Sunderland or Kingston upon Hull. However, levelling up *within* regions and local communities will also be important for a just transition, as well as *between* regions.

Across our research, rural areas stand out as facing higher levels of disruption from net zero and lower levels of opportunity, in comparison to more urban areas. This is due to a number of factors, including the dependence on private transport, challenges in the rollout of EV charging infrastructure and grid capacity, heritage homes, and distance from industrial centres with decarbonisation opportunities. Previous research from the SMF highlighted that the market alone is unlikely to deliver sufficient EV charging infrastructure in rural areas where grid capacity needs strengthening, and local authorities also face funding and expertise limitations in this area.<sup>65</sup> This demonstrates just one example of how, without targeted intervention, rural communities risk being left behind in the transition to net zero.

The UK government's centralised approach to net zero policymaking overlooks these differences between rural and urban areas. The national focus on economic and industrial areas has led to a lack of targeted support for rural communities, as demonstrated by the two-year gap between publishing the Future of Mobility: Urban Strategy and starting to consult on its rural counterpart.<sup>66</sup> A more local approach to net zero policymaking, with greater powers and funding devolved to sub-national governments and local authorities could enable greater flexibility in addressing specific local challenges within communities. The UK government should look to publish a Rural Net Zero Strategy that includes priorities for action delivered by local authorities across homes and buildings, agriculture, climate mitigation and adaptation, renewable energy and grid capacity, as well as transport and mobility to ensure there is a clear roadmap and package of support for all rural areas throughout the UK.

While there is less employment opportunity from natural environment enhancement (e.g. planting trees, restoring woodlands, peatlands, wetlands) than decarbonising energy or industry<sup>67</sup>, rural areas are well-placed to benefit from nature-based solutions for carbon sequestration. According to LGA-commissioned research, local authorities hold around 170 statutory duties relating to land use through local planning and biodiversity duties, as well as economic development, meaning they could play an active role in capitalising on this opportunity for rural communities. UK 100 highlights several rural local authorities that are already delivering ambitious land use plans, such as Shropshire, East Riding of Yorkshire, Cheshire East, Gloucestershire and Cambridgeshire.<sup>68</sup> However, it is unclear how far this group represents all rural communities across the UK. A recent report by Josh Buckland, published by Bright Blue, recommended linking new farm payments schemes more directly to projects that reduce or store carbon alongside further measures to build long-term incentives for land-use sequestration.<sup>69</sup> The UK government should consider this scheme as part of the Rural Net Zero Strategy and expand the recipients to include small businesses and

local authorities to allow councils to raise funding for investing in and delivering carbon sequestration measures.

### **Provide tailored support to SMEs to help them decarbonise.**

Small and medium enterprises (SMEs) make up 99% of firms in the UK.<sup>70</sup> They are critical in meeting net zero, yet face specific challenges in meeting the costs of decarbonising their business, particularly as COVID-19 has already had a significant impact on many business' finances.<sup>71</sup>

Recent research from London School of Economics' Grantham Institute noted that SME access to finance is uneven across the regions and devolved nations of the UK with bank lending and equity finance options faring particularly worse in the Midlands and North of England – in the case of equity financing, due to a smaller concentration of high-growth firms.<sup>72</sup> The Carbon Trust also describes the energy efficiency grant landscape for SMEs as “fluid and often regionally defined”, highlighting how grant opportunities may differ between LEPs, Growth Hubs, and local authorities. Under the Carbon Trust's guidance promoted on the Government's UK Business Climate Hub, SMEs are also advised to search “energy efficiency grants + your county” online as one way of identifying available resources.

While we recognise that grants will vary by the economic needs of different areas, navigating what grant opportunities are locally available may be onerous for SMEs with limited resources. The UK government should look to improve the grants system for SMEs to ensure financial support is more accessible and regionally available.

In May, the Prime Minister and Business and Energy Secretary urged small business across the UK to pledge to cut their emissions as part of a new campaign Together for our Planet.<sup>73</sup> Since then, hundreds of businesses have committed to the SME Climate Commitment suggesting that uptake has been relatively low across the business community. As part of the campaign, the UK Business Climate Hub was launched to provide SMEs access to interactive tools, resources and advice on how to reduce their emissions through low-carbon technologies.<sup>74</sup> While the Hub toolkit is informative, it predominantly relies on guidance and research reports that may be burdensome to consume and digest for SMEs with personnel constraints. The Hub does not provide SMEs with access to additional financial support to reduce their carbon footprint.

The UK government should develop a Help to Green package of support, modelled on the Help to Grow scheme, accessible through the Hub, to SME business leaders. The Help to Grow scheme supports small business leaders through two programmes of management and digital support. The management programme consists of a 12-week curriculum course including 1:1 business mentor support and additional resources. The digital programme offers technological advice to businesses as well as a discount of up to 50% of the costs of approved software to improve digital capacity, worth up to £5,000.

