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# Governance factors on the road to net zero

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## Editorial:

# Governance factors on the road to net zero

*Tim O’Riordan and Chizitera Pennington*

*Abstract:* In 2021, the UK Government released its Net Zero Strategy, which laid out how the country would meet its legally binding carbon-based emissions target of no net greenhouse gas emissions by 2050. Recent developments have shown the importance of governance in the delivery of this target. These include the 2022 Committee on Climate Change progress report to Parliament and the 2023 independent review, led by Chris Skidmore MP (a former Energy Minister), which outlined that there was further work to be done at all governance levels and that all relevant stakeholder groups who will be involved in or are affected by the transition should be mobilised to ensure that the net zero target is met.

The British Academy Net Zero policy programme is examining net zero from a governance perspective and commissioned a series of essays on the topic. Emerging themes from the essays and programme emphasise the important role that leaders and people will play in net zero governance.

*Keywords:* Governance, leadership, people

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## **A governance lens is crucial to examining the process of transition to net zero**

The common thread to the work presented in this journal edition is the use of a governance lens to examine the issues around deliverance of the net zero agenda. Here it is understood to be the processes and activities, actors and institutions which include (but go beyond) the government.<sup>1</sup> It ‘refers to activities backed by shared goals that may or may not derive from legal or formally prescribed responsibilities .... Governance, in other words, is a more encompassing phenomenon than government. It embraces governmental institutions, but it also subsumes informal, non-governmental mechanisms.’<sup>2</sup>

### **Review of the policy landscape**

The British Academy’s ability to marshal the deep and expansive insights of the SHAPE (social sciences, humanities and the arts for people and the environment) disciplines to explore what underpins functioning societies and multi-level governance systems makes it well positioned to explore this issue of net zero and how effective governance systems can help to deliver on the policy goals. The programme’s ambition is to use these SHAPE insights to produce policy analyses and outputs that contribute to the delivery of UK commitments to achieving net zero by 2050.

The Government’s Net Zero Strategy has highlighted areas that it assesses require transformation to deliver net zero. These cover emissions reductions across sectors of the economy (such as buildings, transport, land use, and power); and support for the transition through mobilising finance and by improving a number of governance systems, structures, and approaches.

Critiques of the approach outlined in the strategy focus on the lack of integration and connectedness between policy strands and departmental coordination. One of many examples is the delay in ensuring that ‘all new houses built in England meet full net zero standards for internal insulation and energy efficiency’.<sup>3</sup> This includes the installation of non-fossil-fuelled heating and cooling machinery. Wider examples of the underdevelopment of net zero governance mechanisms have been brought to the fore by the Climate Change Committee and by Chris Skidmore MP. Both have published some suggestions on improving governance, such as calling for the Government to agree, define, and

<sup>1</sup> Kooiman, J. (1993: 2)

<sup>2</sup> Rosenau, J. (1992: 4)

<sup>3</sup> BEIS & DESNZ (2022)

publish clear roles and responsibilities. While such a change could have an impact on governance, there is more work to be done on exploring and developing practical policy lessons that address the urgency of net zero while creating links and drawing on the strengths of the multitude of stakeholders involved, such as policymakers, people, businesses, the research community, and civil society.

There is still much to be done. The Institute of Government (2023) comments:

The most straightforward justification for an industrial strategy approach to business is found in the enormous investments needed for reaching net zero, an investment agenda that needs clear, consistent, and committed signals to business over a long period of time. The department in charge of that needs to have clout and business nous to stand up to the Treasury, bring energy users and producers onside, and understand how investment really works.<sup>4</sup>

Also, there are signs of political backtracking as the election-sensitive political parties eye warily the murmurings from the electorate over the apparent cost of getting to net zero. Key variables here are the rising cost of living, sky-high bills for internationally-price-set energy, persistent inflation, and the dates for potentially contentious policies regarding the prohibition of petrol and diesel vehicles and gas-based home heating. Not thoroughly involving people in the policy-making process or making them aware of the costs and co-benefits of the transition is a major failing of current net zero governance. People are not being fully integrated into the governance system, and the essays that follow help to explain why.

## Overview of the contributing essays

The collection of five essays which follow were commissioned through a competitive process run by the British Academy. We are hugely grateful to the writing teams who generated these documents and for their willingness to engage in revision and coordination. The five essays provide a particularly important compilation of relevant background material on net zero governance. The essays also offer a forensic critique of some of the key struggles and constructive lessons that can be used to further progress in this vital arena.

We look first at the two contributions on housing: one on affordable housing authored by Jing Zhao, and the other on residential buildings contributed by Ludovica Gazze. Their message is clear and practical. Getting the UK housing stock to low carbon and thermal comfort (as cooling will become more important over the coming two decades)

<sup>4</sup>Institute of Government (2023)

will be challenging. There is limited capacity in the maintenance and heating trades to deliver either on the scale or the cost in ways that will be affordable and workable. However, these two papers indicate that a mix of improved engagement with the public, coordinated supply chains and delivery, and suitable provision for housing redesign will help prevent crisis in the coming twenty years. Ludovica Gazze summarised the position:

The Government needs to spur action to decarbonise homes across several temporal horizons and domains. Short-term action is needed to ensure that different policy objectives do not jeopardise longer-term net zero efforts, for example when mitigating the effects of increased international energy prices on families’ expenditures. At the same time, coordination and planning are required to put in place holistic, enabling policies that leverage low-hanging fruit, such as investments by the able-to-pay segment, while preparing a path for everyone to realise energy savings investments.<sup>5</sup>

Jing Zhao echoes this point:

For social and affordable tenants, a greater proportion of the residents are senior citizens, those who have a long-term illness or disability and those who are looking after a family. They represent some of the most vulnerable groups of people in the UK, facing rising energy bills and the cost-of-living crisis. However, more often than not, they do not have the opportunity to choose a low-carbon home, nor do they have sufficient means or control over what low-carbon technology is to be included in their homes. As a result, they are often in need of more systematic support to fully benefit from a low-carbon home.<sup>6</sup>

Both authors make sensible policy recommendations. They connect variable price incentives, to the introduction of smart meters, to local educational programmes, coupled with phased neighbourhood support. They also see the scope for training a generation of heating engineers with the skills of efficient delivery and sensitive householder engagement. There is also a wider governance issue of coordination and accountability.

The other papers pick up on a key theme of the programme and that is the important role of people in governance. Supportive behaviour towards bettering oneself and one’s neighbours as well as one’s offspring depends on collective commitment. There is an exuberance in collaborating. People are more willing to sacrifice when they feel supported and part of a wider social norm – they note that their friends and next-door neighbours are also pulling their weight. This feeling for low carbon and its association with caring for nature is nurtured by solidarity and proof of fairness in treatment. This could mean that for many the notion of fairness applies to high carbon emitters paying for their emissions, and the frugal or carbon creators who are unable to pay being compensated. This

<sup>5</sup> Gazze L. (2023)

<sup>6</sup> Zhao, J. (2023)

is a long way from being the case right now. But it may have to come about that high emitters become the focus for helping to finance the transition to low carbon.

Two papers address this theme. One, written by Paulina Baranova, looks at businesses where net zero approaches could be set in a collaborative and policy setting. At present, this is not the case:

Despite *place* being identified as one of five foundations of the national and local industrial strategies, business support provision across the regions remains largely ‘place-blind’ .... Net zero business support needs to become an integral part of the Local Industrial Strategies and Strategic Economic Plans .... An integrated model of support services that adopts a holistic approach to addressing business growth as well as carbon reduction challenges is likely to equip businesses better for the net zero transition.<sup>7</sup>

These conclusions indicate that there could be more collaboration where businesses could profitably work together with supportive local communities. The authors point to a low level of connectedness and mutual support, which is weakening both investment and resolve at an early stage of the net zero transition.

Turning to whole communities, the paper compiled by the Centre for Climate Change and Social Transformation (CAST) offers the ingredients for successful mutual gain:

... policymakers must integrate multiple approaches at different levels, including individual, community and population levels. ... ‘Downstream’ approaches that focus solely on changing individual behaviour are less effective than ‘upstream’ approaches that remove contextual barriers, such as an absence of feasible low-carbon transport options in many communities. Targeting approaches to different needs and key decision-points, alongside an ongoing process of public engagement is crucial and a process that needs to be co-led by policymakers and other stakeholders.

... a government-led public engagement strategy should provide coordination and joined-up thinking to develop genuine societal dialogue on net zero that combines existing approaches (e.g. communications, consultations, surveys) with new forms of participation (assemblies, community engagement).<sup>8</sup>

This is sound advice. There is plenty of research supporting these forms of people-centred and nurturing active engagement, as referenced in their contribution. Broader research under the British Academy programme has explored a variety of ways for the Government to engage with people. Some of these methods use non-traditional and innovative approaches, such as ‘climathons’, which allow for the integration of important voices, knowledge, and the enhancement of local collaboration.<sup>9</sup> The CAST paper

<sup>7</sup>Baranova, P. (2023)

<sup>8</sup>Verfuert C. *et al.* (2023)

<sup>9</sup>Maye, D. *et al.* (2023)

and our other research also show that not doing so will be both counterproductive for net zero buy-in and eventually politically contentious.

The paper also outlines the importance of the other benefits that will arise from the transition and how it is essential that policymakers work on solutions that can go beyond climate change and address other issues that people care about, such as the cost of living and biodiversity, as doing so not only helps in tackling those issues but also in fostering public involvement and support for net zero policies.

The final paper, led by Tom Bedford and his colleagues, looks at four contrasting experiments in local net zero governance in the Midlands. They reinforce the findings of the CAST group in that centralised approaches alienate keen participants and lead to dismay, disarray, and inertia. The examples highlighted in this paper show how creative leadership can enable considerable participation and learning.

Our research indicates that place-based local collaborative leadership is an important dimension to ensure a just transition (recognising the procedural and recognitional elements). A dialogic approach can potentially ensure that there is a flow of information and knowledge between actors at the local scale and better scales, particularly mitigating the harmful impacts of the transition of particularly vulnerable groups. It can also help with the distributional impacts of the transition, ensuring that local communities could benefit from the deployment and installation of technologies. A collaborative approach has the potential to reimagine community consent for projects by centring them in the heart of local decision-making.<sup>10</sup>

The paper also argues that central Government should provide a clear framework for local actors that supports them in using collaborative governance approaches.

These five contributions provide illuminating examples of the kinds of action-based research at the heart of the net zero struggle. They show that local initiatives with good leadership backed by policy support and appropriate incentives to scale up, could begin local journeys towards net zero and fill current gaps in policy shaping and delivery.

## **Emerging themes**

Exploring the issues posed by the net zero agenda through a governance lens highlights the complexity society faces, such as navigating complex funding and planning landscapes, and sustaining public support for the goal.

Considering this, the insights from these papers and the British Academy’s Net Zero programme point towards two critical factors that underpin governance around net zero: leadership and people. Local councils and regional administrations illustrate the

<sup>10</sup>Bedford, T. *et al.* (2023)



leadership challenge. They play an essential part in tailoring national-level strategies to the needs of their constituents and in leading on place-based net zero efforts. However, issues such as ambiguity over roles and responsibilities, ineffective coordination, and conflicting regulatory goals hamper such efforts. There is an urgent need to get this right, and research under the programme has shown that effective leadership across all governance levels can be delivered through the creation and support of an ambitious vision and timeframes, and collaboration amongst relevant stakeholders.

Alongside leadership, the programme outlines that people have a significant role to play in the transition to net zero. Polling research indicates that there is broad public support for net zero, but there is limited room for complacency, as people's enthusiasm can rise or fall depending on wider social and political contexts. Lessons identified in the papers presented here provide useful starting points for policymakers on these issues as they continue to push forward on net zero.

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# Implementing net zero affordable housing — towards a human-centred approach

*Jing Zhao*

*Abstract:* This paper reviews the UK Net Zero Strategy in conjunction with the decarbonisation of the affordable housing sector, with a focus on the key stakeholders involved in the decarbonisation process. Viewing it from a socio-technical perspective, this paper discusses three overarching groups of people in delivering low-carbon affordable housing — affordable housing providers, the supply chain and residents — highlights the range of issues and factors that policymakers should be considering; provides sign-posts to evidence; and discusses some critical gaps, barriers and transition risk factors in delivering net zero policies and potential mitigating strategies that can be learned from exemplary projects. The conclusion of this paper proposes a preliminary structure for a five-step place-based, human-centred framework to implement net zero in the affordable housing sector, emphasising the importance of long-term legislative certainty and funding, localised decision-making with stakeholder engagement, including approaches such as communities of practice, a soft landings framework, and developing monitoring and evaluation matrices.

*Keywords:* Net Zero Strategy, affordable housing, human-centred, place-based, decarbonisation, socio-technical, low-carbon, communities of practice, soft landings, evaluation matrices.

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## Introduction

Buildings are the UK's second-largest source of emissions. The household sector in particular, contributes more than a quarter of overall energy consumption and GHG emission, with space heating contributing 62 per cent of household energy consumption.<sup>1</sup> To date, there are over 24.7 million dwellings in England,<sup>2</sup> with a steady growth of 140,000 dwellings built per year over the past ten years. Based on this, the total number of dwellings in the UK is projected to reach 32 million by 2050. This will further increase total household energy consumption by a third of the current consumption levels. Meanwhile, the UK is experiencing an unprecedented housing crisis. Affordable housing (AH) is a key element of the government's plan to end this crisis, tackle homelessness and provide support for people whose housing needs cannot be met in the commercial market. AH providers and residents represent very specific social groups that face particular challenges in UK's decarbonisation transition. Understanding those challenges and providing relevant policy support are key to decarbonising the AH sector, delivering net zero goals and, most importantly, ensuring a just transition.

The definition of AH has been heavily contested. Housing affordability and criteria to apply for AH funding vary across different regions in the UK. AH does not have a statutory definition; instead it is defined primarily through policy and practice. Historically, the term 'affordable housing' tended to be interchangeable with references to social housing.<sup>3</sup> However, the sub-categories of AH have grown over past decades. The most commonly used definition of AH in recent years is taken from the National Planning Policy Framework (NPPF), which defined AH as 'housing for sale or rent, for those whose needs are not met by the market (including housing that provides a subsidised route to home ownership and/or is for essential local workers) [...]'. Under this definition, AH includes social rent (with rents at around 50–60 per cent of market rents), affordable rent (with rents of up to 80 per cent of market rents), as well as a range of intermediate rent and for-sale products.<sup>4</sup> However, many of the above categories are concluded by the Affordable Housing Commission to be 'clearly unaffordable to those on mid to lower incomes'.<sup>5</sup> For the purpose of this paper and statistical discussion, the definition of AH follows the NPPF definition, whilst recognising criticisms of it.

<sup>1</sup> Department for Energy Security and Net Zero and Department for Business, Energy and Industrial Strategy (2022)

<sup>2</sup> Department for Levelling Up, Housing and Communities (2020)

<sup>3</sup> Wilson, W. & Barton, C. (2022)

<sup>4</sup> Ministry of Housing, Communities and Local Government (2021a: 64)

<sup>5</sup> Kell, M. *et al.* (2020)

Up to 2011–12, the largest tenure in the AH sector was social rent. 2010 saw an increase in affordable rent and shared ownership schemes, and a rapid decline in social rent following the withdrawal of funding for new social rented housing in 2010, meaning the proportion of properties in the lowest rent bracket was decreasing. However, social and affordable rent still make up the majority of the AH tenure — nearly 60 per cent of AH built in 2022 were social or affordable rent, and a third of them were homeowners with shared ownership.<sup>6</sup> There were about four million homes in the social and affordable rent sector across the UK in 2022,<sup>7</sup> representing about a sixth (17 per cent) of all UK housing stock. The overall trend of AH construction sees big fluctuations over past decades. The number of AH built each year is smaller than it was in the 1990s, but recent years have seen a trend towards a slight increase in numbers with the growth of affordable rent and shared ownership housing. There is also an uneven spread of AH built in urban areas and in rural areas. The overall amount of AH delivered in urban areas is higher, even though the proportion of rural AH has seen a steady increase (from 30 per cent in 2014–15 to 44 per cent in 2019–20).<sup>8</sup> The proportion of new-build AH has been increasing dramatically since 2003–4 to nearly 20 per cent in 2020,<sup>9</sup> accompanying the decline in the number of AH acquisitions. The current AH supply is around a quarter of all new houses being built each year. In the year 2021–2, amongst 239,840 homes built in England, over 24 per cent (59,175 homes) were built as affordable homes. However, the quantity of AH and the speed of delivery are far from sufficient. In England, more than 10 per cent of the households are on council waiting lists for five years or more waiting for AH.<sup>10</sup>

AH is often offered to people on a low income (usually at or below the median as rated by a recognised housing affordability index) or who need extra support. As has been explored by the Affordable Housing Commission focus group, housing payments of 25 per cent to 33 per cent net household income are seen as affordable.<sup>11</sup> It has been recorded that nearly half (49 per cent) of social or affordable tenants are either retired, in full-time education or belong to an ‘inactive’ group that includes those who have a long-term illness or disability and those who are looking after the family or home.<sup>12</sup> The most prevalent group in the social or affordable rented sector were households with a householder aged 65 or over (28 per cent).

<sup>6</sup> Department for Levelling Up, Housing and Communities (2022a)

<sup>7</sup> Department for Levelling Up, Housing and Communities (2022b)

<sup>8</sup> Department for Levelling Up, Housing and Communities (2021b)

<sup>9</sup> Department for Levelling Up, Housing and Communities (2021b)

<sup>10</sup> Leckie, C. *et al.* (2020)

<sup>11</sup> Kell, M. *et al.* (2020)

<sup>12</sup> Department for Levelling Up, Housing and Communities (2022b)

Tenants also formed the highest proportion of the population that has an income within the lowest two quintiles (nearly 80 per cent). Over half (54 per cent) of households in the sector had one or more household members with a long-term illness or disability, much higher than private renter or owner-occupier groups. Social or affordable renters were also the least likely to have internet access at home. 1 per cent of owner-occupiers were in overcrowded accommodation compared with 8 per cent of social renters. They also had the lowest score for life satisfaction, thinking life is worthwhile, and happiness.<sup>13</sup>

Meanwhile, a staggering 13 per cent of social dwellings failed to meet the Decent Homes Standard.<sup>14</sup> Low-quality homes with poor indoor air quality, and insufficient heating and ventilation are detrimental to residents' health. The illness caused by such poor-quality housing with high energy demand is estimated to cost £1.4 billion a year to the NHS.<sup>15</sup> Low-quality social dwellings also contribute directly to fuel poverty in the UK. Amongst the UK housing stock, over 13 per cent of households (3.16 million) suffered from fuel poverty, of which 23.8 per cent were social tenants. For those dwellings that are newer and more compact with higher average EPC (Energy Performance Certificate) ratings, they also face a higher potential to overheat in summer, affecting vulnerable households more than others, creating an increasing trend in summertime fuel poverty. The inactive social profile of the tenants also restricted the median increase in household income for those tenants. With the recent sharp rise in fuel prices, the fuel poverty gap is expected to widen further.

Given the above background, there are great and specific socio-technical challenges in the AH sector decarbonisation transition that need to be understood and addressed. First of all, the need to deliver AH in quantity often competes with the quality at which AH needs to be delivered in order to provide significant carbon reduction and a healthy living environment. In delivering low-carbon affordable housing (LCAH), AH providers are often restricted by funding when specifying low-carbon measures (including higher air tightness levels, triple-glazed windows and electric-based heating and ventilation systems). The lack of experience and precedents creates an uncertain tender market and higher risk premiums during procurement. Furthermore, improving the current energy efficiency of homes requires not only the availability and affordability of low-carbon technology (such as heat pumps and photo-voltaic (PV) panels) and subsidy funding to ensure the uptake of such technology, but also skills training and supply-chain scale-up to

<sup>13</sup> Department for Levelling Up, Housing and Communities (2022b)

<sup>14</sup> Department for Levelling Up, Housing and Communities (2022b)

<sup>15</sup> BRE (2021)

specify, install and maintain the technology. The limited funding and policy guidance in implementing training and skills sharing, and a lack of consideration of a fair and just transition for those jobs at risk are important factors in the slow uptake of low-carbon technology. These factors combined make the decarbonisation of affordable housing extremely difficult.

More critically, because of their specific social profile, AH residents are in need of consistent and systemic support in this transition to ensure that they are empowered to control their home environment and can fully benefit from the installation of new heating networks and technology, rather than be further disadvantaged by the change. For instance, social or affordable tenants, older people, low-income households and ethnic minority groups are more likely to be connected to heat networks,<sup>16</sup> where electrification of the heating grid exposes them to potentially higher energy tariffs and further deprivation.<sup>17</sup> Furthermore, reducing energy demand remains a critical measure in facilitating the low-carbon transition of the UK's affordable housing stock. The residents' knowledge of using low-carbon housing and technology, as well as the amount of information and support they receive, could all influence their energy behaviour and demand. AH residents of different economic status, ethnic background and age experience different levels of difficulties and require a tailored engagement plan in order for them to be effectively supported. In addition, as has been pointed out by the Climate Change Committee (CCC) progress report, unintended consequences of energy-efficiency improvement giving rise to issues such as damp/mould, summertime overheating or reduced indoor air quality, are detrimental to the health of vulnerable AH residents, affecting especially older people, those with a disability or a long-term illness and those living in compact or crowded dwellings. Without policy support and guidance, these problems will hinder the progress of the transition, pushing vulnerable AH residents further into economic deprivation and widening the inequality gap.<sup>18</sup> However, there has been no overarching plan for public engagement, or advice for local authorities to support AH residents to mitigate negative impacts on different social groups, reduce energy demand, make behavioural changes or adapt to electrified low-carbon living. The lack of a coherent public engagement plan and evaluation strategy greatly hinders the implementation of the Net Zero Strategy (NZS).

People play a vital role in the net zero transition. In order to deliver the emission goals set by the government, the current framework of implementation that has a technical focus on heat pumps and renewables is not enough to address the complex

<sup>16</sup> BEIS (2023)

<sup>17</sup> Miller, C. *et al.* (2019)

<sup>18</sup> Morey, J. *et al.* (2020)



socio-technical challenges. A human-centred approach is needed to effectively engage people in this transition, ensuring equity and effectiveness. The human-centred approach originated from the field of design, but has been developed across a variety of fields as an approach to creative problem-solving that focuses on human elements. A human-centred, place-based approach proposed here, as opposed to a ‘resource-centred’ or ‘technology-based’ approach to net zero, puts the emphasis on the challenges, barriers and conflicting interests faced by stakeholder groups within a specific social, cultural and institutional context, and focuses on involving the stakeholders in decision-making, problem-solving and policy-implementation processes, to ensure the outcomes are feasible, viable and desirable.<sup>19</sup>

### **Policy context**

The 2008 Climate Change Act<sup>20</sup> has propelled the setting out of the carbon budget. Each carbon budget, set 12 years in advance, provides a five-year, statutory cap on total greenhouse gas emissions. The CCC has reported that the first and second carbon budgets were met and the UK is on track to meet the third, but is not on track to meet the fourth or fifth budgets.<sup>21</sup> In alignment with setting the sixth carbon target, the government published the Net Zero Strategy (NZS) in 2021, aiming to reach net zero emissions by 2050.<sup>22</sup> As one of the strategies set out to reduce emissions, the government’s Heat and Buildings Strategy specified a range of policy mechanisms to decarbonise the sector mainly through a rapid scale-up of low-carbon heat supply chains and an upgrade of measures to improve home energy efficiency rating EPCs.

Following the publication of the NZS, its feasibility and lawfulness were called into question in July 2022. It was determined by the High Court that the NZS lacked proper explanation or quantification of how the UK government’s plans would achieve the sixth carbon budget. The High Court further noted that a carbon shortfall in the NZS was unaccounted for in the report itself.<sup>23</sup> The progress report of the Net Zero Strategy document by the Climate Change Committee (CCC) clearly stated that important policy gaps remain in delivering the NZS, in which the energy efficiency of buildings is an outstanding item. The independent review by the Rt. Hon. Chris Skidmore MP further emphasised the importance of decarbonising

<sup>19</sup> IDEO.org (2015)

<sup>20</sup> UK Government (2008)

<sup>21</sup> CCC (no date)

<sup>22</sup> BEIS (2021: 10)

<sup>23</sup> Markowitz, K. *et al.* (2022)



homes by reducing energy demand,<sup>24</sup> for which the UK is currently lacking policy support.

At the same time, the Heat and Buildings Strategy (HBS), as part of the NZS, has been criticised for overlooking the impact on legally protected groups under the Equality Act 2010,<sup>25</sup> where people in these groups can be unfairly and disproportionately impacted by a badly planned transition to low-carbon living. The CCC progress report has also criticised the lack of cross-cutting enablers for a just transition in the NZS.<sup>26</sup> The newly published ‘Equality impact assessment for the Heat and Buildings Strategy’ has recognised some negative impacts affecting groups of people with protected characteristics,<sup>27</sup> but has not provided a clear plan to mitigate such impacts.

On the other hand, the building regulations have also been trying to reflect the sector’s transition to net zero over the past two decades. But the effort has been greatly affected by the shifting policy landscape, resulting in slow progress. This has been illustrated in the past decade, by the withdrawal of the Code for Sustainable Homes standard (introduced in 2006), despite the advice given by the House of Commons Environmental Audit Committee,<sup>28</sup> leaving local authorities and home builders with limited guidance on expected standards for low-carbon housing. The Zero Carbon Homes target, introduced in the same year, aiming to challenge the construction industry to produce zero-carbon housing by 2016 through a gradual tightening of building regulations and a series of sustainability requirements, was scrapped one year before the target was supposed to be met (in 2016), resulting in subsequent slow uptake of low-carbon heating systems and projections of a very costly future retrofit.<sup>29</sup>

Since then, there has been a vacuum in government-backed low-carbon building standards. A minority of affordable housing providers sought alternative sustainable building standards, such as the *Passivhaus* standard developed in Germany,<sup>30</sup> as guidance to achieve better energy efficiency. But without relevant support from the government to recognise its value, the barriers to delivering such low-carbon housing are hard to overcome.<sup>31</sup> In 2020, changes were made to Building Regulations Part L (Conservation of Fuel and Power), F (Ventilation) and O (Overheating) in

<sup>24</sup> Skidmore, C., Rt. Hon. (2022: 238)

<sup>25</sup> UK Government (2010)

<sup>26</sup> CCC (2022)

<sup>27</sup> BEIS (2023)

<sup>28</sup> Environmental Audit Committee (2013)

<sup>29</sup> Currie & Brown, (2019)

<sup>30</sup> See definition of *Passivhaus* standard at [https://www.passivhaustrust.org.uk/what\\_is\\_passivhaus.php#2](https://www.passivhaustrust.org.uk/what_is_passivhaus.php#2)

<sup>31</sup> Zhao, J. (2023)

line with the Net Zero Strategy that has only come into effect in 2022.<sup>32</sup> The recently announced Future Homes Standard, which will deliver ‘zero-carbon ready’ new build is scheduled to come into effect in 2025. However, this has already delayed the progress of low-carbon housing by a decade. Given this context, this paper explores the policy gaps, barriers and transition risks facing AH providers, supply chain and residents in the process of decarbonisation of AH, emphasising a human-centred policy framework to effectively implement NZS.

## **Research overview— people at the centre of the transition**

This section considers the role of people in the transition. Specifically, perspectives are taken from three overarching stakeholder groups: AH providers, the supply-chain and AH residents.

### **AH providers in net zero transition**

The section discusses the policy gap in supporting AH providers, some of the critical barriers AH providers experienced in this transition and examples where those challenges have been overcome by effective mitigation strategies. In 2021–2, 81 per cent of all affordable homes was delivered by private registered providers, with local authorities delivering 13 per cent and non-registered providers 3 per cent.<sup>33</sup> Those AH providers, whether a housing association, a city council or a private business, are often the start of the ‘chain reaction’ to decarbonise the sector. Studies across different countries have shown that they are key decision-makers in determining the extent to which low-carbon designs and technologies are implemented.<sup>34</sup> As the main providers of affordable housing, each local council and housing association has different levels of funding commitment, experience and capabilities for delivering low-carbon affordable housing.

A critical policy gap in this area is the lack of legislative certainty and consistency on the expected standard for homes. There has been a decade of absence of clear ambition and targets in place of the Code for Sustainable Homes and Zero Carbon Homes that residential buildings should achieve in order to reduce carbon emission. The widely used Standard Assessment Procedure (SAP) and EPC ratings have long been questioned for their ability to reflect real energy costs, and their use

<sup>32</sup> Department for Levelling Up, Housing and Communities (updated 2022c)

<sup>33</sup> Ministry of Housing, Communities and Local Government (2021a: 64)

<sup>34</sup> Diyana, N. & Abidin, Z. (2013), Elias, E.M. & Lin, C.K. (2015), Ahn, Y.H. *et al.* (2013)

has been discouraged in setting a minimum target in the upcoming Future Homes Standard.<sup>35</sup> This creates uncertainty amongst AH providers whether there is a clear target (either an energy use target or lifecycle carbon emission target), and whether the government is committed to long-term funding for the extra costs associated with low-carbon projects.

Evidence from local climate action plans has shown some local authorities adopting higher energy-efficiency standards in building affordable homes than the criteria set in Building Regulations. For instance, Exeter City Council and Norwich City Council have committed to building all new council buildings to achieve the *Passivhaus* standard; the Greater London Authority and Bristol City Council have set an ambition to reduce a minimum of 35 per cent carbon beyond Building Regulations.<sup>36</sup> The Welsh government has proposed that all social homes should achieve the highest Energy Performance Certificate rating (EPC A).<sup>37</sup> But such efforts are isolated and meet with challenges and barriers. The following sections discuss some of the main barriers met by AH providers, in terms of delivering LCAH schemes, and provide examples where positive results have been achieved when the barriers have been sufficiently overcome.

#### *Barriers facing AH providers in delivering net zero AH*

For AH providers, the main barriers when pushing the boundaries of Building Regulations to achieve better energy performance and lower carbon emissions are the higher capital costs and the lack of familiarity in procurement.

The higher capital costs, driven by increased material and technology costs, skilled labour inputs as well as certification, is the most critical barrier to delivering AH projects,<sup>38</sup> where economic viability is the biggest challenge in implementing low-carbon choices in design and construction.<sup>39</sup> Most affordable housing developers have a constrained budget. Their decision to build low-carbon housing and to what extent they want to increase energy-efficiency credentials are affected by subsidies and projected increases in rental incomes.<sup>40</sup> Balancing value and affordability becomes key to initiating development. Studies show that the current UK decarbonisation grants can only achieve an emissions reduction of 33.5 per cent

<sup>35</sup> Ministry of Housing, Communities and Local Government (2021b: 33)

<sup>36</sup> Passivhaus Trust (2019)

<sup>37</sup> Welsh Government (2022: 5)

<sup>38</sup> Outcault, S. *et al.* (2022), Zhao, J. (2023)

<sup>39</sup> Copiello, S. (2015)

<sup>40</sup> Outcault, *et al.* (2022)

without incurring significant additional investment costs to the local authority.<sup>41</sup> This creates huge pressure on local authorities when planning for low-carbon affordable housing. Under this pressure, during 2021–2, out of 157 surveyed housing associations, a total of 50,000 homes were completed, among which only 1 per cent (607 homes) achieved a high energy performance rating (EPC rating A).<sup>42</sup>

Closely related to the cost implication is the uncertainty AH providers face during the procurement process. The procurement method is designed to strategically identify the best route to achieve the objectives of a project. It defines the relationships of various parties involved in a project and assigns responsibilities and authorities.<sup>43</sup> During the procurement process, choosing the most suitable procurement route for a low-carbon AH project often requires more preliminary planning in comparison with procuring a standard affordable housing project. This is due to a lack of experience from the client. But contractors' and consultants' unfamiliarity with the design and construction of low-carbon housing also creates an uncertain risk premium and uncertain tender market. As a result of unfamiliarity and inexperience, choosing the appropriate procurement route becomes a critical challenge in commissioning a low-carbon affordable housing project.

Examples from the US and the UK below demonstrate that committing to low-carbon projects early on in the development, accessing multiple strands of funding, choosing the appropriate procurement route, as well as being agile in response to the market in development can have positive cost and time implications.

#### *Examples of what can work to overcome these gaps and barriers*

A case study in the US comparing three LCAH projects has shown promising results where low-carbon designs and satisfying local needs helped projects secure funding, incentives (rebates for solar PV panels, tax incentives and a deferred developer fee) and increased rental incomes, which alleviated initial concerns about the cost premium.<sup>44</sup> The three studied projects were similar in size and carbon emission ambition, with different specifications of energy supply (all-electric or mixed fuel). The research found that for all three projects, funding was sourced from multiple streams, often associated with specific criteria (local provision for vulnerable groups of people or emission and energy targets). Those targets further motivated developers

<sup>41</sup> De Mel, I. *et al.* (2023)

<sup>42</sup> McCabe, J. (2022)

<sup>43</sup> BSI (2011: 6)

<sup>44</sup> Outcault, S. *et al.* (2022)

to achieve better design and performance for the projects, in order to access the funding. In these cases, the funding itself motivated low-carbon construction. Furthermore, the developers suggested that committing to a lower-carbon design earlier in the development process (before the design phase) enabled the development team to pursue more ambitious decarbonisation strategies. This echoes studies conducted in the UK context,<sup>45</sup> where research into the delivery of *Passivhaus* social housing in the UK illustrated barriers and mitigating strategies shared by experienced AH providers and supply chains, which were then mapped against the Royal Institute of British Architects (RIBA) Plan of work 2020, confirming the importance of integrating carbon targets from the outset of the project.<sup>46</sup> It has shown that setting a low-carbon ambition early on in the planning stage (RIBA stage 0) with clear energy performance goals, choosing the right procurement route (RIBA stages 0–1), and involving experienced low-carbon designers and contractors early in the design stage (RIBA stages 1–2) will increase the success of the project, reducing additional cost implications associated with low-carbon skills and technologies.<sup>47</sup>

An example of LCAH procurement can be taken from Exeter City Council's *Passivhaus* development. Exeter City Council has a track record of building low-carbon council houses. It adopted the *Passivhaus* standard over a decade ago and committed to building all new council projects to *Passivhaus* standard. According to its experiences in procuring a low-carbon project or a *Passivhaus* project, because of the novelty or uncertainty of the low-carbon building design and technology involved, understanding the risks, the client's appetite for risk and ways to mitigate risks often determine the most suitable procurement route.<sup>48</sup> For instance, when procuring a *Passivhaus* affordable housing project, the traditional single-stage route carries a higher level of risk for the clients. It is believed to be more suitable for smaller scale, simple or one-off projects. It limits contractor involvement in the design, and could potentially be time intensive and incur extra cost. But it gives the client good control over change and the quality of the end product. Choosing this route means that the client needs to be very well informed with a certain appetite for risk to initiate a *Passivhaus* brief. Whereas for larger projects, a design and build procurement route, with early contractor involvement and oversight, is more advantageous than a traditional single-stage tender, where contractors have no involvement in the design process. It is believed that this procurement route transfers risks to the contractor, and effectively uses their expertise

<sup>45</sup> Zhao, J. (2023)

<sup>46</sup> RIBA (2020)

<sup>47</sup> Zhao, J. (2023)

<sup>48</sup> Zhao J. & Carter K. (2022)

and buildability, as well as the supply chain within the contractor to drive cost benefits.<sup>49</sup>

Another example of successful delivery of affordable housing schemes can be drawn from Norwich City Council. For a series of its development sites, it strategically mixed tenures to ensure affordable housing targets and economic growth. It embarked on joint ventures with local businesses, employed a combination of shared equity, social rent, private sale and rent, and affordable rent. The houses are designed as tenure blind, where dwellings in the different housing tenures are designed to be externally indistinguishable to help with social integration without affecting property prices.<sup>50</sup> Tenure mixing and tenure-blind design have been considered to be a more important factor in enabling the success and integration of communities in mixed-tenure estates than the clustering or dispersal of social housing.<sup>51</sup> The council uses tenure-blind design not just as a social principle, but also as a good business principle, so it could be more agile in responding to market change by adapting specifications throughout the design and delivery stage.

In recognising the policy gap, barriers and learning from exemplary projects, a crucial step towards a human-centred approach is to assess specific local needs, set appropriate carbon emission ambitions, ensure long-term funding commitment with clear LCAH standards and targets, support affordable housing providers and engage local stakeholders in decision-making from the early stage of LCAH delivery.

### **Supply chain in the net zero transition**

Another critical link in delivering net zero AH is the supply chain. Closely connected with AH providers in the delivery of LCAH, the supply chain is also experiencing unprecedented challenges in the net zero transition. The lack of skills and experience has not been sufficiently addressed in policy. There is also a lack of a coherent plan for people currently working in carbon-intensive jobs to transition into a low-carbon skilled market. The Climate Change Committee has noted that current carbon-intensive jobs (steel, cement or glass manufacturers, gas boiler manufacturers and installers), at risk in this transition cannot be ignored. The construction industry, especially home builders who have traditionally had a local focus and apprentice-based skills building, are often restricted by localised construction methods, building materials and technologies. For instance, builders and

<sup>49</sup> Passivhaus Trust (2016a)

<sup>50</sup> Passivhaus Trust (2016b)

<sup>51</sup> Norris, M. *et al.* (2021)

tradespersons trained for a conventional building type do not necessarily have the skills or opportunities to access the skills and experiences involved in building low-carbon buildings. Unfamiliarity and inexperience could result not only in higher costs and longer time in construction, but could also mean local jobs being commissioned to bigger, national companies that have low-carbon expertise, worsening the local construction job market.

The following sections further discuss the skills challenge facing the supply chain, and provide examples of local supply chains working with AH providers in a successful skills transition.

### *Barriers facing the supply chain in delivering net zero AH*

The skills shortage is reflected in both hardware technologies (such as heat pumps) and software capabilities (such as energy modelling). For instance, when designing a *Passivhaus* project, challenges arise in designing the appropriate building form, orientation and construction details that can satisfy the *Passivhaus* energy performance criteria. This often requires an architect/designer with specific *Passivhaus* certification to carry out the design. The verified design then needs to be implemented appropriately during construction, which often involves a different construction process, additional air tightness tests and experienced contractor on-site monitoring. Unfamiliarity with the construction of *Passivhaus* projects could have time and cost implications.

The uneven geographical spread of low-carbon housing across the country has also restricted the supply chain in accessing the training and practice required. In general, residential buildings that achieve an EPC rating C or above represent a higher proportion of all dwellings in Southern regions (43 per cent and above) than in the North and Wales (37 per cent to 39 per cent). Similar trends apply to *Passivhaus* projects, where the South has a higher concentration of certified *Passivhaus* projects than the North. There is not enough skills-building, experience or learning being generated across different regions.

### *Examples of what can work to overcome these gaps and barriers*

An example of successful skills transition in the local supply chain can be reflected in locally developed specialist frameworks. For example, Norwich City Council has employed a specialist framework of local building professionals — the Fabric First Framework — to deliver LCAH. The Fabric First Framework consists of nine contractors in three lots procured to provide the range of services and works necessary to deliver housing and associated infrastructure. The framework is available



for use by Norwich City Council, any other public authority or Registered Provider (RP).<sup>52</sup> Using this specialist framework has greatly reduced the uncertainty involved in procurement, design and construction, making the project economically viable. The Goldsmith *Passivhaus* social housing scheme, developed by Norwich City Council, comprising 100 per cent social housing units, has won the 2019 RIBA Stirling prize, due to its architectural design, community building and energy performance credentials. It has been regarded by RIBA as an exemplary project marrying reduced energy consumption with mass housing. Norwich City Council had previously delivered smaller scale *Passivhaus* projects, and the success of this project was achieved through a combination of aspiration and commitment to achieve *Passivhaus* from the client side, effective solar design and careful selection of construction method, as well as the employment of the Fabric First Framework to assist with the procurement process, increasing efficiency and significantly reducing costs by pre-qualifying suppliers under set terms and conditions.

A similar specialist framework has been developed by other local authorities, such as Exeter City Council and the EXEseed Framework.<sup>53</sup> The frameworks provide access to a carefully selected list of contractors who have proven their competency in collaboration, culture, value and quality in delivering the low-carbon construction of projects.<sup>54</sup> Fundamental criteria for the selection of contractors are the delivery of housing and public buildings that promote low-energy consumption, create a healthy and comfortable internal environment and buildings that are sufficiently robust to withstand future predicted climatic changes.<sup>55</sup> Furthermore, the framework manager will also provide procurement advice, compilation of employment and skills plans, standard tender and contract management documents, etc. to assist with project procurement.

Moreover, the experiences from the above two city councils are regularly shared nationally amongst a group of AH providers, low-carbon designers and contractors via workshops, training and symposia organised by the Passivhaus Trust. Together with other skilled and experienced professionals in the AH sector, they have formed communities of practice<sup>56</sup> to share knowledge and lessons learned in order to advance the domain of LCAH.

Those examples show that another crucial step towards a human-centred framework in delivering LCAH is to employ a more integrated approach to supply-chain management, engaging local stakeholders and establishing a local

<sup>52</sup> Hamson Barron Smith & Norwich City Council (2015)

<sup>53</sup> Exeter City Council (2015)

<sup>54</sup> Zhao, J. (2023)

<sup>55</sup> Exeter City Council (2015)

<sup>56</sup> Wenger, E. (1988)



delivery framework. At the same time, supporting local supply-chain transition in skills building where the specialist framework of low-carbon skilled jobs can be secured locally is critical in mitigating risks faced by people in carbon-intensive jobs. It is equally important to encourage communities of practice amongst AH professionals, engaging AH providers and supply chains across regions in conversations where knowledge and experience from experienced LCAH providers such as Exeter and Norwich City Councils can be effectively shared.

### **AH residents in the net zero transition**

This section discusses the policy gap in engaging and supporting affordable housing residents, the systemic disadvantages they face and risks that could lead them into further deprivation and affect their behavioural adaptations in this transition, as well as examples where the residents are sufficiently supported to live in and benefit from low-carbon homes. Decarbonising AH requires a holistic strategy to engage the residents in a just transition, in order to prevent further deprivation of already underprivileged social groups. Currently, there is no clear plan from the government to effectively engage and support AH residents. Local efforts made by councils and housing associations are not supported and guided by national policy. For instance, there is very limited funding for AH providers to engage and support tenants in reducing demand, using low-carbon technology more efficiently and transitioning into low-carbon behaviours. Grants are often available in the form of energy upgrade materials and installation costs, but rarely is any funding made available specifically for engagement workshops, focus groups or R&D activities leading to behavioural adaptations. Moreover, there is also a lack of measurement or indicators of positive behavioural change or community benefits that can inform policymakers about the effectiveness of supporting residents in low-carbon affordable dwellings, making it difficult to evaluate and improve plans for public engagement.

The following sections discuss the barriers faced by AH residents during the net zero transition and examples where sufficient and effective support has been given to the residents to assist them to adapt to low-carbon living.