Similarly, the government should introduce a Help to Green scheme that provides industry-specific advice on how an SME can reduce its emissions through low-carbon technology, and subsidies on the up-front costs of purchasing the recommended options. As part of the scheme, combined and local authorities in partnership with Local Enterprise Partnerships (LEPs) should coordinate 'green mentor' opportunities

to match business leaders from large firms with SMEs to share knowledge on going green.

## ANNEX

**Net Zero Opportunity Index**

This annex includes details of the Net Zero Opportunity Index sub-measures, including the sites of under-construction renewable energy (solar, onshore and offshore wind) projects; UKRI-awarded decarbonising industrial cluster plans; SIC codes related to EV manufacturing and repairs, and low-carbon heat manufacturing and installation; and top British universities for STEM research.

**Figure 12: sites under construction for solar, onshore and offshore wind**



Source: BEIS renewable energy planning database

**Table 6: UKRI-awarded decarbonising industrial cluster plans**

Project name	Location
Decarbonising the Full Cluster: Roadmap Pathfinder	Teesside, North East
North West Hydrogen and Energy Cluster: Route to Net Zero	Merseyside, North West
Humber Industrial Decarbonisation Roadmap	Humber, Yorkshire and the Humber
Repowering the Black Country	Black Country, West Midlands
South Wales Industrial Cluster	South Wales, Wales
Net Zero Roadmap	Grangemouth to St. Fergus, Scotland

Source: UKRI, BEIS

**Table 7: SIC codes relating to EV manufacturing and repair, and low-carbon heat manufacturing and installation**

SIC Code	SIC Name	Green sector
29100	Manufacture of motor vehicles	Electric vehicle manufacturing & repair
29201	Manufacture of bodies (coachwork) for motor vehicles (except caravans)	Electric vehicle manufacturing & repair
29202	Manufacture of trailers and semi-trailers	Electric vehicle manufacturing & repair
29203	Manufacture of caravans	Electric vehicle manufacturing & repair
29310	Manufacture of electrical and electronic equipment for motor vehicles	Electric vehicle manufacturing & repair
29320	Manufacture of other parts and accessories for motor vehicles	Electric vehicle manufacturing & repair
30910	Manufacture of motorcycles	Electric vehicle manufacturing & repair
33170	Repair and maintenance of other transport equipment	Electric vehicle manufacturing & repair
43220	Plumbing, heat and air-conditioning installation	Low-carbon heat manufacture & installation
45200	Maintenance and repair of motor vehicles	Electric vehicle manufacturing & repair
45400	Sale, maintenance and repair of motorcycles and related parts and accessories	Electric vehicle manufacturing & repair
25210	Manufacture of central heating radiators and boilers	Low-carbon heat manufacture & installation
27110	Manufacture of electric motors, generators and transformers	Electric vehicle manufacturing & repair
27200	Manufacture of batteries and accumulators	Electric vehicle manufacturing & repair

Source: BRES

The sub-index measure for research and innovation opportunity reflects the top 20 universities for STEM research in Britain. This measure comprises the 2021 THE ranking for the top 20 universities for research in each of the two broad subject categories that relate to STEM: **Physical Sciences** (Chemistry; Geology, Environmental; Earth & Marine Sciences; Mathematics & Statistics; and Physics & Astronomy) and **Engineering and Technology** (Chemical Engineering; Civil Engineering; Electrical & Electronic Engineering; General Engineering; and Mechanical & Aerospace Engineering). Due to a majority overlap across the two broad subjects, the list below includes 26 universities.

**Table 8: Top 20 British universities for STEM research**

University	Region
University of Cambridge	East of England
University of Oxford	South East
Imperial College London	London
University College London	London
University of Manchester	North West
University of Edinburgh	Scotland
University of Southampton	South East
Durham University	North East
University of Bristol	South West
King's College London	London
University of Reading	South East
University of St Andrews	Scotland
University of Liverpool	North West
University of Leeds	Yorkshire and the Humber
University of Nottingham	East Midlands
University of Sheffield	Yorkshire and the Humber
University of Aberdeen	Scotland
University of York	Yorkshire and the Humber
University of Glasgow	Scotland
Queen Mary University of London	London
Newcastle University	North East
Loughborough University	East Midlands
University of Warwick	West Midlands
University of Birmingham	West Midlands
University of Bath	South West
University of Strathclyde	Scotland

Source: *Times Higher Education*

## Net Zero Disruption Index

The table below describes the data sources used for calculating our Net Zero Disruption Index scores.

**Table 9: Net Zero Disruption Index data sources**

Measure	Data sources used
Transport emissions per capita	BEIS local authority and regional carbon dioxide emissions national statistics
Household gas/fuel emissions per capita	BEIS local authority and regional carbon dioxide emissions national statistics
Median employee earnings	ONS Annual Survey of Hours and Earnings
Percentage of jobs in carbon-intensive industries	ONS Business Register and Employment Survey
Percentage of businesses in carbon-intensive sectors	ONS, "Atmospheric emissions: greenhouse gas emissions intensity by industry" Interdepartmental business register data on local business units

## ENDNOTES

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