#### *4.3.1 Barriers facing AH residents in the net zero transition*

Overall, there are two main barriers facing AH residents' low-carbon behavioural transition. The first concerns the systemic barrier the AH residents face in managing lives under considerable material and social stress, which influence their power

in planning and adapting to a low-carbon future. The second barrier is the availability, or not, of support given to the residents in transitioning to low-carbon living.<sup>57</sup>

AH residents by definition are on a low income (usually at or below the median) in their region or who need extra support. However, due to the wide range of tenures involved and delivery mechanisms, AH residents include a variety of social groups that require tailored engagement strategies. Social and AH tenants represent some of the most vulnerable groups of people in the UK, facing rising energy bills and the cost-of-living crisis. However, more often than not, they do not have the opportunity to choose a low-carbon home, nor do they have sufficient means or control over what low-carbon technology is to be included in their homes. As a result, they are often in need of more systematic support to fully benefit from a low-carbon home. For those residents living in shared ownership properties, in addition to an effective support mechanism to engage them in planning and transitioning to low-carbon living, policy to assist them financially to opt for low-carbon technologies is also critical in this transition.

Without a specific engagement plan, guidance, energy audits and support mechanisms, the residents are at a loss as to what the decarbonisation transition means and how to plan and adapt to living in a low-carbon house (e.g. switching from gas central heating to heat pumps). For instance, quite often, the behaviour of AH tenants is considered to be unpredictable, and they are seen as incapable and unwilling to change their behaviour,<sup>58</sup> resulting in building professionals ‘designing out’ the residents’ role in operating a low-carbon home,<sup>59</sup> restricting their behaviour, leaving them feeling powerless to control their own home environment<sup>60</sup> and putting them at a higher risk of further deprivation.

Another example can be taken from the electrification of heating grids. For AH residents living in homes with an Energy Performance Certificate (EPC) rating of D or below, the electrification of the heating grid exposes them to potentially higher energy tariffs and further deprivation. If such households do not switch away from gas, their fuel costs may increase as a result of a decline in the number of gas customers, caused by a widespread shift to electric heating. But early electrification of heating for low-income households could also make them vulnerable as the price of electricity greatly exceeds the price of gas.<sup>61</sup> The volatility of energy prices as

<sup>57</sup> Zhao, J. & Carter, K. (2020)

<sup>58</sup> Cherry, C. *et al.* (2017)

<sup>59</sup> Cherry, C. *et al.* (2017)

<sup>60</sup> Zhao J. & Carter K. (2016)

<sup>61</sup> Miller, C. *et al.* (2019)

experienced in the past year (2021/2), and the possibility of future energy crises has put further strain on the situation. Possible mitigations could include the installation of solar PV panels, if feasible. However, the capital cost of PV again creates a barrier preventing this transition from happening.

An increasingly prominent issue facing AH residents is summertime energy poverty, with the increase in summer temperature and heatwaves. Research on overheating shows that social housing stock, which has a high proportion of flats, newer dwellings and buildings with higher EPC ratings, is more prone to becoming overheated. Rooms inhabited by vulnerable occupants were found to be more likely to overheat due to a lack of ventilation or where the ventilation control is limited by age or mobility.<sup>62</sup> The financial constraints of AH residents also put them at a higher risk of overheating. An appropriate support framework in arranging for vulnerable occupants to live in dwellings less affected by overheating risks, as well as accessible guidance for occupants' behaviour and adaptation play an important role in mitigating summertime overheating.<sup>63</sup>

Furthermore, decarbonisation of affordable housing often involves the introduction of innovative low-carbon technologies, which can bring challenges to residents. Research has revealed that the performance of low-carbon technology, such as heat pump systems, relies on complex socio-technical system interaction. Both residents' behavioural patterns and enabling feedback processes (such as a user-friendly display of energy consumption on a heat pump system or a simple identifiable alert when high-carbon back-up heating is enabled) can affect their energy use.<sup>64</sup> For instance, the optimum performance of a heat pump system was associated with situations in which people better understand the system. As a result, their satisfaction is linked to the amount of technical support they receive in operating the heat pump system.<sup>65</sup> Even though the residents are, to an extent, capable and willing to adapt their behaviours to save energy,<sup>66</sup> their technical know-how, the usability of the control interface as well as the technical support available to them determine a great deal of how much they can adapt their behaviour. In a study conducted in the UK among low-carbon dwellings, even for residents who lead a low-carbon lifestyle, their energy behaviour does not necessarily result in energy savings if not facilitated with relevant information and support.<sup>67</sup>

<sup>62</sup> Morey, J. *et al.* (2020)

<sup>63</sup> Sameni, S.M.T. *et al.* (2015)

<sup>64</sup> Oikonomou, E. *et al.* (2022)

<sup>65</sup> Caird, S. (2012)

<sup>66</sup> Centre for Climate Change and Social Transformation (2022)

<sup>67</sup> Zhao, J. & Carter, K. (2020)

Research has repeatedly stressed that residents are one of the most important groups in lowering the carbon emissions of buildings: behaviour contributed 46 per cent of the variance between the higher end and lower end of energy consumption among surveyed households.<sup>68</sup> Even in energy-efficient housing, totals of 51 per cent, 37 per cent and 11 per cent of the variation in heat, electricity and water consumption, respectively, can be explained by occupant behaviour (e.g. high thermostat setting, or the use of energy-intensive heating devices when low-carbon technology is available).<sup>69</sup> The ‘performance gap’, a term used to describe the gap between predicted energy use and actual energy consumption, especially in low-carbon buildings, has been the focus of the energy-efficiency research area. One of the main contributors to the ‘performance gap’ has been found to be the energy behaviour of residents.<sup>70</sup> It is critical that building professionals and policymakers address the role of residents in the discourse of decarbonising AH, in order to continue the debate surrounding energy demand reduction, encouraging behavioural change, rather than focusing purely on energy efficiency. Failure to do so could lead to an adverse effect of energy reduction, called ‘the rebound effect’. The rebound effect is defined as an economic mechanism that drives an increase in energy consumption following a ‘below-cost improvement’ in energy efficiency.<sup>71</sup> In other words, people’s energy consumption can increase as a result of the installation of energy-saving measures in their homes as their behaviour changes to match the lower costs they face. While some research reported an increase in pro-environmental behaviour in users of low-energy buildings,<sup>72</sup> a number of other studies show a lack of occupants’ behaviour adaptation in low carbon residents,<sup>73</sup> or their frustration that they had to actively adapt their behaviour to acquire comfort in what they assumed to be a house that provided comfort automatically.<sup>74</sup> Evidence of the rebound effect following increases in energy efficiency were also presented in research.<sup>75</sup> It is unclear how the rebound effect affects AH residents specifically, but an unintended rebound effect could put AH residents into further economic deprivation in an uncertain energy market. Further research is needed to understand the mechanism of the rebound effect in the AH sector.

<sup>68</sup> Sonderegger, R.C. (1978)

<sup>69</sup> Gill, Z.M. *et al.* (2010)

<sup>70</sup> Gupta, R. *et al.* (2019)

<sup>71</sup> Bourrelle, J.S. (2014)

<sup>72</sup> Zhao, J. & Carter, K. (2020)

<sup>73</sup> Monahan & Powell, 2011

<sup>74</sup> Sherriff *et al.*, 2019

<sup>75</sup> Guerra Santin, O. (2013), Haas, R. & Biermayr, P. (2000)

Given those barriers and risks, the following example shows the contrast between two AH *Passivhaus* projects. One was supported by a landlord in terms of knowledge sharing and behavioural adaptation, resulting in behavioural change and eco-community building. In contrast, the other project was not supported, or was even restricted by the housing association controlling their low-carbon home technologies, leading to resident dissatisfaction.

#### *Examples of resident support and behavioural change*

A case study of two low-carbon affordable housing projects represents a distinctive contrast as a result of the availability of support to residents during their occupancy. The two projects both belong to the social rent sector, and were developed in Scotland. One was built in 2011 by a private landlord and the other was built in 2015 by a housing association. The two projects have many similarities in terms of floor area, bioclimatic region, construction, household size and service systems. Both have achieved *Passivhaus* standard. They both employ a state-of-the-art mechanical ventilation and heat recovery system (MVHR) as the main heating and ventilation strategy, backed up by a bio-mass burner or electric fire. Domestic hot water was acquired via solar PV or solar thermal, backed up by an immersion heater. The main technical challenge to controlling the environment of this type of house is to learn to use the MVHR, solar PV and thermal heating effectively so not to incur extra energy use with an immersion heater or electric fire. The study has revealed that in the first project, the occupants showed a high level of satisfaction with their home environment and demonstrated increased knowledge and skill throughout their occupancy in operating the low-carbon system (MVHR, solar thermal and bio-mass burner). The landlord initiated a soft landing<sup>76</sup> procedure to provide technical support and troubleshooting where the residents and the landlord have established a community that supports each other in minimising energy use and maximising the benefits of the low-carbon technology. Positive low-carbon behavioural changes were recorded as a result of landlord support and community learning. The landlord also monitored and audited the energy use of each household, evaluating the variance in energy use, uncovering links between energy use and energy behaviour that can be shared within the community. However, the occupants surveyed in the second project showed the opposite experience. Their knowledge of their low-carbon houses was very limited. The residents expressed frustration about how little the low-carbon technologies installed in their houses were effectively communicated to them and said ‘if we understood this place better

<sup>76</sup>Way, M. & Bordass, B. (2005)

we'd be a lot happier'. Instead of facilitating the residents in using the features of the house efficiently, the housing association asked them not to change any control settings, or even open windows to ventilate. The residents were given a big instruction manual (with parts of it written in German), without further explanation. The energy use was much higher than they were told or expected at the beginning of the tenancy. The residents were left frustrated without any understanding of the reason for this discrepancy. This study provides evidence of the importance, and the benefits, of effective and continuous guidance and support given by affordable housing providers, which could result in a community that shares low-carbon knowledge and fosters more sustainable behavioural norms.<sup>77</sup>

The example above demonstrated that the support given to residents is as much a top-down low-carbon educational process as a bottom-up eco-community building process. By providing energy advice, low-carbon technology demonstrations and walk-throughs as well as community energy auditing and knowledge sharing, decarbonisation at a larger scale that is centred around the community can be achieved. In addition to energy-efficiency measures, a more comprehensive matrix or set of indicators measuring a wider range of behavioural change and community benefits in relation to low-carbon living would provide a more holistic view of the effectiveness of supporting residents that can inform policy and improve outcomes.

In summary, engaging and supporting AH residents in planning and adapting to the decarbonisation transition by facilitating behavioural change and eco-community building is another important link in building a human-centred framework. Policy could assist this by ensuring resident support through a soft landings process in post-occupancy, as well as establishing frameworks and measuring matrices to involve residents in the discourse of low-carbon living and behavioural change. Support for residents should examine specific local needs and demographic groups to ensure equity during the transition.

### **Concluding remarks and future research**

The above discussion highlights the importance of developing approaches and frameworks that are focused on people and place, where the social challenges are at the centre of the net zero transition. The paper has put forward areas for further examination and research; however, the scope of this paper is not broad enough to provide a comprehensive review of all the factors identified. In identifying the issues concerning AH providers, supply chain and residents in the net zero

<sup>77</sup>Zhao, J. & Carter, K. (2016)

transition, the following preliminary structure of a five-step human-centred framework towards net zero in the AH sector is proposed, whilst recognising that the framework and accompanying evidence need future research for completion.

### **Step 1: Ensure long-term certainty in building standards and funding**

Certainty and consistency in low-carbon building standards and long-term commitment to funding are critical to ensure that stakeholders are supported in this transition. It is important that the government ensures consistency in setting the ambitions of low-carbon building standards, with funding associated with achieving low-carbon targets. Further review and investigation are needed to devise effective funding strategies associated with energy targets and social benefits. The problem of how to provide funding that specifically engages with stakeholders — AH providers, local supply chain and residents — is also in need of further research.

### **Step 2: Engage stakeholders early in local net zero AH deliveries**

The second step of a human-centred framework is to engage local stakeholders (AH providers, supply chain and residents) in decision-making from the early stage of low-carbon affordable housing delivery, assess specific local needs, set appropriate carbon emission ambitions, and use participatory workshops, focus groups and committees to devise localised strategies, as seen in the examples, to effectively deliver LCAH. More research is needed to set out a strategy to enable specific local needs to be understood, where local groups at higher risk in the transition could be highlighted and supported to enable strategic planning and decision-making for the local context.

### **Step 3: Enable communities of practice for cross-fertilisation**

Skills and experience sharing are important to overcome the uncertainty, unfamiliarity and uplift premium associated with low-carbon affordable housing projects. Successful examples championed by experienced affordable housing providers and supply chains using strategies such as multiple funding streams, tenure blindness, and specialist frameworks in delivering low-carbon affordable housing in a cost-effective way should be shared across regions via communities of practice. More investigation is needed into how to effectively engage stakeholders in communities of practice across regions to connect scattered efforts.



#### **Step 4: Develop a plan for monitoring and support**

People's environmental awareness and attitudes are key to facilitating a low-carbon transition in the affordable housing sector. As has been shown in the examples, energy advice, continuous monitoring and resident support in the soft landings process for new-build low-carbon affordable housing are crucial in supporting residents in the net zero transition and are in need of policy support. More research is needed to effectively support AH residents and engage them in planning for low-carbon living and behavioural change to achieve social and community benefits. This engagement strategy should include all local stakeholders and involve communities of different social profiles, to devise a targeted plan for a just transition.

#### **Step 5: Develop metrics and indicators to improve outcomes**

It is important to examine both energy-efficiency and carbon emission goals as well as human elements: behavioural change (an increase in pro-environmental behaviour and a reduction in energy demand) and community benefits (skills transition and local hiring). Research is needed to design and develop a comprehensive metric that can be used to measure the effectiveness of the engagement of key stakeholders involved in this transition, to ensure there is a continuous feedback loop to evaluate the framework to deliver the intended outcomes.

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# Achieving net zero goals in residential buildings

*Ludovica Gazze*

*Abstract:* This paper discusses recent evidence of a large, unrealised energy savings potential in the UK residential sector. It discusses authoritative policy reviews critiquing the Net Zero Strategy and the Heat and Buildings Strategy as well as the economic literature on the energy-efficiency gap. These sources point to four main potential explanations for the lack of progress towards net zero in residential buildings in the UK: 1) historical and current untargeted subsidies to energy prices (e.g., energy price guarantee); 2) poor scheme implementation and lack of workforce training; 3) regulatory barriers such as planning restrictions and lack of policy coordination across stakeholders; 4) split incentives. To overcome these barriers, the paper recommends better access to data to foster evidence-based policy-making and support for innovative, local-authority-led projects.

*Keywords:* Energy-efficiency gap, energy price guarantee, planning restrictions, policy coordination, scheme implementation, residential buildings.

*Note on the author:* Ludovica Gazze is an environmental and health economist researching policy-relevant issues, such as the consequences of pollution exposure and policies to curb emissions and to encourage resource conservation. She is an Associate Professor in the Department of Economics at the University of Warwick, an invited researcher at JPAL for the K-CAI and North America programs, and an IZA Research Fellow.

## Introduction

With the passing of the Climate Change Act in 2008, the United Kingdom became the first G7 nation to bind itself to statutory targets to reduce greenhouse gas (GHG) emissions. Responding to the 2015 Paris Agreement,<sup>1</sup> the government amended the Act, changing the commitment for an 80 per cent reduction in the UK's net carbon account compared to 1990 levels to a full 100 per cent decrease. Achieving this target would make the UK a 'net zero' carbon emitter.<sup>2</sup> In a second ambitious change, the government pledged to the UN that national GHG emissions would be reduced by at least 68 per cent by 2030 compared to the 1990 baseline.<sup>3</sup>

These targets have been characterised as technically possible but very difficult to achieve.<sup>4</sup> How to realise them was until February 2023 the responsibility of the Secretary of State for Business, Energy and Industrial Strategy (BEIS), upon whom the Climate Change Act placed a statutory duty to set a carbon budget every five years and present a report to Parliament on the strategies for meeting that budget.<sup>5</sup> BEIS was abolished in Prime Minister Rishi Sunak's first reshuffle and its energy responsibilities were transferred to a new body, the Department for Energy Security and Net Zero (DESNZ). DESNZ has an explicit mission to 'Ensure the UK is on track to meet its legally binding Net Zero commitments'.<sup>6</sup>

2021 saw the first carbon budget and associated strategy explicitly committed to achieving the new, net zero goal. *Net Zero Strategy: Build Back Greener*, laid before Parliament on 19 October, is an umbrella strategy outlining pathways to reduce emissions across all sectors of the UK economy.<sup>7</sup>

This discussion paper focuses on one of these sectors: residential buildings — and specifically those existing buildings which, according to analysis from the BRE Trust, a building science research centre, will represent 80 per cent of the 2050 UK housing stock.<sup>8</sup> In 2020, residential building emissions accounted for about 16 per cent of greenhouse gas emissions in the UK.<sup>9</sup> Moreover, this sector saw the smallest reductions in emissions since 1990, together with agriculture, despite decades of policies described more in detail below.<sup>10</sup>

<sup>1</sup>United Nations (2015)

<sup>2</sup>UK Government (2008)

<sup>3</sup>UK Government (2008)

<sup>4</sup>Committee on Climate Change (2019)

<sup>5</sup>UK Government (2008: Section 4)

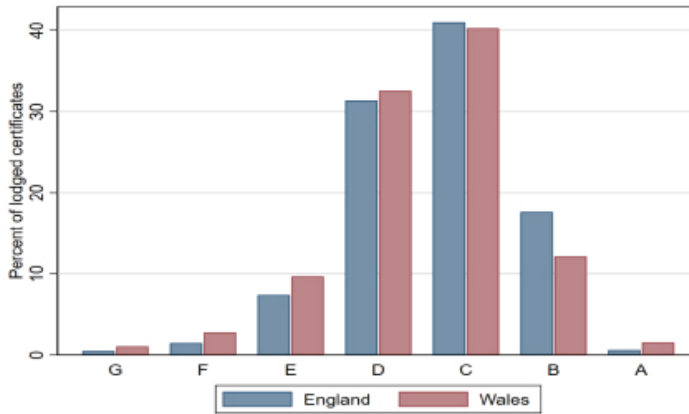
<sup>6</sup>His Majesty's Government (2023)

<sup>7</sup>BEIS (2021a)

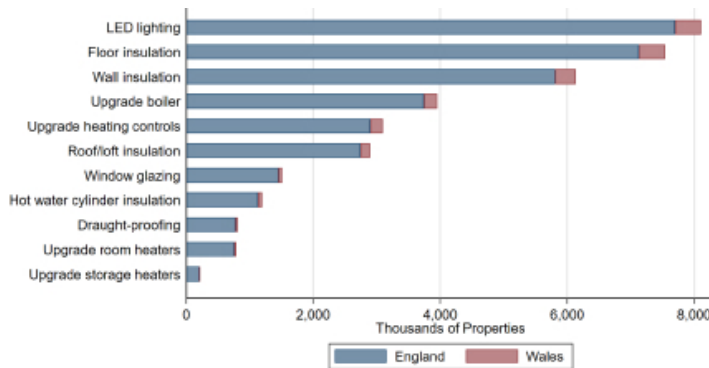
<sup>8</sup>BRE Trust (2017)

<sup>9</sup>BEIS (2022a)

<sup>10</sup>BEIS (2022b)



**Figure 1.** This chart shows the breakdown of EPC ratings for residential housing in England and Wales, where A is most efficient and G least. See <https://epc.opendatacommunities.org/>



**Figure 2.** The number of properties that could benefit from simple energy-efficiency measures, as revealed by analysis of building Energy Performance Certificates (EPCs). See <https://epc.opendatacommunities.org/>

Specifically, retrofits and energy-efficiency investments have stalled.<sup>11</sup> Because the UK housing stock is one of the oldest in Europe,<sup>12</sup> these low retrofit rates imply a large untapped energy savings potential in existing UK buildings. One way to measure this potential is to use Energy Performance Certificates (EPCs), which include estimates of the energy performance of each building, as well as recommended energy performance improvements, and are required for each property being sold, constructed, or rented.

Figure 1 shows the percentage of properties with a lodged EPC by energy performance rating. With 41 per cent of properties with EPCs in England and 46

<sup>11</sup> DESNZ (2023)

<sup>12</sup> BRE Trust (2017)



per cent in Wales below C grade (that is with ratings D, E, F, or G), this chart gives a sense of the scale of effort still required to improve energy efficiency to a minimum of an EPC Grade C, the government's target.<sup>13</sup>

According to EPC data, even homes with a C or higher rating could still benefit from energy-efficiency investments. Virtually all 15 million properties in England and Wales that have a certificate lodged could improve their energy performance by adopting one or more simple energy-efficiency measure. Figure 2 shows the number of properties in England and Wales that could benefit from different measures, with insulation (including floor, wall, and roof/loft) and LED lighting making up the lion's share.

This paper discusses analysis by economists at the University of Warwick which asks why such a large energy savings potential has not been exploited (Fetzer *et al.* 2022). The authors find that the UK home energy savings potential is located in relatively affluent areas, suggesting that many homeowners might have been able to pay for improvements to unlock this potential, but so far have not. This finding qualifies results from the literature of correlations between energy efficiency and some socio-economic factors at the district level. For example, Ahlrichs *et al.* (2022) show that local authorities with more vacant homes, more households living rent free, and older households have lower energy efficiency.<sup>14</sup> As such, the geography of home energy savings potential warrants reflections on what policies can deliver a net zero transition that is also equitable. This paper presents novel insights from outreach to local governments who are already creatively designing and sharing best practices on low-cost, bottom-up solutions. Two of these potential solutions are highlighted in boxes below.

The finding of a large untapped energy savings potential in the UK relates to the notion of an energy-efficiency gap, that is an apparent underinvestment in energy efficiency given estimated savings on energy bills net of investment cost. Yet, the size of this gap and its determinants are not yet fully understood. Gerarden *et al.* (2017) review the economic literature on these determinants and divide them in three broad categories: (1) market failures, (2) behavioural explanations, and (3) modelling flaws.<sup>15</sup> The authors remark that the empirical evidence on these determinants has varying degrees of robustness and further research is needed.<sup>16</sup> Yet, in another review of the economic literature, Allcott and Greenstone (2012) find limited evidence of underinvestment from an individual perspective.<sup>17</sup> In other

<sup>13</sup>Department for Levelling Up, Housing and Communities (2023)

<sup>14</sup>Ahlrichs, J. *et al.* (2022)

<sup>15</sup>Gerarden, T.D. *et al.* (2017)

<sup>16</sup>Gerarden *et al.* (2017)

<sup>17</sup>Allcott, H. & Greenstone, M. (2012)



words, according to the studies included in the review, households did not seem to suffer from significant behavioural or information biases that would imply they were making mistakes. As energy-efficiency investments become cheaper over time, this conclusion might change if households fail to update their information and decisions.

Clarity on these mechanisms is crucial to assess the effectiveness of the UK strategy on net zero for buildings. This paper examines the extent to which the current policy landscape, as it relates to residential buildings, will enable the transition to net zero. Particular attention will be given to describing the status quo of the residential building stock and policy framework at the national and local level, building on existing quantitative and qualitative analysis.

## **Policy context**

Historically, the UK government has used a variety of policy tools to promote building retrofits to ‘decarbonize heat’ (Mallaburn & Eyre 2014).<sup>18</sup> However, these policies have not delivered the required improvements and emissions reductions due to a lack of coordination in several dimensions.

First, frequent programme changes undermined programme success, reducing both the demand for energy-efficiency investments and the ability of firms to meet this demand.<sup>19</sup> On the demand side, early termination sends the signal that the scheme is flawed. On the supply side, ever-changing schemes hinder the ability of firms to plan, for instance by hiring or training skilled labour or by securing supply chains. One example of this policy short-sightedness is the case of the Green Homes Grant, introduced as a stimulus measure in October 2020, providing homes with vouchers to cover much of the cost of energy-efficiency improvements using accredited suppliers. However, this scheme ended in March 2021 with a significant underspend, as accreditation for the scheme proved costly and complex, and businesses did not scale up their operations and train new staff for a short-lived programme.<sup>20</sup>

Second, policies have lacked coordination across domains of government, leading to contradictory policies and gaps, for example in funding schemes for different market segments (e.g., rental).<sup>21</sup> Lack of coordination between levels of

<sup>18</sup> Mallaburn, P. & Eyre, N. (2014)

<sup>19</sup> Rosenow, J. & Eyre, N. (2016)

<sup>20</sup> Adam, S. *et al.* (2021: 378–9)

<sup>21</sup> Shrubsole, C. *et al.* (2014)

government has meant that top-down schemes have been ill equipped to address the needs of each local authority. Because both housing stock and population demographics vary extensively across the country, a one-size-fits-all approach is likely to fail.

The Net Zero Strategy attempts to provide a long-term vision across sectors of the economy. For example, while illustrating plans to decarbonise buildings, it also discusses implications for the levelling-up agenda, through the creation of 175,000 green skilled jobs. A package of policy papers further focuses on emissions arising from energy use in buildings, including the Heat and Buildings Strategy, released on the same day the Net Zero Strategy was presented to Parliament.<sup>22</sup> However, like the Net Zero Strategy, the Heat and Buildings Strategy lacks clear, well-defined steps. Indeed, lack of detail was one of the grounds on which the High Court deemed the Net Zero Strategy unlawful in summer 2022, following a legal challenge from a coalition of climate concern groups.<sup>23</sup>

Several independent reviews note similar shortcomings and call for more precise strategies and timelines. I discuss two important reviews below. The Climate Change Committee (CCC), an independent, statutory body established under the Climate Change Act 2008, is required to report to Parliament on the government's plans and progress towards its emissions targets. It issued an independent assessment of the Net Zero Strategy in October 2021, a separate review of the BEIS Heat and Buildings Strategy in March 2022, and a Report to Parliament on Progress in reducing emissions in June 2023.<sup>24</sup> With respect to decarbonising residential buildings, its critique highlights (1) underfunding and poor targeting,<sup>25</sup> and (2) lack of coordination and enforcement.<sup>26</sup>

Another independent review of the Net Zero Strategy is *Mission Zero* by the Rt. Hon. Chris Skidmore MP, published in January 2023.<sup>27</sup> The review discusses the following shortcomings of the Net Zero Strategy both from an individual and from a local government perspective:

<sup>22</sup>BEIS (October 2021b)

<sup>23</sup>Friends of the Earth, Client Earth, Good Law Project v Secretary of State for Business, Energy and industrial Strategy [2022]

<sup>24</sup>CCC (2021)

<sup>25</sup>CCC (2022)

<sup>26</sup>CCC (2022)

<sup>27</sup>Skidmore, C., Rt. Hon. (2023)

- (1) Lack of policy certainty and clarity, including on funding.<sup>28</sup>
- (2) The need for clear data and communications on:
  - (a) information on co-benefits associated with net zero, for example air quality,
  - (b) information on public attitudes towards net zero,
  - (c) changes in household energy bills thanks to net zero investments.<sup>29,30</sup>
- (3) Accessibility gaps.<sup>31</sup>
- (4) The need to allow for changes in planning approaches to codify net zero goals in a legal duty or requirement for local authorities to act on climate change.
- (5) The need to shift levies to disincentivise fossil fuels: Unlike in other European countries,<sup>32</sup> levies are disproportionately applied to electricity rather than fossil fuels, which makes low-carbon heating technology less appealing.<sup>33</sup> A study by the Institute for Fiscal Studies (IFS) finds that for domestic users, the implicit tax on emissions through gas consumption is negative as a result of the preferential 5 per cent rate of VAT charged on household energy bills.<sup>34</sup> Furthermore, starting in January 2023 the government applied a new, temporary levy on returns from low-carbon electricity generation to contribute to cost-of-living support.<sup>35</sup> Because an attempt to tax fossil fuel energy sources had already failed in the 1990s, the IFS proposes that such a reform be accompanied by a compensation package.<sup>36</sup> The government has committed to implementing a rebalancing of electricity and gas prices by March 2024.<sup>37</sup>

These reviews highlight the need to go beyond the Net Zero Strategy and address past policy failures in spurring energy-efficiency investments. The next section discusses published and novel economic research, shedding light on the potential implications of these policy gaps for the transition to net zero in residential buildings.

<sup>28</sup> Skidmore, C., Rt. Hon. (2023)

<sup>29</sup> Skidmore, C., Rt. Hon. (2023)

<sup>30</sup> Skidmore, C., Rt. Hon. (2023)

<sup>31</sup> Skidmore, C., Rt. Hon. (2023)

<sup>32</sup> Skidmore, C., Rt. Hon. (2023)

<sup>33</sup> CCC (2022)

<sup>34</sup> Adam, S. *et al.* (2021: 378–9)

<sup>35</sup> Office for National Statistics (2022a), HMRC (2022)

<sup>36</sup> Adam, S. *et al.* (2021: 378–9)

<sup>37</sup> CCC (2023)

## How can UK policy enable the transition to net zero in the residential sector?

This section presents research outlining the extent and distribution of the energy-efficiency gap in the UK. It then discusses theories and recent empirical evidence in the economic literature on the potential determinants of this energy-efficiency gap in light of the UK policy context. Specifically, it focuses on issues of 1) implicit and explicit incentives faced by homeowners; 2) implementation processes; 3) regulatory barriers; and 4) market failures, such as split incentives. Alongside current policy gaps, this section also proposes solutions highlighted in boxes.

### The UK energy-efficiency gap

Fetzer *et al.* (2022) characterise the distributional consequences of the ongoing energy crisis and show how its effects relate to the energy efficiency of the housing stock in different areas. Their analysis shows that 30 per cent of aggregate energy consumption, totalling £10–20 billion, could be saved if buildings were upgraded to higher energy-efficiency standards.<sup>38</sup> Moreover, these potential energy savings are largely concentrated in the wealthiest parts of England and Wales.<sup>39</sup>

This analysis uses data from EPCs covering over 15 million properties in England and Wales — about half of the housing stock. This imperfect coverage reflects the infrequent nature of EPC updates, which is tied to housing market events. Acknowledging that EPCs provide only engineering estimates of actual and potential consumption if all energy-efficiency recommendations are adopted, the authors calibrate the EPC data using granular data on actual energy consumption. This approach is in line with the recommendations of the CCC review.<sup>40</sup> However, it is important to note that further advances in data coverage, for example through a complete smart meter rollout, would improve the accuracy of this type of analysis.

What can explain the energy-efficiency gap highlighted by Fetzer *et al.* (2022)? The classification by Gerarden *et al.* (2017) outlined in the Introduction, identifies market failures, behavioural explanations, and modelling flaws as potential determinants of the energy-efficiency gap. In addition, the economic literature, discussed more in detail below, has identified implementation processes, rational responses

<sup>38</sup>Fetzer, T. *et al.* (2022)

<sup>39</sup>Fetzer, T. *et al.* (2022)

<sup>40</sup>CCC (2022)

to explicit and implicit economic incentives (as opposed to behavioural responses), and regulatory barriers.<sup>41</sup>

Importantly, most of these factors relate to the individual calculation of whether to take up investments in one's home. In other words, while households take into account their own costs and benefits to decide whether to invest, they do not take into account the carbon externalities. One role for governments is to aggregate individual preferences and take into account all social costs and benefits to find the socially optimal level of investment, and then devise policies to incentivise adoption up to that level.

Decomposing energy-efficiency gaps from a weather-proofing programme in Illinois across some of these factors, Christensen *et al.* (2023) find that 41 per cent of the gap is attributable to flawed engineering estimates, 43 per cent to heterogeneity in workmanship, and 6 per cent to rebound in energy use, that is households using more energy after retrofits have made it effectively cheaper.<sup>42</sup> This decomposition suggests that low-cost policies like behavioural nudges might have limited scope to make a difference for decarbonising buildings, especially when directed at households who have already chosen to invest in energy efficiency. By contrast, investments in workforce training appear sorely needed, as well as better data on individual buildings. The next subsections discuss evidence in favour of or against each mechanism.

## **Modelling flaws**

Engineering assessments of the benefits of energy-efficiency measures might be flawed due to mismeasurement or heterogeneity in building characteristics. This critique also applies to EPC data that underlies the analysis in this discussion paper, highlighting the need for granular data on actual use linked to up-to-date measures of building quality, as discussed in both reviews of the Net Zero Strategy outlined in the Policy Context section.

## **Demand responses to economic incentives**

This subsection discusses the monetary incentives to invest in energy efficiency that are implicit in energy prices, and how the current UK energy policy affects them. Then, it discusses additional non-monetary incentives households might face, emphasising the role of coordination and collective action at the local level.

<sup>41</sup> Gerarden *et al.* (2017)

<sup>42</sup> Christensen, P. *et al.* (2023)

The main monetary incentive to invest in energy efficiency is determined by the expectation of lower energy bills in the future. As such, expectations about future energy prices play a key role in determining take-up of energy-efficiency investments. Moreover, households base future expectation on current price trends when they make energy-efficiency investment decisions (Myers 2019).<sup>43</sup> As such, energy policy that changes consumer-facing prices can facilitate or hinder energy-efficiency investments. Fetzer *et al.* (2022) find that current policies, such as the UK's energy price cap, weaken incentives for households to invest in energy-efficiency upgrades by muting the price signal.<sup>44</sup> Moreover, these incentives are weakened precisely for those households that are able to pay and have high energy use.<sup>45</sup>

Beyond the monetary trade-offs implied by the delayed repayment through lower energy bills, households might also incur non-monetary costs and benefits due to energy-efficiency investments. In conversations with the author, an installer described the 'homeowner journey to net zero' as a long and complex process. For example, households might incur search costs in finding the right contractor and technology, scheduling costs for appointments, hassle costs to fill out paperwork. Similarly, households might experience non-monetary benefits from improved energy efficiency, such as increased comfort and health, or a *warm glow* from participating in something that benefits the environment. Allcott and Greenstone (2017) find that these non-monetary costs and benefits drive a lot of the variation in take-up of energy-efficiency investments. In fact, when looking only at monetary net benefits, households appear to make the 'wrong' investments: 40 per cent of households in their sample did not take up an investment with an internal rate of return (IRR) greater than 20 per cent on the dollar; while 36 per cent took up investments with a negative IRR — i.e, that actually cost them money. This suggests that non-monetary factors, such as increased comfort or a sense of 'doing one's bit', also drive decisions.<sup>46</sup>

Such a high degree of heterogeneity highlights the importance of targeting policies to the right people. Indeed, Knittel and Stolper (2019) find that differences in baseline consumption and income are significant predictors of the effectiveness of policies to reduce energy use among US households.<sup>47</sup> Ignoring these differences leads to weaker overall policy effects relative to more targeted approaches.

<sup>43</sup>Myers, E (2019)

<sup>44</sup>Fetzer, T. *et al.*(2022)

<sup>45</sup>Fetzer, T. *et al.*(2022)

<sup>46</sup>Alcott, H. & Greenstone, M. (2017)

<sup>47</sup>Knittel, C.R. & Stolper, S. (2019)

However, it is important to note that targeting might increase the complexity and delivery costs of a policy.<sup>48</sup>

One particular set of non-monetary costs relate to searching for the right solutions and coordination at the local level. As highlighted in the reviews of the Net Zero Strategy discussed above, the government strategy focuses on individual action rather than community or local authority action. Gregório and Seixas (2017) hypothesise that a neighbourhood-based strategy might yield better outcomes than a strategy targeting individual properties in historic urban centres in Portugal. In particular, they develop an aggregate Urban Energy Renovation Index that could be used to target at-scale retrofits, that evaluates the energy renovation capacity of a community, based on: 1) vacant dwellings, 2) ownership, 3) building age, 4) buildings with repair needs, and 5) energy savings potential based on EPC data.<sup>49</sup>

A UK Government Community Energy strategy was launched in 2014 and abandoned a few years later. Despite the lack of official support, such schemes are gaining a foothold<sup>50</sup> — local, bottom-up initiatives to organise bulk purchases of solar panels are sprouting throughout the country. However, these efforts rely on local champions, and not every neighbourhood or district has people willing and able to take matters in their own hands. Professor Thiemo Fetzer and Dr Ludovica Gasse at the University of Warwick are recruiting local authorities to learn about their existing efforts towards net zero. Through these conversations with 16 local authorities, arising in response to targeted outreach conducted in Autumn 2022, local authorities have shared the challenges they face:

- (1) The lack of coordination even at local level: Remits concerning low-carbon housing are split between offices, and officers do not have time or resources to respond to inquiries about available schemes.
- (2) The lack of technical capabilities for impact evaluation and targeting.
- (3) Short-lived funding and electoral cycles do not incentivise contractors to invest in training and inventory.

## **Implementation process**

Practical implementation of energy-efficiency investments matters both on the intensive margin, that is how the retrofits are carried out, and on the extensive margin, that is what homes get retrofitted. For example, Blonz (forthcoming) finds that

<sup>48</sup>Allcott, H. & Greenstone, M. (2012)

<sup>49</sup>Gregório, V. & Seixas, J. (2017)

<sup>50</sup>IPPR (2021)



**BOX 1: EFFECTIVELY TARGETING LOW-CARBON HOUSING POLICIES IN THE UK**

Fetzer (2022) suggests one policy alternative to the current energy price guarantee (EPG).<sup>1</sup> The suggested policy is a two-tier tariff such that the standing charge is fixed at the level of the October 2021 price cap, as are unit prices for the first 9,500 kWh of natural gas consumption and the first 2,500 kWh of electricity consumption. As 50 per cent of UK households consume less than 12,100 kWh of natural gas and 2,900 kWh of electricity, this threshold would limit energy price increases for the majority of households. The second tier of the tariff would be set at steeper levels. For example, a second-tier unit price of 20 pence per kWh for natural gas and 60 pence per kWh for electricity, together with the first tier described above, would have a similar cost to the government as the EPG. An alternative policy with stronger energy conservation incentives would involve a two-tier tariff where the first-tier threshold is set as a fraction of previous year's (or estimated) consumption, as implemented in Germany where the threshold is set at 80 per cent starting in March 2023.<sup>2</sup>

Importantly, more complex tariffs might require better targeting and data checks to ensure, for example, that households with medical needs are not overburdened by energy costs. Data that allow for targeting exist, but appear to be housed in different government departments and are not currently linkable.<sup>3</sup> For instance, appearing before the Treasury Select Committee in November 2022 the Chancellor of the Exchequer indicated that the government is working towards introducing a social discount or social tariff approach, better targeting energy subsidies, but only starting in Spring 2024 due to these data gaps: 'That means a lot of complicated work to marry the information held by HMRC with the information held by DWP on benefits. That is a very big operational challenge, but that is the direction of travel we want to go in.'<sup>4</sup>

The 2023 Spring Budget addressed one element of inequality, requiring utility firms to allow customers on prepayment meters to access the same tariffs as other customers; and extended the EPG; but did not announce any further steps towards the social tariff.<sup>5</sup>

<sup>1</sup> Fetzer, T. (2022)

<sup>2</sup> Sgaravatti, G. et al. (2021)

<sup>3</sup> Norman, A. et al. (2023)

<sup>4</sup> House of Commons (November 2022) Treasury Committee

<sup>5</sup> HM Treasury (2023)

contractors paid per number of replacements of energy-inefficient refrigerators intentionally misreport information about these refrigerators to inflate the number of qualified replacements.<sup>51</sup>

Contractors, installers, and energy companies have a big role to play, often representing the first point of contact for homeowners. The reviews discussed in the Policy Context section emphasise the need for coordination both across government levels and with industry. For example, energy suppliers have Energy Company Obligations (ECOs) to provide retrofits to fuel-poor customers, but these funds

<sup>51</sup> Blonz, J.A. (forthcoming)

**BOX 2: DESIGNING AND TESTING LOCAL AND COMMUNITY-BASED STRATEGIES**

Many local authorities are already implementing innovative practices. Enhancing knowledge exchange among these local actors could facilitate the diffusion of best practices, including low-touch, data-driven interventions, and the fine-tuning of schemes to the needs of different areas. For example, locally initiated examples, such as the Carbon Coop in Manchester (<https://carbon.coop/>), of one-stop shops that engage with supply-chain actors, consumers, and training providers have been successful and appreciated. Moreover, some districts are experimenting with providing buy-in options to private owners next to council homes when retrofits are carried on council estates.

Another district, Burnley, is leveraging data on rental properties from their selective licensing programme to flag rental homes with below-standard EPC ratings. Through incentives based on the licensing and accreditation programme, they have been able to bring most properties to compliance. This approach is in line with the recommendation by the CCC<sup>1</sup> that the government look at regulatory options around key points in the lifecycle of homes such as point of sale, remortgaging, refinancing, and permit requests for other repairs or improvements.

Another approach could leverage publicly available data on the energy performance of buildings, energy use, and demographic characteristics to identify clusters of homes in need of similar energy efficiency investments. Councils would then host community meetings in these clusters to inform the public about available schemes, showcase model homes, facilitate interactions with local contractors, organise buyer groups, and promote lotteries and competitions among energy savers. These community-level forces have been found effective to encourage investments (Bollinger *et al.* 2022),<sup>2</sup> and group discounts were part of popular schemes such as Solar Together.<sup>3</sup> Encouraging knowledge exchange and partnerships at the neighbourhood level is something that has also been proposed in the independent review by the Rt. Hon. Chris Skidmore MP in the form of champions or Local Net Zero Heroes.<sup>4</sup> For example, households who save the most could be entered into lotteries or be publicly recognised.

These proposals leverage the convening power and facilitating role of local authorities, as recommended by the independent reviews discussed above. Moreover, such policies could be delivered at a relatively low cost, although some councils are sceptical that they can affect take-up without promising grants. Notably, even if these interventions are relatively low-cost, local authorities need the necessary funding and staff resources, as well as regulatory authority to engage in these activities and to share findings and challenges among each other.

<sup>1</sup> CCC (2022)

<sup>2</sup> Bollinger, B. *et al.* (2022)

<sup>3</sup> [Solartogether.co.uk](https://solartogether.co.uk) (2023)

<sup>4</sup> Skidmore, C., Rt. Hon. (2023)

used to be underspent before the energy crisis.<sup>52</sup>

Ongoing research at the University of Warwick Department of Economics led by Dr Arun Advani and the author includes surveys and telephone conversations

<sup>52</sup> House of Lords Environment and Climate Change Committee (February 2023)

with heat pump installers to understand their perspective on barriers to take-up. The Net Zero Strategy relies heavily on heat pumps to replace gas boilers, but little is known about the market for heat pumps. 59 heat pump installers (out of over 200 firms contacted) responded to a survey highlighting the following areas of friction that jeopardise achieving the goal of 600,000 installations a year:

- (1) High electricity prices. To incentivise heat pump installation, a specific electricity tariff at lower supply cost might be needed.
- (2) The lack of tax incentives. For example, the European Union recommends that member states apply lower VAT rates for higher efficiency heating systems and building insulation.<sup>53</sup>
- (3) The lack of funding for fabric-first approaches. According to most contractors, as much as half of the UK housing stock is currently unsuitable for heat pumps due to poor insulation.
- (4) The lack of installer and maintenance training, exacerbated by brand specificity.
- (5) Administrative burdens for accreditation, government schemes, and installation applications, including payment delays.

Crucially, different installers have different views on what homes are better suited for heat pumps, and what configurations work best. Yet, homeowners receive most advice from installers when they are shopping for options to either replace old boilers or retrofit homes. Therefore, these differences in views mean that who customers talk to will determine whether they choose to install. Moreover, installers lament low ‘conversion rates’ in terms of the number of installations relative to calls for interest that they receive, with some mentioning only 5 or 10 per cent success rates from inquiries. Because these installers perform home evaluations before any contract or decision is made, these represent losses for them.

As such, it is useful that councils and energy companies are setting up advice services for free, either in the form of one-stop shops, or as on-demand programmes that customers can request. More awareness and information are sorely needed on these products. Yet, some councils feel that they would overstep their role by recommending certain products or businesses. Therefore, it is important that the national government steps in to provide this education on new products and to restore trust.

<sup>53</sup>European Commission (2022)

## Regulatory barriers

As highlighted in the Policy Context section, the status of the UK housing stock is the result of failed past energy and housing policies, as well as of well-intentioned policies responding to different, sometimes conflicting, mandates. One crucial example, mentioned also by the independent reviews discussed above, is the mandate for local councils to preserve the character of neighbourhoods, defined as conservation areas. Conservation areas have increased permitting requirements, and these extra hurdles have important consequences.<sup>54</sup> A property inside a conservation area uses 5–15 per cent more energy (especially gas for space heating) than an identical property just outside the boundary of the conservation area. Overall, this extra consumption costs around £104–314 million per annum, at the price cap as of February 2023. From an environmental standpoint, this extra consumption generates 3–4 million tonnes in avoidable CO<sub>2</sub> emissions per year.<sup>55</sup>

Another potential source of friction on retrofitting action due to legacy policy is the chequered nature of social vs. private housing resulting from Right-to-Buy incentives. The fractionalised and inconsistent nature of ownership within, for example, a row of terraced homes, created by Right-to-Buy schemes might hinder the fruition of economies of scale and scope that might arise when retrofitting larger estates. Indeed, former council homes exhibit wider variation in conditions: while they are generally in better condition, some of them require relatively high-cost repairs.<sup>56</sup> Right-to-Buy schemes also interact with issues generated by leaseholds, such that service charges liability and lower resale values might disincentivise home improvements.<sup>57</sup> Moreover, it is unclear whether it is the council as the freeholder who is responsible for retrofits, or if that should fall to individual leaseholders. Mixed tenure is also a challenge for housing associations to leverage their bargaining power. Exploring regulatory changes and legal instruments that might solve this coordination problem could lower costs by distributing fixed costs among many project owners, for example by having joint ownership of converters and meters for solar power generation.

<sup>54</sup> Fetzer, T. (2023)

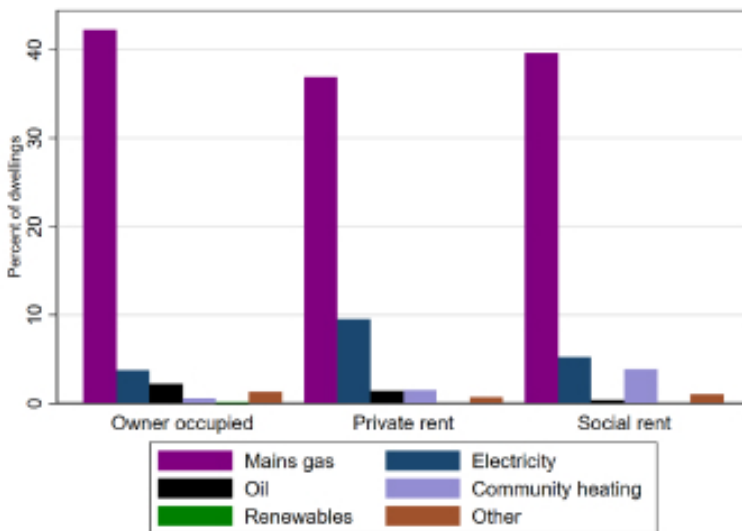
<sup>55</sup> Fetzer, T. (2023)

<sup>56</sup> Cole, I. *et al.* (2015)

<sup>57</sup> Cole, I. *et al.* (2015)

### Market failures: split incentives across landlords and tenants

One final barrier in terms of misallocation of incentives for energy-efficiency investments that is often discussed at the property level, rather than at the neighbourhood level, is split incentives across landlords and tenants. Because tenants pay the bills but cannot decide on energy-efficiency investments, rental homes might see lower investments in energy efficiency and might have higher carbon emissions per square foot than owner-occupied properties, other things equal. For example, Petrov and Ryan (2021) and ONS (Office for National Statistics) analysis (2021) show that rented homes are generally less energy efficient than owner-occupied homes in England and Ireland (although these properties also differ on other dimensions).<sup>58</sup> However, recent research in the United States could challenge the widely held view that rental properties generate more carbon emissions by noting that rental properties are 9–20 percentage points more likely than owner-occupied properties to have electric heat, electric hot water heating, an electric stove, and an electric dryer.<sup>59</sup> The gap is largest for electric heating, with 49 per cent of US renters and only 29 per cent of US homeowners heating their homes primarily with electricity.



**Figure 3.** The main source of heating or method of heating used in central heating by tenure, England and Wales. See <https://www.ons.gov.uk/releases/energyefficiencyofhousinginenglandandwales2022>

<sup>58</sup>Petrov, I. & Ryan, L. (2021); ONS (2021)

<sup>59</sup>Davis, L. (2022)

The same general patterns hold for England and Wales as shown in Figure 3, although notably over a third of rental properties are still heated with gas.<sup>60</sup> One plausible explanation for this gap is that electric appliances are less capital-intensive and cheaper to install. As such, rental properties might be ahead of the curve on the path to electrification and net zero. This fact suggests that shifting levies from electricity to gas might favour some renters. However, it is important to note that the electric appliances installed in rental properties might be less energy efficient than average.<sup>61</sup> Thus, more research is needed to shed light on this issue.

## **Conclusion and policy recommendations**

The government needs to spur action to decarbonise homes across several temporal horizons and domains. Short-term action is needed to ensure that different policy objectives do not jeopardise longer-term net zero efforts, for example when mitigating the effects of increased international energy prices on families' expenditures. At the same time, coordination and planning are required to put in place holistic, enabling policies that leverage low-hanging fruit, such as investments by the able-to-pay segment, while preparing a path for everyone to realise energy savings investments.

(1) In the short term, the government can:

- (a) Promote savings with behavioural measures and price signals while supporting energy-poor households (Alcott & Rogers 2014).<sup>62</sup> A two-tier, or social, tariff could achieve both energy conservation and equity goals as shown in other countries.
- (b) Create a database of local innovative initiatives and encourage knowledge exchange. Given the reliance of local councils on national and regional government schemes, the national government could leverage mandatory scheme reporting to compile such a database. Convening workshops and roundtables including representatives of different levels of government before, during, and after the launch of such schemes can enable a deeper understanding of local needs and specificities, including feedback on what works and what does not.

<sup>60</sup>Data from ONS (2022b)

<sup>61</sup>Souza, M.N.M., (2018)

<sup>62</sup>Allcott, H. & Rogers, T. (2014)

- (2) In the medium term, the government needs to:
- (a) Encourage investments by the able-to-pay (Hahn & Metcalfe 2021).<sup>63</sup> A first step towards investment is empowering consumers to understand costs and benefits, for example by promoting awareness of how behaviour translates into energy bills.<sup>64</sup> To do so, a fast and mandatory rollout of smart meters is paramount (Bhattacharjee *et al.* 2022). Yet, a recent online experiment shows that, without subsidies, stated willingness to adopt a smart meter is still too low at 22 per cent.<sup>65</sup> Information on the social benefits of these meters has similar effects in terms of increasing adoption by about 18 per cent of a small £10 subsidy.
  - (b) Facilitate evaluation of local and national solutions, including 1) facilitating efficient and GDPR (General Data Protection Regulation)-compliant data sharing across governments, businesses, and researchers and 2) adopting an agile experimentation mentality such that schemes can ‘fail fast’ or be adopted at scale. Relatedly, a complete smart meter rollout will provide at least part of this sorely needed data infrastructure.
- (3) In the long term, the UK government needs to solve structural issues, including:
- (a) Resolve supply-side material and skill shortages by securing robust supply chains and promoting workforce training.
  - (b) Provide adequate funding with continuous, reliable schemes co-designed with industry and local councils to ensure ease of access and maximise uptake.
  - (c) Remove regulatory barriers, including grid bottlenecks and permitting red tape. Regulatory harmonisation across levels of governments will require coordination and careful revision of existing laws and regulations, but is key to ensuring net zero objectives become a true priority across the UK.

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<sup>63</sup> Hahn, R.W. & Metcalfe, R.D. (2021)

<sup>64</sup> Bhattacharjee, A. *et al.* (2022)

<sup>65</sup> Gosnell, G. & McCoy, D (2023)



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# Place-based business support towards net zero: enabling through the place-policy-practice nexus

*Polina Baranova*

*Abstract:* The prevailing approach of policymakers to the design and delivery of net zero business support remains focused on financial economic growth. This approach limits the role of businesses in leading societal transformation towards a sustainable future. Although opportunities for businesses to transform so that they remain financially viable and resilient may emerge, support and policy innovation are needed to enable businesses to navigate the net zero transition. Place-based policies are one way of ensuring localities, cities and regions respond effectively to the economic and social challenges of the transition. Despite *place* being identified as one of five foundations of national and local industrial strategies, business support provision across the regions remains largely ‘place-blind’. Support programmes are often generic in their design, scope and delivery mechanisms, and downplay the challenges businesses face when engaging with the net zero transition. This article critically reviews the policy articulation and the state of net zero business support from the place-based perspective. By applying *place-policy-practice nexus* thinking, gap analysis of net zero support is undertaken, and resolutions are offered. The article calls for a deeper reflection of place characteristics in policy discourse, local strategies and policy mixes. This requires concerted efforts from the government, support agencies, universities and businesses to develop a shared understanding of the growth opportunities and risks of the net zero transition relative to place. This includes the development of representative net zero governance mechanisms and addressing the growing demand for net zero skills.

*Keywords:* Business support, net zero transition, place-based, policy mixes, place-policy-practice nexus, gap analysis, net zero skills, governance.

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## 1. Introduction

The UK has significant potential to become a leading net-zero economy of the 21st century according to the independent review of net zero, *Mission Zero* (Skidmore 2023). Amongst the many conditions necessary for such a potential to flourish is the availability of business support that would enable the net zero growth aspirations of businesses to be realised. Such aspirations include decarbonisation of processes and systems; rapid and scalable innovation; and adaptation of new net zero products and services (McKinsey 2021). They must not be limited to domestic markets and must prepare business to act on opportunities presented by rapidly developing global markets for net zero products and services with an estimated value of annual sales of more than \$12 trillion by 2030 (McKinsey 2022a).

Net zero skills are critical to the net zero transition; they are a prerequisite for financial growth and are essential for managing the upcoming changes in the job market in the UK and globally. It is estimated that 200 million jobs could be created and 185 million jobs could be lost worldwide by 2050 as a result of the transition (McKinsey 2022b). In the UK alone, 500,000 jobs could be created as a result of decarbonisation efforts across a wide range of sectors and localities by 2050 according to the Department for Business, Energy and Industrial Strategy (BEIS) (Vivid Economics 2019). UK sectors where job creation is expected are offshore wind; electricity networks and smart technologies; and retrofitting buildings and the construction of new builds in the UK. Job losses are expected in fossil-fuel extraction, production and fossil-fuel power generation; and livestock and feed-related jobs in agriculture. Sectors where the demand for upskilling and job mobility is predicted to intensify are automotive; heating and cooling, circular economy and resource efficiency, oil and gas (BEIS 2021).

Businesses need to be prepared to navigate such tidal changes in the job market to ensure competitive success and business resilience. They need skills to support decarbonisation efforts as well as to create the next generation of products and services capable of contributing towards carbon neutrality to secure positions in fast-emerging green market niches nationally and internationally (*Economist* 2022). Businesses must have sustained access to talent in order to innovate, to compete and to work in partnership to deliver net zero solutions with stakeholders in the locality and beyond. A lack of access to skills and talent is one of the key constraints preventing businesses taking advantage of the opportunities presented by the net zero transition (CCC 2023).

In the context of net zero challenges and opportunities, business support plays a critical role in preparing businesses for effective engagement with the net zero transition. Alongside realisation of financial income growth ambitions, support



provision has the potential to build local capacity and address net zero skills shortages regionally and nationally. Effective net zero business support mechanisms bring together multiple stakeholders to strengthen the local entrepreneurial ecosystem, and to contribute to the sustainable and inclusive economic growth of a place.

The paper proposes the application of the *place–policy–practice nexus* in the design and operationalisation of business support towards the net zero transition. The significance of *place* in the design and implementation of business support interventions is emphasised to address calls for the enterprise support ethos towards a closer reflection of location specificity (CCC 2022). These calls put an emphasis on place leadership and a deep understanding of the characteristics of a place in order to strategise and implement effective policy mixes. In such efforts, a place-based approach (Barca *et al.* 2012) is a useful point of reference. With its focus on place in the configuration of business support, it bears the promise of bringing an enterprise and its place closer, with the natural environment and local community at the forefront of place definition (Shrivastava & Kennelly 2013).

This paper proceeds with an introduction to the place–policy–practice nexus and the framing of nexus gap analysis for the design of net zero business support. Business support is discussed in the context of the net zero policy landscape and the challenges of the net zero transition. It moves onto a research overview and analysis. The paper culminates in identification of gaps in the net zero policy and practice support and offers solutions to accelerate the scale and pace of transition through policy mixes and support mechanisms. Conclusions and recommendations for policy, business support providers and businesses are drawn.

## **2. Place–policy–practice nexus in enabling the net zero transition**

The recognition of the role of a place-based approach in the success of building capacity and capability for the net zero transition nationally and globally is well overdue. It speaks pragmatism and gives hope for the net zero transition to be transformational for communities across the UK. It puts the emphases on local buy-in and locally driven solutions to building a critical mass of skills, expertise and talent to fuel the UK's global net zero ambition. At its core, such an approach parallels the sustainable development ethos and paves the way for the achievement of Sustainable Development Goals (UN 2015).

The place-based approach in policy-making is viewed as a major alternative to top-down, supply-side, 'one-size-fits-all' quick fixes that often lead to unbalanced and unsynchronised policies incapable of delivering sustainable development

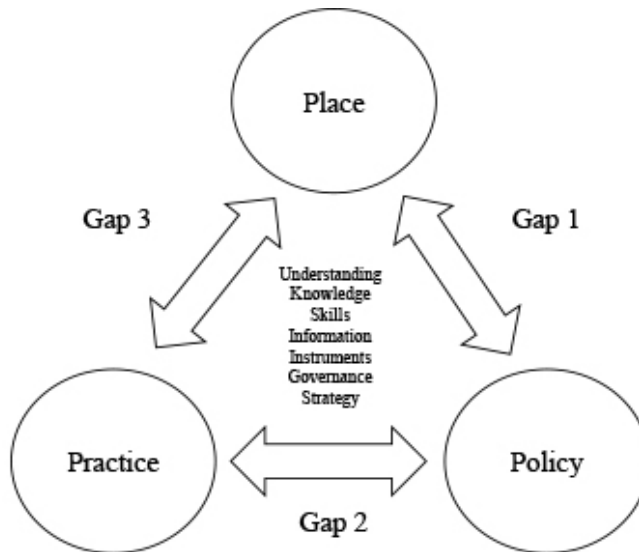


(Pike *et al.* 2016a). Barca *et al.* (2012) argue there are two fundamental aspects to the approach: first, the significance of the geographical context, whereby the context is understood in terms of its social, cultural and institutional characteristics, for effective policy-mixes. Second, the place-based approach focuses on the issue of knowledge in policy interventions. This is linked to the readiness and capacity of policymakers to access, generate and apply new knowledge based on evidence-based data and emerging socio-economic trends in the locality. The place-based approach promotes collaborative working across multiple stakeholders to build thriving communities in a defined geographic location. It is often associated with partnering and shared design, shared stewardship and shared responsibility for outcomes and impacts (Beer *et al.* 2020).

Although well recognised in the policy literature, a place-based approach often treats *place*, *policy* and *practice* as separate but complementary domains (McCann & Rodríguez-Pose 2011; Bailey *et al.* 2023). These domains are represented to a varying degree in many Local Industrial Strategies and Strategic Economic Plans and are treated as foundations of regional economic development (Beer *et al.* 2021). Despite policy, practice and place connections being reflected in the policy discourse, there is a lack of consideration of strategies and synergies to deliver the best value for local communities. To address this challenge, nexus thinking is deployed in framing relationships between policy, practice and place.

Nexus thinking is gaining prominence in environmental, policy and social sciences as a way of tackling interconnected and interdependent sustainability challenges (Biggs *et al.* 2015, Liu *et al.* 2018). The nexus approach allows for an exploration of the links between the nexus elements and identification of the gaps in the alignment of the elements. The relationships between the nexus elements become a focus as well as their contribution to addressing nexus challenges. For example, in environmental studies the nexus of water–food–energy is a well-established framework in problematising the interdependencies of a socio-ecological system, including resource constraints, local disparities in food consumption and food shortages, supply-chain issues and climate change concerns (Mercure *et al.* 2019). A recent study explores the role of business in sustainable development through application of the nexus concept in corporate governance and policy-making (Dalhmann & Bullock 2020). The deployment of the place–policy–practice nexus in a critical review of enterprise support towards led to identification of gaps and the development of policy implementation interventions (Baranova *et al.* 2020).

In the context of business support towards net zero, the place–policy–practice nexus is useful for (a) framing the complexity of business support challenges; (b) emphasising the importance of place in business support policy and provision;



**Figure 1.** Place–policy–practice nexus and associated gaps.

and (c) exploring the gaps and the synergies related to supporting businesses towards the net zero transition locally, nationally and globally.

The following gaps characterise the relationship between the nexus elements shown in Figure 1:

A *place–policy gap* (Gap 1) occurs when policy lacks recognition of the contextual specifics of the place, such as sectoral composition, growth trends and skills base, in the development of the policy scope and policy implementation mechanisms (Cleave *et al.* 2016). A lack of understanding and knowledge about place characteristics, sectoral makeup, community behaviour and attitudes could result in poor uptake of the policy initiative and policy failure (McConnell 2015). Skills gaps either of policymakers or of the local community could result in ill-designed policy interventions and weak implementation. Finally, *place-blind* governance and policy instruments are likely to hinder effective policy design and implementation (Nurse & Sykes 2020). As a contrast to the place-based approach, the place-blind perspective advocates adaptation of ‘spatially blind improvements in the basic institutions of law and order, regulation of land, labour and property markets, macroeconomic stability and the provision of basic services such as education and health’ (O’Brien *et al.* 2015). Such an approach is unlikely to support the development of effective policy mixes towards sustainable development where a place dimension is at the very core of sustainability.

A *policy–practice gap* (Gap 2) results in the design and implementation of interventions that are ill informed and unfit to support the delivery of policy priority areas and associated incentives. This gap could widen further as a result of poor communication between the policy and practitioners and ineffective engagement mechanisms during the

consultation stages of policy development (Waring *et al.* 2016). A weak evidence base and/or difficulty in accessing up-to-date and relevant data could also lead to policies which are ‘out of touch’ with practice (Sanderson 2002). Anticipation, that is ‘foreseeing future and preparing for it’, is argued to be central to how a policy is designed, executed and assessed (Bali *et al.* 2019 1). The effectiveness of the policy mixes is dependent on understanding and forecasting practice complexities and developmental scenarios (Howlett & Mukherjee 2018). Hence, anticipating the net zero transition trends and challenges businesses are likely to face should be at the top of the policy-making agenda when it comes to the design and operationalisation of business support provision.

A *practice–place gap* (Gap 3) signals insufficient recognition of context and place specifics in practice. This gap is often narrow, as businesses are usually well attuned to local markets as a prerequisite for competitive success. Having said that, businesses could be working with local markets by inertia and might not trace the emergence of new market niches efficiently enough to align operations. A regional supply chain is another case in point where small businesses could be left behind as a result of changes in business models and vendor requirements. As some markets would rise and others would fall as a result of the net zero transition (McKinsey 2022a), it is becoming important to pay attention to economic, socio-demographic and behavioural trends of a place for net zero success.

Gaps identification relates to the seven areas concerned with understanding, knowledge, skills, information, instruments, governance and strategy. These areas are often associated with misalignment between policy, practice and place, and inhibit local and regional development (Pike *et al.* 2016b, Hudson *et al.* 2019, Mukherjee 2021). A lack of understanding and awareness about climate change negatively impacts behavioural patterns in society and leads to passive responses from consumers towards green products and services. Knowledge and skills are critical for the development of evidence-based policy instruments. Information gaps often lead to low uptake of policy programmes and negative perception of policies from the practitioners’ point of view (Baranova *et al.* 2020). Policy instruments, such as programmes, initiatives, projects and incentives, can be ill informed and ill designed and of little relevance to practice and place (Howlett 2019). Governance and strategy are often argued to be practices that have the potential to bring the interests of policy, practice and place closer together and address contradictions through multi-stakeholder collaborations and partnerships (Ansell & Gash 2008).

Understanding the complex relationship between place, policy and practice becomes pivotal in the development and delivery of business support towards net zero transition. Identification of nexus gaps is a useful conceptual approach in articulating transition challenges and in finding synergetic solutions. This approach ensures the inclusion of a place and policy in the design and implementation of

support programmes. This strengthens the development of a place-based support ecosystem which ensures access to diverse business support opportunities aligned with the business environment of the place. In light of a conceptual approach that calls for an exploration of place–policy–practice nexus gaps, a review of net zero policy with a focus on net zero support provision follows.

### 3. Policy context

#### 3.1 Net zero policy initiative

The UK has been leading by example in tackling climate change and was the first country in the world to pass legislation — Climate Change Act 2008 (UK Government 2008) — to provide a comprehensive framework to tackle global warming. This Act remains the backbone of legal, regulatory and political commitments in the UK and worldwide to keep global warming to no more than 1.5°C with a reduction in emissions by 45 per cent by 2030 and reaching net zero by 2050 as per the Paris Agreement (Paris Agreement on Climate Change 2015).

The UK *Industrial Strategy: Building a Britain Fit for the Future* (BEIS 2017) maintained climate change commitments and outlined clean growth as a Grand Challenge. The government pledged support to ‘maximise the advantages for UK industry from the global shift to clean growth’ (BEIS 2017: 34). The strategy emphasised the importance of *place* and *business environment* as foundations of productivity and economic growth and creating prosperous communities across the UK.

The narrative of place in the Industrial Strategy is centred on harnessing the potential of local economies to resolve UK disparity in regional productivity, the so-called ‘productivity puzzle’,<sup>1</sup> when compared with other European countries (ONS 2021). This affects people in their pay, their work opportunities and their life chances. Place strengths and growth opportunities are to be accentuated and supported through effective policy mixes. The strategy approach places people in local communities at the heart of Local Industrial Strategies (LISs) and promises investment in local skills, innovation, infrastructure and support for new high-value businesses and leading sectors. Local leadership, both public and private, is needed to accelerate industrial regeneration and Local Enterprise Partnerships

<sup>1</sup> The UK economy, like any other, is viewed as a system that converts work into the outputs of good and services. Productivity measures that conversion and is an indicator of the economic health of the country. As productivity increases, living standards are rising. In the UK, productivity has been flatlining since 2010. This is unprecedented in the post-war era and has come to be referred to as the ‘productivity puzzle’ (ONS 2015).

(LEPs) remain important vehicles for driving economic growth in their area. Alongside the strong narrative about building on local strengths, collaborations to address shared challenges in the regions are encouraged. The strategy draws on the Northern Powerhouse and Midlands Engine examples in attracting central government investments, developing industrial clusters, driving competition and increasing access to domestic and international markets.

The establishment of the world's first net zero carbon industrial cluster<sup>2</sup> by 2040 and four low-carbon clusters by 2023 was one initiative towards wide-scale decarbonisation. The establishment of six low-carbon industrial clusters is underway in Humber, Teesside, North Wales, Scotland, Tees Valley and the Black Country supported by £210 million of funding matched by £216 million from industry. There has been an investment of £20 million committed into a new research and innovation centre. Nine projects and six cluster plans are in operation, and over 170 businesses are engaged in cluster development (UKRI 2021).

There has been some progress towards the introduction of zero emission cars and vans by 2040 and halving the energy use of new buildings by 2030. The government is providing extensive financing including £1 billion over 10 years to support innovation in clean ways of powering vehicles. An Automotive Sector Deal sets the mechanism of how industry and government will work together to deliver the electric mobility challenge. There was over £500 million available in various funds to drive the electric revolution through investments in zero emission vehicle technology and electric and low-emission vehicle infrastructure. Progress towards energy-efficient housing is less prominent despite over £400 million being made available for new construction projects, technologies and techniques (BEIS 2021)

The government's *Clean Growth Strategy* was launched in 2017 (DESNZ & BEIS 2017) and set out a plan for meeting the legislated carbon budgets through 50 key policies and proposals. The priority areas for funding and investment were identified as transport, buildings, power, industry and cross-cutting, mainly carbon capture, utilisation and storage (CCUS), assets. The clean growth ambition was reflected in the Local Industrial Strategies alongside three other Grand Challenges: artificial intelligence and data, an ageing population and the future of mobility.

Despite forming part of the local industrial policy discourse, the articulation of net zero investment priorities, support mechanisms and incentives for cross-sector collaboration lacked clarity. In many cases, manufacturing, transport and energy sectors dominated the focus of decarbonisation incentives as opposed to carbon-

<sup>2</sup> A net zero industrial cluster is a geographic concentration of interconnected businesses that provides opportunities for scale, sharing of risks and resources, and aggregation and optimisation of demand to achieve net zero (DESNZ & BEIS 2021)

rich sectors such as agriculture, land use, hospitality or tourism. This resulted in carbon-rich sectors being left out of local industrial strategies and contributed to the misrepresentation of place in policy. It is unsurprising that such an omission further narrowed an understanding of net zero transition challenges and risks. Hence, the widening of the net zero policy–practice gap continues to proliferate.

The government remained committed to supporting the net zero transition in the *Build Back Better: Our Plan for Growth* policy paper (HM Treasury 2021). There is stronger recognition of the net zero skills as an enabling factor to the success of the transition. For example, the job creation opportunities are set to be supported by the government, including 60,000 jobs in the offshore wind sector: 50,000 jobs in CCUS and up to 8,000 jobs in hydrogen industrial clusters. An estimated £12 billion of investment is allocated to supporting hydrogen, CCUS, offshore wind, nuclear and accelerating EV charging roll out, and the decarbonisation of heat and buildings.

In the latest report to Parliament about progress towards net zero priority areas and emission reduction, the Climate Change Committee reported a lag in tangible progress compared with policy ambition. There is notably slow progress on wider enablers, such as the development of a strategy of engagement with small and medium-sized enterprises (SMEs) on decarbonisation and enabling participatory and deliberative governance methods in the net zero policy-making process (CCC 2022). Recognition of the low engagement of SMEs in decarbonisation initiatives is well overdue and signals a positive change in the policy narrative towards acknowledging the net zero challenges of smaller businesses.

The recent independent review of net zero ‘Mission Zero’ by the Rt. Hon. Chris Skidmore MP reported better than expected progress on net zero nationally and globally since 2019. Against the backdrop of 91 per cent of the global economy committed to net zero, UK is leading the transition from the regulatory and policy standpoint. Renewable energy costs are dropping sharply, including a 70 per cent drop in offshore wind prices since 2014 (Skidmore 2023: 19). Solar and wind are increasingly becoming real alternatives to fossil fuels worldwide. Global markets for renewable energy and low-carbon technologies are growing and present strategic growth opportunities for UK businesses. Net zero is framed as the economic opportunity of the 21st century, which is attracting interest from major economies across the globe:

‘We are in an international race for capital, skills, and the industries of the future. We must act quickly, and in collaboration with our international partners, to cement the UK as a prime destination for international capital and unlock export opportunities for British businesses around the globe. Failing to do so will mean missed opportunities.’

(Skidmore 2023)



Such a global ambition is firmly rooted in local action. The report concludes that a locally led, place-based approach is vital for unlocking the economic and social benefits of the net zero transition. The review calls for more local support and tailoring of net zero initiatives to local needs in recognition that each community has a different path to net zero. Integral to this approach is an opportunity for commonalities and development of economies of scale and scope in building regional supply chains, developing low-carbon industrial clusters, forging net zero skills and attracting green investment.

The Skidmore review calls for a simplification of business support and funding mechanisms to stimulate business engagement with the net zero transition. The review suggests there is a need for easy access to information and better signposting for SMEs to the support available regionally and nationally. The report recommends a wider review of the tax system to incentivise investment in decarbonisation, including incentives for SMEs to stimulate the uptake of energy-efficiency technologies.

### **3.2 Government support for businesses**

Historically, the overall approach to the delivery and design of government support for businesses has been largely top-down, centralised and led by financial economic growth logic. Business Link, a decentralised network of business support services established in the late 1990s, became a prototype for the Local Enterprise Partnership (LEP) network operating currently. Business Links were supported by the Industry Ministry and funded on performance. The most important performance indicators were the amount of ‘market penetration’ and the ‘satisfaction rate’ (Mole *et al.* 2011). In contrast, government funding of LEPs supports ‘capacity building’ within LEPs and ‘supports the development and delivery of the LEP strategic plan’ (HM Treasury 2012). As net zero is becoming a strategic priority for most LEPs, there is an opportunity for a well-overdue shift in the business support towards sustainable and inclusive growth and well-being for all.

When it comes to policy-making, the literature recognises a mismatch in the ‘hierarchy of choices’ concerned with who delivers the support, the type of support offered, how it is allocated and how the support is funded (Mole & Bramley 2006). The reluctance of support providers to focus ‘more intensive assistance on appropriate beneficiaries’ or match enterprise support to a specific business problem has also been a well-recognised criticism of business support (Mole *et al.* 2009: 20).

These calls are not unusual as, throughout the history of the public policy of business support, there is a recurring problem of the limited uptake of support programmes. Uptake of support can be related to SME characteristics, such as size and



sector, as well as external influences, such as the state of the economy. A study by Bager *et al.* (2015) suggests, for example, that programme enrolment may be subject to selection bias, leading to SMEs with the most growth potential being overlooked. Communication and information gaps have been recognised as barriers to small business engagement with support provision (Bennett 2008).

The net zero business support provision is a welcome departure from the narrow and self-serving policy perspective on the purpose of an enterprise and its contribution to society and growth. Consecutive governments maintained a focus on financial economic growth outcomes with little attention to environmental sustainability or social dimensions. This is not surprising as business support policy has often been an extension of national industrial policy with a traditionally dominant focus on economic development and growth, especially at a regional level (Huggins *et al.* 2015). A purpose-driven approach to business (the British Academy 2019; British Standards Institute PAS 808 2022) support provision that accelerates business contribution towards a Wellbeing Economy (Scottish Government 2022) is a much-needed trajectory in policy-making.

Such an approach has been emerging at grass roots for over two decades where not-for-profit organisations such as the Carbon Trust, Groundwork and Regen SW are leading the transformative change towards net zero. They provide access to skills, knowledge and expertise, as well as free to access tools that support businesses on the decarbonisation journey. They grow peer networks and multi-stakeholder collaborations for addressing the societal challenges of clean energy, zero-carbon transport, sustainable living, inclusive community and nature restoration. They provide purpose-driven support to strengthen business resilience, to succeed at net zero, to reduce ecological footprints, and to contribute to employee and change to wider community well-being. These examples are worthwhile sources of much-needed policy innovation for business support towards the net zero transition.

### **3.3 Net zero business support in the policy discourse**

A review of the national net zero strategy and policy documents highlights a gap in articulating the role of business support in the net zero transition, as shown in Table 1. The policy lacks consideration for the approach, pace, scope and scale of the support that would prepare businesses to successfully engage with the biggest transformation of the business environment as a result of the net zero transition in coming years.

Although there has been a greater recognition of the role of enabling mechanisms in supporting business engagement with and benefits from the transition, the policy does not go far enough in articulating the focus, operationalisation, investment

**Table 1.** Policy articulation of the net zero business support.

<i>Topic</i>	<i>What is articulated</i>	<i>What is not articulated</i>
Businesses and net zero transition	Business is pivotal to the net zero transition as the bulk of investment and innovation is expected from the private sector (HM Treasury 2021). SMEs are core target for growth and the future of net zero (Skidmore 2023).	Configuration of the business support at the central and local levels including considerations for multi-stakeholder approach in creating business support ecosystem for the net zero transition.
Types of support	Government needs to act to enable SMEs to actively participate and benefit from the transition. Access to finance is part of the solution (Skidmore 2023).	Net zero business support beyond an energy-efficiency and decarbonisation focus.
Characteristics of support	Introduce a package of measures including a one-stop shop for SMEs to get decarbonisation advice with a carbon foot-printing tool, develop a strengthened low-carbon advisor/auditor role for SMEs and develop an effective financing strategy to support SME decarbonisation (CCC 2022).	Manufacturing focus dominates investment priorities, whilst services sector is downplayed. Urban vs rural business challenges of engagement with the net zero transition.
Support mechanisms/platforms	Utilization of role models — use sector-specific forums to provide evidence, case studies, information and advice to encourage businesses to actively decarbonise (Skidmore 2023).	Net zero support as a mechanism for accelerating the transition of regional and local entrepreneurial ecosystems towards net zero. Collaboration and cross-sector solutions to support net zero innovation and decarbonisation.
Net zero/green skills	Net zero skills are critical to the success of the net zero transition. A comprehensive assessment of when, where, and in which sectors there will be skill gaps specific to net zero. This should include consideration of particular barriers to labor market entry into occupations (CCC 2022)	Upskilling of business advisors to support the net zero transition. Considerations for pace and scope of training as well as the numbers of the advisers to be trained.

priorities and governance of the business support. The policy treats the business community as a homogeneous group without signalling differences in business support mechanisms and incentives for businesses of different size, sector of origin or location. The prevailing focus of support provision remains on the delivery of financial economic outputs rather than supporting businesses to succeed in the net zero transition.

The importance of place characteristics in the design and delivery of net zero business support is underplayed. Such a place-blind approach to the design and delivery of net zero support is unlikely to enable meaningful and transformative interventions capable of raising the capacity of local communities to take advantage of net zero growth opportunities.

The role of collaboration and cross-sector solutions is underplayed throughout the policy narrative. The importance of multi-stakeholder partnerships for the development of the net zero support ecosystem has yet to be brought to fore. The net zero skills and the net zero support agendas are yet to be linked, opening opportunities for discussions about how to support skills development through business support mechanisms, thus boosting the supply of local net zero skills for the transition.

When it comes to support provision towards net zero, the prevailing policy discourse is around energy-efficiency initiatives and decarbonisation. Although these are well-recognised opportunities of the net zero transition, there are other opportunities around development and commercialisation of the new product and service offerings, and supporting businesses towards green growth (OECD 2011). The latter requires a holistic understanding of the transformation that businesses would undertake as part of net zero. Such a transformation involves re-imagining the purpose of business in society and redefining the approaches to sustainable growth through contributions to place and communities.

#### **4. Research overview**

The underpinning research for this paper has been drawn from a number of studies and the practical experience of delivering an award-winning ERDF DE-Carbonise project<sup>3</sup> (DBT 2020). The contributing studies include:

<sup>3</sup>Derby City and Derbyshire County Councils won the title of Energy Efficient Council of the Year in the East Midlands Efficiency Awards in both 2018 and 2019, for their role in the delivery of the project. The project was also shortlisted for the Institute for Environmental Management & Assessment (IEMA) Sustainability Impact Award 2019 and was a finalist for the APSE [Association for Public Service Excellence] Best Renewable or Energy Efficiency Initiative 2019 and APSE Best Climate Action Initiative 2020. Additionally, the project was winner of

- A review of the Local Industrial Strategies (LISs) and Strategic Economic Plans (SEPs) across the 38 LEPs with a view to studying the representation of place in the policy documents and articulation of net zero business support provision. Each of the LISs and SEPs in the LEPs were carefully reviewed according to three themes: a net zero transition narrative, including framing of strategic priorities, interventions and challenges; business support provision framing, including net zero support; the articulation of place and place characteristics in LEP policy documents.
- An analysis of the net zero business support available through LEPs and Growth Hub web pages. The analysis included current support provision as well as past support offerings since 2014 in line with the ERDF (European Regional Development Fund) and ESF (European Social Fund) funding cycle. The analysis included type and scope of support offers, delivery mechanisms, and level of reflection of place characteristics (sector, locality, local socio-demographic and economic trends) in the support provision.
- A longitudinal study of green growth trends in the East Midlands region. The study analyses a survey of 372 businesses operating in the Midlands and reveals trends of engagement with green growth, demand for green skills development and trends in business support requirements and uptake in 2015 (Baranova *et al.* 2022).
- An analysis of the ERDF and ESF projects delivering business support towards decarbonisation, eco-innovation and clean growth from 2014 to 2023. The author accessed publicly available European Structural and Investment Funds data (DBT 2023) and analysed the projects that targeted carbon reduction, low-carbon innovation, net zero and green growth as part of the project outcomes.

The limitations of the methodological approach are twofold. First, the analysis does not include any data on private providers or NGOs delivering net zero support. The market for private net zero consultancy and training is growing and market scanning needs to be undertaken to understand the size, characteristics and locality of the provision. There are some well-established NGOs (non-governmental organisations), for example the Carbon Trust, supporting businesses on their net zero journey. The scale and diversity of support offering are growing and cover almost every UK region. Second, the data on demand for net zero support, policy awareness and uptake of the support programmes is based in the East Midlands region. The D2N2 LEP, which covers the majority of the East Midlands, has a long-standing

and successful tradition of attracting central and European funding for pro-environmental business support provision.

In addition to the above studies, the paper draws on the author's own experience of leading and managing decarbonisation initiatives in small businesses as part of the ERDF DE-Carbonise project. DE-Carbonise was a business support programme delivered to SMEs in the East Midlands during 2016–22. The £8.9 million programme supported over 1,000 SMEs by providing carbon audits and grants worth over £1.6 million for energy-efficiency measures that delivered savings of over £750,000 per year, helping 273 SMEs to be significantly more resilient in the face of steep rises in energy costs. The project supported extended innovation and research and development (R&D) projects to 47 firms and business improvement consultancy for 153 SMEs to support their journey towards net zero. Overall, it secured an estimated 32,600 tonnes of reductions in greenhouse gas (GHG).

In the second phase of the project from 2019 to 2022, businesses were allowed to access all three strands of the project offer. This included energy audits followed by energy-efficiency grants, consultancy, and eco-innovation R&D as well as sign-posting to broader business network support activities. The DE-Carbonise project Summative Assessment Report (Shaw *et al.* 2022) acknowledged that this integrated offer to SMEs (audits, grants, R&D and consultancy) was a key strength of the business support offering. Following this outline of the data used in the research, place–policy–practice nexus gaps are analysed.

## 5. Analysis and discussion

### 5.1 Place–policy gap

#### 5.1.1 Lack of local net zero policy ambition and evidence base

Policy ambition in relation to the net zero transition is communicated by only one in three LEPs. Although linked to the clean growth Grand Challenge (BEIS 2017), the net zero transition demands an identification of key sectors and risks of the transition including job market patterns, potential skills shortages and infrastructure constraints. The strategy documents show only a few LEPs are advanced in this work. Net Zero North West, a partnership between Liverpool, Greater Manchester, and Cheshire and Warrington LEPs, has undertaken a review of net zero skills gaps. The report highlights the need for a coordinated, strategic approach to connecting the mechanisms across the regions for the rapid development of net zero skills, capacity building, effective communication and awareness raising (Net Zero North West LEP 2021).

The South Yorkshire Mayoral Combined Authority pledged concerted efforts to achieve a net zero economy by 2040 as part of the strategic economic plan. Net zero is presented as an ‘unparalleled opportunity to transform energy generation, supply, storage, and use will create benefits for the local economy, our communities and the environment’ (SYMCA 2022: 51). The plan proposes a focus on (1) clean growth and decarbonisation of local businesses; (2) enabling investment and innovation in low-carbon energy; (3) improving the energy efficiency and sustainability of the built environment; and (4) a transition to ultra-low emission vehicles and transport systems. These areas are regularly mentioned in other local net zero policies alongside priority areas for investment such as green hydrogen; Ultra Low Emissions Vehicles (ULEV) and transport systems; renewable energy systems; and design and building construction and using modern methods of construction (MMC).

Decarbonisation and the drive to net zero is a cross-cutting theme in the North East LEP SEP. The commitments to net zero are balanced alongside ensuring quality employment, improved standards of living and enhancement of the unique regional natural environment. There are emphases on collaborative working across businesses, institutions and communities to ‘collectively drive to Net Zero and advocate for a firmer national response and strengthened local powers to enable us to deliver this’ (North East LEP 2022: 8).

York and North Yorkshire Region LEP declared commitments to become England’s first carbon-negative region. Additionally, clean growth enabled by a circular bio-economy is viewed as ‘a USP’ of the economic recovery plan (York and North Yorkshire LEP 2020). Such an ambition is rooted in place capabilities, including world-leading bio-economy and agri-tech innovation assets, and low-carbon industrial innovation, including carbon capture and storage. Access to two national parks and three Areas of Outstanding Natural Beauty provides the opportunity to increase agricultural and food productivity whilst delivering natural carbon-reduction opportunities. The strategy identifies key sectors for investment and targeted interventions to deliver the carbon-negative ambition, including heat and building; transport; business and industry; power; land-use, agriculture and marine (York and North Yorkshire LEP 2022)

Despite these examples of commitments to the net zero transition, the majority of LEPs have not undertaken the necessary work to develop net zero targets, governance mechanisms and implementation plans. A holistic approach to understanding the impact of the net zero transition on the locality and the opportunities and challenges it might bring is rare. There are information gaps about the purpose and impact of the net zero transition in local and regional contexts. There is limited consideration of the support mechanisms and programmes that need to be in place

to support businesses engagement with the net zero transition. Where they are articulated, they lack place-based focus due to insufficient evidence-based data on business attitudes, barriers and enablers of the net zero transition.

### *5.1.2 Misalignment between policy and place characteristics*

An overview of the Local Industrial Strategies (LISs) and Strategic Economic Plans (SEPs) of 38 Local Enterprise Partnerships (LEPs) showed large variations in policy commitments towards business support. There are four positions which describe how the policy treats the business support narrative:

- (1) **Little or no articulation of business support in the policy documents.** This position is rather rare and only one LEP was identified as being in this position.
- (2) **Generic articulation with little implementation detail or place recognition.** Although only five LEPs fall into this position, it is concerning that such an approach is exercised alongside a well-evidenced body of knowledge about the value of business support for economic growth, and regional and national development (OECD 2017).
- (3) **Some sectoral focus, a well-defined approach and detailed implementation steps.** This is the majority position exercised by 22 LEPs. The business support approach is often linked with LIS priority sectors and is aimed at strengthening established businesses; creation of new ventures; start-up support, and improvements in productivity. There is little consideration beyond the LIS priority sectors, including low-income areas and communities underrepresented in entrepreneurship. The place characteristics are limited to sectoral composition with little consideration of natural capital, infrastructure, heritage or business characteristics.
- (4) **Strong sectoral focus alongside other place characteristics.** This approach is applied by only 10 out of 38 LEPs and shows a broad range of place characteristics in the design and delivery of business support. Such considerations include support for rural and coastal businesses; collaborative working across training providers to deliver business support; public–private partnerships for inclusive support provision; heritage, tourism and well-being; internationalisation activity; and infrastructure characteristics.

The analysis confirms a fragmented picture when it comes to use of place characteristics in the design of public business support. Less than a third of LEPs drew on the range of place characteristics to design business support provision that reflects the sectoral make-up, business composition, local infrastructure and



community. Although many policy documents communicated business support commitments for the LIS priority sectors, this does not go far enough in terms of place taking centre stage in policy design and implementation from a regional development perspective. The varying needs of different sectors beyond the priority areas remain underexplored and unrecognised in the net zero policy discourse. This leads to the design and delivery of place-blind business support due to a limited understanding and knowledge of the local business environment.

### *5.1.3 Narrow appreciation of the rural–urban dimension*

The rural–urban specificity of the place is largely underrepresented across the policy documents. Only seven out of the 38 LEPs declared the development of and investment in rural areas as a strategic priority. Support for rural businesses is rarely articulated in the LEP strategic narrative. Where it is mentioned, the support focus is on new and developing micro and small rural businesses. There is a recognition that business support programmes could support the upskilling of rural businesses and that their learning needs and preferred modes of learning might be different: i.e. collaborative learning (Pittaway & Cope 2007).

### *5.1.4 Net zero skills and the net zero transition: a missing link*

Net zero skills is another area that has little representation in the policy discourse and is linked to a vague articulation of net zero commitments. Despite the skills agenda being part of local industrial strategies, little is done to forecast demand for net zero skills to accommodate changes in the job market as a result of the transition (BEIS 2021). Little contingency planning is in place to accommodate changes in demand for net zero skills. The characteristics of local training providers, potential for upskilling and opportunities for flexible and collaborative provision remain largely underexplored.

### *5.1.5 Challenges of local net zero governance*

The net zero governance mechanisms that ensure place representation, effective and evidence-based decision-making, as well as resourcing are rarely articulated. They are at the early stages of development and require concerted efforts to ensure multi-stakeholder representation. The net zero strategies of local government, LEPs, regulators and other significant institutional stakeholders remain unsynchronised, which adds to the fragmentation and mixed messages about net zero policy commitments and policy instruments.

## **5.2 Policy–practice gap**

### *5.2.1 Limited understanding of the impact of the net zero transition*

Policy articulation of the business support focus, characteristics and delivery mechanisms is fragmented and shows little understanding of the varying needs of businesses across sectors and localities. The review of strategy documents across 38 LEPs showed that the main policy business support narrative is linked to the stages of enterprise development. These include development of entrepreneurial ideas (support through concept and innovation grants); start-up support; scale-up support; and support for high-growth firms. The type of support includes commercialisation support; capacity building; access to funding for growth; innovation and supply-chain support; and export growth strategy support. Only a few LEPs differentiate the specific needs of rural businesses for business support.

There is a recognition of the role of networks in supporting enterprise development and growth. Although every LEP has some form of business network they facilitate, it is rarely linked to the net zero transition. In fact, when articulating business support strategy, the majority of LEPs revert back to the traditional view of support for financial or activity-based growth without reflecting clean growth or net zero priorities in the business support design and interventions.

There is limited recognition of the impact of the net zero transition on businesses in regions and localities. Net zero impact is often understood through energy, infrastructure and opportunity for cost efficiencies and business growth opportunities. It is far less understood through changes in social practices, including skills and talent development; career pathways and professions; and physical and mental well-being in the workplace.

### *5.2.2 Energy efficiency dominates support focus*

By and large, the focus of net zero business support is on energy efficiency. Such a narrow and ‘one-size-fits-all’ approach limits business responses to the opportunities presented by the net zero transition in domestic and international markets. Analysis of net zero support provision across LEPs and Growth Hubs shows that energy-efficiency advice and information remain the most common form of support, followed by advice and information on net zero and renewable energy, as shown in Table 2.

Only 21 LEPs out of the 38 have provided energy-efficiency grants. Most grant schemes offered funds of up to £20,000 for eligible businesses. Only a few programmes offered funds above the threshold of up to of £25,000. Drawing on the experience of the £8.9 million awardwinning ERDF DE-Carbonise project, the

**Table 2.** Net zero business support provision across the Local Enterprise Partnerships and Growth Hubs.

<i>Business support towards the net zero transition</i>	<i>Number of LEPs</i>
Energy-efficiency advice and information	32
Net Zero advice and information	31
Renewable energy use and adoption advice and information	23
Energy-efficiency grants	21
Eco-innovation advice and innovation	12
Sustainability/net zero/clean growth network	9
Eco-innovation grants	8
Green growth grants	8
Renewable sources of energy adoption grants	7
Retrofit grants for households and communities	3

most common types of energy-efficiency initiatives for grant applications were for heating, including new compressors and boilers; LED lighting and heating control; and solar energy generation. The distribution of the grants was also uneven across sectors. Manufacturing companies were responsible for a third of the uptake of energy-efficiency grants followed by repair outlets for motor vehicles and motor-cycles, and wholesale and retail businesses. The grant value, locality of grant availability, and availability of energy and carbon data to support the grant application were recognised as limiting factors in the uptake of energy-efficiency grants (Shaw *et al.* 2022).

Unsurprisingly, advice and information provision are more common than grants due to national and local budget and funding restrictions. Despite the significant role innovation plays in the net zero transition (DESNZ *et al.* 2020), eco-innovation advice and information were provided by only a third of LEPs. Surprisingly, only eight out of the 38 LEPs provided eco-innovation grants. Green growth grants targeting businesses with support packages to enhance their performance on green market niches and to reduce carbon are also quite rare. Grants for adoption of renewable sources of energy are the least common form of grant offer in seven out of the 38 LEPs. Retrofit grants for households and communities were available through only three LEPs, making this the rarest form of net zero support.

The prevalence of energy-efficiency advisory and information, and energy-efficiency grants in net zero support offerings is not surprising. Although such programmes offer the benefits of ‘light-touch’ and ‘quick ROI (return on investment)’ interventions for carbon reduction and cost efficiency, these interventions tend to be short term and transactional in nature. They are a useful starting point on the decarbonisation journey for many SMEs. However, a more holistic offer of business support that adopts a transformational approach to business engagement with net zero is well overdue. Such an approach involves broadening the scope of support provision as well flexibility in delivery modes.

### 5.2.3 Information and communication issues

Based on the Green Growth Trends in the East Midlands Report (Baranova *et al.* 2022), only 17.2 per cent of the 372 businesses that took part in the Quarterly Economic Survey (QES) said that the current policy allows them to fully engage with the clean growth policy agenda. This is a decline of nearly 2 per cent from the 2021 QES response about the confidence level in relation to clean growth policy. A third (33 per cent) did not feel well informed about the support available for clean growth, although this was a drop from 42 per cent in 2021. These findings paint a challenging picture where information and communication gaps constrict the engagement of regional businesses with net zero policy and support provision.

### 5.2.4 Networks as support mechanisms

The availability of the networks that support clean growth, sustainability and net zero in nine out of the 38 LEPs, is not as widespread as expected. Networks have long been recognised as effective mechanisms for entrepreneurial learning and business support (Vittoria & Lubrano Lavadera 2014). There are missed opportunities to establish such networks as effective mechanisms for knowledge sharing, knowledge exchange and innovation to support capacity building towards net zero (Baranova 2022).

Net zero business support must cater for rural communities and realise their specific challenges when engaging with net zero. As the policy mainly targets manufacturing, power, energy, digital and transport sectors and rural businesses are challenged to find pathways of engagement with net zero. This widens the policy–practice gap between rural communities and local and regional net zero policy ambitions, leading to unrealistic targets and ineffective policy mixes (Peters *et al.* 2018).

### 5.2.5 Capacity shortages to deliver net zero support

Undoubtedly, there is a question of business support capacity for net zero in regions and localities. Many LEPs and Growth Hubs have dedicated advisors for energy-efficiency and decarbonisation support. However, the numbers are often small — one or two advisers per Growth Hub business support team. Taking into account a significant increase in the business engagement required to meet the net zero targets set in the *Building Back Better* report (HM Treasury 2021), the support capacity needs to be increased not only in terms of the number of advisers but also in terms of sustained investment in advisor upskilling.

### 5.2.6 *Lack of synchronisation in policy mixes*

Lastly, the studies of local clean growth policies commented on the confusing messages in the policy documents and the lack of a ‘joined-up’ approach in developing policies across institutional stakeholders (Baranova *et al.* 2020). Businesses commented on the lack of clarity in the policy documents about business support mechanisms and the incentives for cross-sector collaboration towards tackling environmental underperformance. Considering the well-recognised lack of small business engagement with policy (Blackburn & Smallbone 2011), effective governance mechanisms that actively encourage business participation in net zero policy design and implementation are essential. They hold the potential to narrow the understanding, knowledge and information gaps as well as to design effective policy instruments and to contribute to strategy alignment and synergies.

## 5.3 Practice–place gap

In considering the practice–place gap, the following questions direct the inquiry: ‘What is the availability of the net zero support provision relevant to the place?’ and ‘How well do net zero business support programmes cater for the place?’ Analysis of the business support provided through LEPs and European Structural and Investment Funds reveals some interesting insights.

### 5.3.1 *Lack of local net zero business support provision*

Analysis of LEP support offerings shows a low number of dedicated business support programmes for decarbonisation and net zero. Only 10 LEPs have such programmes in operation, and they are mainly delivered through advisory and information support with some grant provision. Such a position is problematic for ensuring business readiness for the net zero transition. Although most policies recognise the role of business support in the delivery of strategic economic priorities, the net zero support offer is limited in scope and availability.

### 5.3.2 *Prevailing manufacturing focus of the net zero support*

By and large, local business support programmes target LIS and SEP priority sectors. Although this is unsurprising at times of constrained public funding and economic uncertainty, there is a tendency to commit funding to a select group of sectors and repeatedly exclude the others. For example, advanced manufacturing, and digital and transport sectors are identified as priority sectors for growth and

investment in most of the LISs reviewed. Services and the agricultural sector are far less in focus; and hospitality, tourism and creative industries are mentioned in only a handful of the documents. Only seven out of the 38 LEPs have specialised business support provision for rural businesses.

As mentioned earlier in Section 4.2.2, manufacturing companies dominate uptake of energy-efficiency grants and other forms of support. This is linked to a strong manufacturing focus in the central net zero policy and sector reports that forecast significant demands on and transformation in manufacturing sectors as a result of the net zero transition (BEIS 2021). Although the role of manufacturing in the net zero transformation is undisputed, to achieve a whole-system transformation other sectors need to be engaged, adequately supported and succeed at the net zero transition.

### *5.3.3 Net zero community-based projects*

There is a notable lack of projects that bring together local community and businesses in tackling issues of sustainable development. Local business support programmes for community-based projects are rare. Nationally, Business in the Community, the UK's largest responsible business network 'dedicated to building a fairer and greener world together' and supported by the Royal Family, leads the agenda (Business in the Community 2023). However, such an initiative is yet to be followed by national or local government.

There were 43 ERDF projects supporting community-led local development initiatives in rural and urban areas. The vast majority of the projects, 33, were delivered by local government. Only 11 projects focused on strengthening the links between businesses and local communities towards addressing localised sustainable development challenges. There were only six ERDF projects to support social enterprises during the period 2014–23. None of the projects were delivered by local government and/or LEPs. Two of the projects were delivered by the University of Bath and the University of Central Lancashire, respectively, and the remaining four projects were delivered by NGOs. There is a significant lack of policy innovation to support community-based projects that leverage synergies and collective strength of businesses and local communities to accelerate climate action and engagement with net zero.

### *5.3.4 Limited focus on place-based innovation*

A review of business support programmes through ERDF and ESF programmes 2014–23 reveals that out just under half of all the funded programmes supporting

SMEs towards the net zero transition in England, 30 out of 69, focused on energy and resource efficiency (DBT 2023). These were primarily led by local council and combined authority teams (17 projects). The universities led eight and the private sector delivered only four of these projects. Only one project, Swindon–Wiltshire Target 2030, focused on the needs of rural businesses for energy efficiency and the use of renewables. The support design included a dedicated energy-efficiency and renewable energy advisory service; tailored expert advice and diagnostics; and a grant offer of up to 35 per cent of the cost of capital measures.

Twenty-eight projects were aimed more broadly at developing a local low-carbon economy and green business growth: i.e. ensuring sustained growth on green market niches balanced with a reduction in the carbon footprint. Many projects included a *multi-strand offer*, including business coaching, environmental mapping, carbon footprinting, attainment of Environmental Management Accreditation, consultancy and growth grants. Local councils and universities were the main delivery partners delivering 12 and 10 projects, respectively, followed by businesses and NGOs delivering three projects each.

Twenty-seven projects targeted eco-innovation with the vast majority, 20 projects, delivered by the university teams. Alongside generic areas of support with R&D, prototyping, access to demonstrators, laboratories and testing facilities, there were very few projects targeting *place-based innovation*. Examples of these projects include a £1.1 million Bioeconomy Growth programme aimed at growth of the emerging bioeconomy sector across the YNYER (York, North Yorkshire and East Riding) and Humber LEP Regions; and Orbis Energy's SCORE project with a £6 million delegated grant fund that supported over 200 SMEs to develop new and innovative technologies in the offshore renewable energy sector.

The analysis demonstrates a differentiation between universities that focused on eco-innovation support and councils specialising in energy-efficiency programmes. There is a clear disparity in the overall balance of funding. Funding for energy-efficiency and carbon reduction measures amounted to £376 million; £126 million was provided for more general low-carbon/green growth initiatives combined with business development programmes. Eco-innovation projects received £122 million in ERDF funding.

### 5.3.5 Business support ecosystem approach

An ecosystem approach to business support is gaining popularity in the policy and academic literature (Brown & Mason 2017; Spigel & Harrison 2018). It is credited with opportunities for access to resource pools, including skills, knowledge, finance, supply chains, technology and know-how. It ensures representation and



stakeholder management opportunities. There are opportunities for collaboration and partnership working in addressing the net zero transition challenges.

Despite this, the ecosystem approach to local and regional business support provision is rarely exercised. There are, however, some positive examples of how the ecosystem approach is adopted. For example, Liverpool City Region LEP is committed to an efficient, privately sustainable business ecosystem supported by public interventions informed by the requirements for business support, space and infrastructure (Liverpool City Region LEP 2020). Solent LEP outlines a holistic framework for business support through the Green and Sustainable Business Hub. LEAP (Local Energy Advice Partnership) is committed to a focus on circularity in business support provision and long-term investment priorities (LEAP Climate Hub 2023). The ecosystem approach is useful for realising the role of collaboration and partnerships in the delivery of business support. It offers opportunities for knowledge transfer, learning and multi-stakeholder engagement for local capacity building towards sustainable development.

## **6. Net zero business support gaps and resolutions**

Having undertaken an analysis of the place–policy–practice nexus gaps in relation to net zero business support, a summary is shown in Table 3. The review of business support provision through LEPs, local government, and national and EU funding streams confirms the focus on energy-efficiency interventions as a dominant model for business support towards net zero. Although this approach ensures a high uptake of energy-efficiency grants by businesses due to energy saving and a potential cost reduction, it has a limited scope in preparing businesses for large-scale and deep decarbonisation as part of the net zero transition.

Only 10 LEPs have dedicated net zero/decarbonisation business support provision. Where business support exists, it is largely in the form of net zero advice and information. There is a shortage of grants, funding and finance provision supporting resourcing towards the net zero transition. Only one in three LEPs communicates a strong sectoral focus alongside a well-defined business support approach, support targets, investment priorities and implementation steps.

One focus of the net zero support is dedicated to the development of technical competence at large. There are few opportunities for the development of a broader spectrum of net zero competences, including project management, change management, leadership, sustainable business strategy, big data and digital, inter-relational and sustainability competences. The level of competence development, depending on business size and specialist position (middle, senior management), is

**Table 3.** Summary of the net zero support gap analysis and resolutions.

<i>Gap area</i>	<i>Place–Policy Gap</i>	
	<i>Gap issue</i>	<i>Report section</i>
<i>Understanding</i>	The role of place in driving the net zero transition	5.1.2; 5.1.3; 5.3.4; 5.3.5
<i>Knowledge</i>	Lack of evidence-based data on how the net zero transition might impact the place including sectoral, market, technological and socio-demographic trends	5.1.1; 5.1.3; 5.2.1
<i>Skills</i>	Gaps in identifying net zero skills demand patterns of the place, shortages, and barriers to entry into occupations	5.1.4
<i>Information</i>	Policy does not fully reflect the needs of local businesses	5.2.3; 5.3.1; 5.3.3
<i>Instruments</i>	Sectoral focus and other place characteristics reflected in the business support provision in one in three LEPs	5.1.2
		<p>Undertake analysis and scenario planning to understand the impact of the net zero transition on place including opportunities, challenges and risks. Ensure such an analysis informs the policy-making. Work with local and regional stakeholders to understand the impact of the net zero transition and design effective place-based policy mixes.</p> <p>Working collaboratively with universities, support agencies and within and across the local government, ensure the availability and use of sectoral evidence-based data in the design of the net zero policy mixes.</p> <p>Undertake a supply-demand net-zero skills analysis against the net zero transition scenarios of the place.</p> <p>Clearly articulate the purpose and impact of the net zero transition across the multiple local and regional stakeholders. The emerging information gaps needs to be monitored and addressed timely and effectively.</p> <p>Ensure place characteristics inform and accommodated for in the design and delivery of the net zero business support provision.</p>

Table 3. Cont.

<i>Gap area</i>	<i>Gap issue</i>	<i>Place–Policy Gap Report section</i>	<i>Resolution</i>
<i>Governance (Clean Growth boards, streaking groups, networks)</i>	Governance mechanisms lack effective place representation	5.1.5	Establish effective and transparent net zero governance mechanisms at regional and local levels. Such mechanisms must ensure representation from the local government, business and public, and facilitate the partnership between local and central government to support the net zero transition.
<i>Strategy</i>	Lack of visibility of the place-specific challenges and opportunities of the net zero transition in policy	5.1.1; 5.2.1; 5.2.6	Undertake a review of local policies and strategies to ensure place-specific net zero challenges are consistently and comprehensively reflected in policy-making. Ensure greater strategy alignment through the synchronisation of priorities, targets, timelines and interventions.
<i>Understanding</i>	The role of business support in the net zero transition	5.2.2	Stimulate the policy–practice dialogue and strategy development for place-based net zero business support.
<i>Knowledge</i>	Lack of knowledge about business support needs and preferences for the scope, mode, style and timescale of business support interventions	5.2.2;	Undertake a comprehensive review of the net zero business support needs. Be mindful that not all sectors and communities will benefit from the net zero transition. Identify those who are at high risk and provide appropriate support to mitigate the risks.
<i>Skills</i>	Skills gaps in design and delivery of the specialised net zero business support programmes	5.2.5	Undertake a review of the net zero skills and capacity gaps at the local government, LEPs, universities and other business support providers.

Table 3. *Cont.*

<i>Gap area</i>	<i>Gap issue</i>	<i>Policy–Practice Gap Report section</i>	<i>Resolution</i>
<i>Information</i>	Insufficient and difficult to access information on business support towards net zero	5.2.3	Work collaboratively with businesses and business support providers to ensure accessibility and better signposting to the net zero business support.
<i>Instruments</i>	Energy-efficiency advice and information, and grants remain the most common form of the net zero business support followed by the advice and information on net zero and renewable energy.	5.2.2; 5.2.3	Broaden the scope of the net zero support to include support with eco-innovation, green growth and management of the net zero transition. A greater diversity in the types of the net zero support is encouraged including eco-innovation grants, green financing, bespoke consultancy and wide-ranging training provision.
<i>Governance (Clean Growth boards, streaking groups, networks)</i>	Conflicting oversight of the business support provision and lack of visibility	5.1.5; 5.2.4; 5.2.6; 5.3.5	Ensure application of the ecosystem approach in the design and delivery of the place-based business support.
<i>Strategy</i>	Lack of clarity in policy commitments to net zero business support	3.3; 5.1.2; 5.2.3	Net zero business support needs to become an integral part of the Local Industrial Strategies and Strategic Economic Plans. Local reviews of the impact and risks of the net zero transition are to take place and to inform the design of the support mechanisms for the effective transition.
<i>Understanding</i>	The role of place and its characteristics in the design and implementation of business support	<i>Practice–Place Gap</i> 5.3.2; 5.3.3; 5.3.4.	Ensure place characteristics and local specifics of the net zero transition drive design and delivery of the support.

Table 3. *Cont.*

<i>Gap area</i>	<i>Gap issue</i>	<i>Practice–Place Gap Report section</i>	<i>Resolution</i>
<i>Knowledge</i>	Business support programmes lack appreciation for the diversity of businesses in the locality and their growth aspirations including the international markets.	3.3; 5.1.3; 5.3.3	Strengthen the delivery of the net zero support through collaborative working across local and regional stakeholders including local government, LEPs, universities and training providers. Undertake data collection to develop a comprehensive understanding of the business make-up of the place, business growth potential and aspirations. Design effective business support that matches growth aspirations and the net zero opportunities at domestic and international markets.
<i>Skills</i>	Advisor shortages and need for upskilling of business advisers to match the net zero support demands	5.2.2; 5.2.6	Work collaboratively with the support agencies to assure advisor recruitment, upskilling and talent management.
<i>Information</i>	Effective communication of the net zero support offers, sector-leading net zero practices and networks.	3.3; 5.2.4; 5.3.5	Develop effective communication strategy and operational plans that support utilisation of role models; dissemination of the case studies and development of the net zero networks.
<i>Instruments</i>	Disjointed approach in the business support provision that leads to inefficiencies and weak uptake of the support programmes.	5.2.2; 5.3.1; 5.3.4; 5.3.5	An integrated model of support services that adopts a holistic approach to developing net zero capabilities is likely to equip businesses better for the net zero transition. A multi-strand provision by design characterised by a seamless customer experience across a number of

Table 3. *Cont.*

<i>Gap area</i>	<i>Gap issue</i>	<i>Practice–Place Gap Report section</i>	<i>Resolution</i>
<i>Governance (Clean Growth boards, streaking groups, networks)</i>	Weak progress towards development of the agile business support ecosystem that supports the sectoral diversity of the place and ensured inclusion of low income and underrepresented communities.	5.1.5; 5.3.5	strands — for example, grants, R&D and consultancy — is proven to be the best practice nationally. Exercise strong place-based leadership to support development of the business support ecosystem which opens opportunities for multi-stakeholder collaboration and partnerships in the delivery of the business support and addresses needs of low income and underrepresented communities.
<i>Strategy</i>	Lack of considerations about the role of business support in the place-based capacity building for the net zero transition.	5.1.1; 5.2.1; 5.2.6	Clearly articulate the development of the business support ecosystem which builds collective place-based capacity for the net zero transition as a strategic priority in LISs and SEPs.

not articulated. The number of net zero advisers needs to be enlarged. Advisor upskilling opportunities should be in place to ensure access to the latest technological, operational and industrial developments.

The governance mechanisms need to increase the visibility and effective representation of a place in the oversight of the business support ecosystem towards net zero. The diversity of the business community of the place needs to be well understood. The design of support instruments needs to be aligned to the specifics of the place and regional growth priorities. The role of business support in place-based capacity building towards the net zero transition needs to be clearly articulated and provided for. An inability to design and implement effective business support interventions of varying scope, mode, timescale and delivery mechanisms could further delay business engagement with the net zero transition and limit access to net zero opportunities in domestic and international markets.

## **7. Conclusions and recommendations**

The socio-economic transformation required to achieve net zero emissions by 2050 will be worldwide in scale yet localised in execution. Place-based solutions should lead the way in designing and executing interventions to transform our energy and land-use systems for a reduction in CO<sub>2</sub> and methane emissions. Place–policy–practice nexus thinking ensures place representation in policy-making and encourages practice with the place in our hearts and in our minds. Such an approach supports the sustainable development of regions and localities where place characteristics drive considerations for net zero policy design and policy mixes.

Gap analysis advances an understanding of net zero business support and reveals a number of challenges faced by businesses when engaging with the net zero policy agenda. These challenges are characterised by a degree of misalignment between the place, policy and practice nexus dimensions. Drawing on the article findings, the following set of recommendations aimed at re-imagining business support towards the net zero transition can be drawn:

### *For policy*

- Net zero business support needs to become an integral part of Local Industrial Strategies and Strategic Economic Plans. A review of the net zero transition needs to be undertaken to understand the risks and the impact of the transition in a locality.



- This should inform the design of support mechanisms for an effective transition.
- The ecosystem approach in the design of agile business support provision opens opportunities for multi-stakeholder collaborations and partnerships in the delivery of business support interventions. As a result, the net zero capacity of the place advances.
- Deployment of place–policy–place nexus thinking in tackling the challenges of the net zero transition is helpful for designing policy mixes that are place based and practice relevant.
- An integrated model of support services that adopts a holistic approach to addressing business growth as well as carbon reduction challenges is likely to equip businesses better for the net zero transition. A multi-strand provision by design characterised by a seamless customer experience across a number of strands — for example, grants, R&D and consultancy — is proven to be the best practice nationally.
- Support the programmes to accelerate the scale and pace of the net zero transition. The availability of local evidence-based data on decarbonisation and green growth trends is a prerequisite for effective decision-making about the priorities and characteristics of net zero support programmes.
- There is a need for a greater alignment of strategy and collaborative work at a local level to ensure net zero targets and priorities are synchronised.
- Rural businesses need stronger representation in strategy documents. Rural challenges of engagement with the net zero transition need to be well understood and to inform the design of dedicated business support provision.
- Support development of net zero governance mechanisms that ensure ‘whole place’ representation, and effective and evidence-based decision-making. They should become enablers for multiple stakeholders to engage with policymakers and ensure the effectiveness of net zero policy instruments.

*For businesses support providers*

- Undertake a comprehensive review of business needs towards the net zero transition and design support interventions in alignment with the needs identified. Be mindful that not all sectors and communities will benefit from the net zero transition. Identify those who are at high risk and provide appropriate support to smooth the transition.
- Actively participate in local and national net zero governance mechanisms to ensure representation and access to the latest developments and opportunities for collaborative funding bids.

- There is a need to increase the business advisor capacity in local authorities and LEPs to accommodate the acceleration of the net zero transition. This should be supported by advisor upskilling programmes that ensure access to the latest technological, operational, industrial and societal innovations.
- Broaden the scope of the net zero business support beyond the traditional focus on energy efficiency and renewable energy. This includes development of competences in the areas of competitive strategy, responsible management and leadership, green funding and finance, collaborative working and stakeholder management.
- Such competences need to be developed over time and require *a transformative approach* in the delivery of business support. The ethos of such support is about *empowering* businesses to face the vision of their role in addressing climate challenges and *enabling* proactive and positive actions that strengthen the contribution of business towards sustainable development.

#### *For businesses*

- Businesses are encouraged to explore the opportunities presented by the net zero transition towards sustainable business growth and wide-scale decarbonisation in operations and through supply chains. Identifying and securing these opportunities in the locality reduces the risks and supports the pro-environmental business practices of a place.
- Approach the development of capability towards net zero holistically, and with strategic foresight. Although energy efficiency might be a starting point of the net zero journey, broader net zero skills and competences are required to succeed in the fast-emerging green market niches.
- Engage in a proactive dialogue with the policy community to shape net zero policy and the associated business support mechanisms, thus ensuring business representation in policy-making. Multi-stakeholder net zero networks and initiatives offer exciting opportunities for net zero capability development and innovation.

These recommendations have outlined target policy, business support providers and business as key stakeholder groups of the net zero support ecosystem. It is important to realise that such an ecosystem has many actors, for example regulators, professional networks and not-for-profit organisations, whose roles need to be better understood in the context of the net zero transition. Effective ecosystem governance and management need to become an integral part of local capacity building initiatives towards net zero.

Place has to become a bigger part of net zero support mechanisms in order to encourage policy buy-in and effective practice adaptation. This requires a deeper reflection of place specifics, including cultural, social, political and economic insights in policy discourse, local strategies and policy mixes. The availability of evidence-based regional data and analytical multi-stakeholder insights is necessary to inform policy-making and support provision. Enabling and partnership working between local and central government in shaping the focus, resourcing, delivery mechanisms and outcomes of net zero policy is necessary to ensure that local places flourish whilst undergoing the net zero transition. The success of the transition is place based, and is linked to how well the net zero initiatives are localised and supported; what opportunities they bring to the community; and how they contribute to community well-being and to building sustainable, resilient and inclusive places.

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## A people-centred approach is needed to meet net zero goals

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*Abstract:* To meet net zero goals, more drastic action is needed than is acknowledged by most policymakers, posing a major social challenge that will impact many aspects of people’s lives. This paper emphasises the importance of a people-centred approach for policy makers to achieve net zero effectively and rapidly while being alert to citizens’ needs and concerns. We advocate a comprehensive and inclusive public engagement strategy, discussing insights on four key questions to guide policymakers in developing successful engagement strategies. (1) How do climate-friendly social transformations happen?, (2) How can behavioural change for net zero be supported? (3) How can people be involved in decision-making on net zero?, and (4) How does climate change intersect with other societal challenges? We conclude with clear policy recommendations: government leadership at all levels (national, devolved, local), underpinned by a public engagement strategy for net zero, is needed in addition to fair and consistent policies that are transparent about the scale of action needed.

*Keywords:* People-centred approach, public engagement, behaviour change, government

*Note on the authors:* see end of article.

## Introduction

To achieve net zero goals, a rapid and society-wide transformation is necessary.<sup>1</sup> This requires widespread adoption of low-carbon technologies as well as significant lifestyle changes, which cannot happen without meaningful public engagement.<sup>2</sup> While concern about the climate crisis is at an all-time high, there is a lack of awareness among sections of the general public of the scale of changes needed to meet carbon targets.<sup>3</sup> A dedicated engagement strategy can help build awareness of the need and support for change by involving the general public in the decision-making processes and the delivery of net zero.<sup>4</sup>

Involving people and putting them at the centre of change is crucial to achieve net zero rapidly, effectively and equitably; in particular in affluent countries such as the UK with high consumption-based emissions<sup>5</sup> that need to be reduced as fast as possible.<sup>6</sup> There are large differences in personal carbon emissions as well as in people's ability to reduce them. Attempts to bring about far-reaching change will therefore only work if they are seen as fair, for example through processes that put people across all segments of the public at the centre of policies and decision-making.<sup>7</sup>

Personal action on climate change involves more than changes in individual behaviour, such as reducing energy use or using public transport. It includes multi-faceted behavioural changes such as political action, participation in community initiatives, activism, climate conversations, and more. Hence, we argue that behaviour and lifestyle change is not solely an individual responsibility,<sup>8</sup> but requires clear government leadership and policies to provide the conditions that enable people, communities and institutions to transition to net zero.<sup>9</sup> However, while the importance of behavioural and lifestyle change is increasingly recognised in policy circles,<sup>10</sup> there is a reluctance in government to be seen to 'tell people what to do' and to involve the public into decision-making. This means that a coherent strategy to establish change is currently missing.

<sup>1</sup> Moore, B. *et al.* (2021)

<sup>2</sup> Whitmarsh, L. *et al.* (2021)

<sup>3</sup> Demski, C. *et al.* (2022a)

<sup>4</sup> House of Lords: Environment and Climate Change Committee (October, 2022)

<sup>5</sup> United Nations Environment Programme (December, 2020)

<sup>6</sup> IPCC (2023)

<sup>7</sup> Howarth, C. *et al.* (2020), Capstick *et al.* (2020a)

<sup>8</sup> Whitmarsh, L. *et al.* (2021)

<sup>9</sup> House of Lords: Environment and Climate Change Committee (October, 2022)

<sup>10</sup> Skidmore, C., Rt. Hon. (January, 2023)

In this paper we first discuss this policy context in more detail, after which we set out why it is important to take a more people-centred approach to net zero and discuss key research insights to help policymakers develop a successful public engagement strategy for net zero policies.

## **Policy context**

In October 2021, the UK government set out its strategy to achieve net zero by 2050.<sup>11</sup> In five-year-long carbon budgets,<sup>12</sup> it has set several key milestones, including removing an increased amount of emissions through carbon capture and storage, ending the sale of petrol vehicles by 2030, a fully decarbonised power system by 2035, and a ban on gas boilers. Similarly, there are legally binding net zero targets in the devolved nations of Wales,<sup>13</sup> Northern Ireland,<sup>14</sup> and Scotland.<sup>15</sup> Over 570 local authorities in the UK have declared a climate emergency, with 95 per cent of the population living in those areas.<sup>16</sup> Many local authorities have made binding commitments to net zero and are implementing their plans locally.

Reaching net zero is also high up the agenda of current opposition parties. For example, the Labour Party clearly highlights the importance of policy interventions to bring about structural and transformational change.<sup>17</sup> In its 2019 manifesto<sup>18</sup> Labour set out the need for change especially in the energy, housing, food, and transport sector to achieve a just transition to net zero and in the lead-up to the next general election has prioritised a ‘fairer, greener future’ as one of its main campaigns.<sup>19</sup> Similarly, the Liberal Democratic Party put climate change amongst their top priorities in its manifesto<sup>20</sup> and measures to address the climate crisis are prominent in the policy proposals of the Scottish National Party<sup>21</sup> and Plaid Cymru.<sup>22</sup>

Although the UK Net Zero Strategy contains plans to transition to a decarbonised economy, it has been widely criticised for not going far enough and lacking

<sup>11</sup> BEIS (October, 2021a)

<sup>12</sup> CCC (December, 2020)

<sup>13</sup> Welsh Parliament (March, 2021)

<sup>14</sup> Northern Ireland Assembly (2022)

<sup>15</sup> Scottish Parliament (2010)

<sup>16</sup> Climate Emergency Declaration (April 2023)

<sup>17</sup> Labour Party (September 2018)

<sup>18</sup> Labour Party (2019)

<sup>19</sup> Labour Party Campaign (no date)

<sup>20</sup> Liberal Democrats (2019)

<sup>21</sup> Scottish National Party (no date)

<sup>22</sup> Plaid Cymru Party of Wales (August 2021)

appropriate funding. The UK High Court ruled that the strategy is unlawful as it does not meet the obligations under the Climate Change Act<sup>23</sup> which requires the government to produce policies that detail how the UK will meet its legally binding targets.<sup>24</sup> An independent review led by the former Energy minister, the Rt. Hon. Chris Skidmore MP, which was conducted in response to the publication of the UK Net Zero Strategy, argues that swift action is needed not only to mitigate climate change but also to avoid missing out on ‘the growth opportunity of the 21st century’.<sup>25</sup> The Climate Change Committee (CCC) emphasised in its latest assessment of the UK’s progress in reducing emissions<sup>26</sup> that there are still major policy gaps in the proposed strategy, especially in the areas of agriculture and land use and decarbonising buildings. Crucially, the assessment highlights the lack of ambitious strategies to reduce consumer demand for carbon-intensive activities, such as flying and specific dietary choices.

There is an increasing awareness that a failure to develop a comprehensive strategy to engage with the public on net zero, combined with a lack of ambition to reduce emissions linked to people’s lifestyles, risks carbon reduction targets being missed.<sup>27</sup> The House of Lords’ Net Zero and behavioural change report<sup>28</sup> estimated that a third of emission reductions involves decisions from individuals and households, both in terms of adopting low-carbon technologies and reducing carbon-intensive consumption. It concluded that the government needs to show leadership to enable behavioural change in these areas, which includes a responsibility for the government to clarify to the public what changes are needed and to establish a public engagement strategy to build public support for net zero delivery.

The policy context for net zero is, however, changing rapidly, with national and devolved governments, local authorities and city regions currently developing responses to a number of reviews and policies to deliver on net zero targets. For example, the UK government has recently responded to the Skidmore review;<sup>29</sup> the Welsh government is currently reviewing the Food (Wales) Bill,<sup>30</sup> which seeks to establish a more sustainable food system; the Northern Ireland Assembly is developing programmes to deliver on the Climate Change Act in Northern Ireland that

<sup>23</sup> UK Government (2008)

<sup>24</sup> Client Earth (July 2022)

<sup>25</sup> Skidmore, C., Rt. Hon. (January 2023)

<sup>26</sup> CCC (2022)

<sup>27</sup> IPCC (2022)

<sup>28</sup> House of Lords: Environment and Climate Change Committee (October, 2022)

<sup>29</sup> HM Government (March 2023)

<sup>30</sup> Welsh Parliament (2022)

came into effect in 2022,<sup>31</sup> and the Scottish government is in the process of integrating the ‘Local living and 20 minute neighbourhoods’ concept into its National Planning Framework.

## **Discussion of research insights**

### **Why and where is a people-centred approach needed?**

Efforts to meet net zero at scale require drastic and rapid emission reductions and must put people at the centre.<sup>32</sup> While not enough on its own, lifestyle change and individual contributions are inevitable to reduce emissions;<sup>33</sup> especially in high-carbon areas such as diet and agriculture, transport, heating and cooling, and material consumption. The introduction of different technologies, reconfiguration of urban environments, and changes in food production and availability — to name just a few potential changes ahead — may disrupt people’s day-to-day lives and require drastic changes to their lifestyle and norms. Similarly, there are multiple co-benefits that these changes can bring with them. For example, electrification of cars will also reduce air pollution — particularly in cities — reduce congestion and make active transport such as cycling more easy.<sup>34</sup> Likewise, a shift to a low-carbon diet can have tremendous health co-benefits, including a reduction in type II diabetes, obesity, various cancers, and cardiovascular disease related deaths,<sup>35</sup> while also saving costs for the NHS. Policymakers need to understand how people’s lives will be disrupted and integrate co-benefits and people’s lived experiences into their policy-making process.

It seems that the foundations for a shift towards a net zero compatible lifestyle are there. Many people generally have positive views towards low-carbon living.<sup>36</sup> But positive attitudes are not always linked to a carbon footprint in reality, a phenomenon called the attitude–behaviour gap. This disconnect varies across different behavioural domains; for example, people’s dietary carbon footprints tend to be more strongly linked to their attitudes than people’s transport carbon footprint.<sup>37</sup> This suggests that attitude change alone will not be enough to change people’s

<sup>31</sup> Northern Ireland Assembly (2022)

<sup>32</sup> Whitmarsh, L. *et al.* (2021)

<sup>33</sup> IPCC (2022)

<sup>34</sup> Carmichael, R. (2019)

<sup>35</sup> Cobiac, L.J. & Scarborough, P. (2019); Springmann, M., *et al.* (2016)

<sup>36</sup> Steentjes, K. *et al.* (2021)

<sup>37</sup> Verfuërth, C. *et al.* (2019)



lifestyle. Actively engaging people in a wider social transformation is needed to overcome the attitude–behaviour gap. As such, people and their communities play a central role in any attempt at achieving the society-wide and transformational change needed for reaching net zero goals. As the IPCC put it,<sup>38</sup> social transformation is ‘A profound and often deliberate shift initiated by communities toward sustainability, facilitated by changes in individual and collective values and behaviours, and a fairer balance of political, cultural, and institutional power in society’ (559). The transformation to net zero can therefore only be delivered through a people-centred approach that puts people at the heart of net zero policy development and implementation.<sup>39</sup>

A people-centred approach means that the general public are involved in decision-making and the delivery of net zero. It is a move away from a techno-centric approach towards a notion of people as agents of change of the net zero transformation. The task for policymakers at various levels, including national, regional and local, is to incorporate a people-oriented strategy for achieving net zero in locations where it will have the greatest impact and potential spillover effects into wider change. We identified three areas where a people-centred approach is most needed.

**First, fairness is key for driving the behavioural and lifestyle changes required to achieve net zero.** A people-centric approach is necessary in areas with high carbon emissions, which are mostly related to diet, agriculture, transport, heating and cooling, and consumption.<sup>40</sup> The wealthiest individuals and societies have higher emissions and more political power to resist policies that impact their lifestyles.<sup>41</sup> For example, the richest 1 per cent in Europe have, on average, a carbon footprint that is ten times that of the lowest 50 per cent income households: Transport emissions are particularly unequal and skewed towards wealthier groups.<sup>42</sup> This means that (a) wealthier people need to do more to reduce their proportionately higher emissions, and (b) that everyone, especially currently underrepresented voices, need to be involved on equal terms in developing net zero visions, for example through co-produced processes that aim to develop strategies and policies to reach net zero. Co-produced processes mean actively involving publics, who play a crucial part in shaping and driving a low-carbon transformations, in an equitable and participatory way to be truly effective.<sup>43</sup>

<sup>38</sup> IPCC (2018: 559)

<sup>39</sup> Howarth, C. *et al.* (2020)

<sup>40</sup> Whitmarsh, L. *et al.* (2021)

<sup>41</sup> Capstick *et al.* (2020a), Westlake, S. (2017)

<sup>42</sup> Capstick, S. *et al.* (2020b), Ivanova, D. & Wood, R. (2020)

<sup>43</sup> Nightingale, A.J. *et al.* (2020); Puaschunder, J. (2020)

**Second, in addition to technological solutions, a people-centred approach is necessary in areas where reducing emissions requires behavioural engagement.**<sup>44</sup> To date, emissions reductions have mostly been achieved through changes to energy systems behind the scenes. However, to achieve a low-carbon society and reach net zero, both systemic infrastructural changes and changes in behaviour are necessary and must work together.<sup>45</sup> Until now, climate policy has predominantly focused on technical solutions but demand-side reductions, such as lifestyle choices, consumption patterns, changes to consumption infrastructure and the adoption of low-carbon technologies, have become recognised as essential for rapid and drastic carbon reductions.<sup>46</sup> Without a focus on engaging people in lifestyle changes and wider societal changes, the current net zero goals is out of reach.<sup>47</sup>

**Third, to create lasting change, a people-centred approach is necessary in areas where wider societal and cultural shifts are required.** A concerted effort between policymakers, publics, politicians, businesses, and other stakeholders is necessary to drive cultural change so that new ways of life become normalised and embedded.<sup>48</sup> Individual behaviour is influenced by the social and cultural context, and changes to these are important preconditions for wider behavioural and lifestyle change. Soft informational or educational measures are insufficient for achieving significant lifestyle changes.<sup>49</sup> A holistic approach that includes both restrictive measures, such as road pricing, and encouraging measures, such as home insulation schemes, as well as timely interventions to influence habits<sup>50</sup> and societal narratives,<sup>51</sup> is necessary. It requires a public engagement strategy that includes multiple actors (e.g. stakeholders, sectors of the public, businesses, governments) across multiple levels of change (e.g. individual, community, national) using public deliberation and engagement processes.<sup>52</sup>

<sup>44</sup> CCC (2022)

<sup>45</sup> Creutzig, F. *et al.* (2016)

<sup>46</sup> Creutzig, F. *et al.* (2022)

<sup>47</sup> House of Lords: Environment and Climate Change Committee (October, 2022)

<sup>48</sup> Jordan, A. *et al.* (2022)

<sup>49</sup> Barrett, J. *et al.* (2022)

<sup>50</sup> Verplanken, B. & Whitmarsh, L. (2021), Mitev, K. *et al.* (forthcoming, 2023)

<sup>51</sup> Carmichael, R. (2019)

<sup>52</sup> Cherry, C.E. *et al.* (2021)

## How do climate-friendly social transformations happen?

Social transformations need the active engagement of multiple actors, including policymakers, non-governmental organisations, business and citizens. Sustained personal action has the potential to drive societal change from the ground up, helping to change norms and open up new opportunities for low-carbon living. At the same time, policy interventions or business innovation can have a substantial influence on the choices people make — reinforcing positive feedback between behavioural change and the conditions under which this takes place.

Emerging trends in people's diets offer a compelling example of this process. Over a ten-year period to 2019<sup>53</sup> data shows that a steady decline in households' red meat consumption in the UK has been associated with a reduction in food-based greenhouse gas emissions of 28 per cent. Over this same period, a move away from meat products was also accompanied by a doubling of consumption of plant-based alternative foods designed to replace or simulate meat.<sup>54</sup> Whereas an initial momentum for change was set in motion by deliberate choices on the part of some determined consumers, this has in turn been followed by manufacturers developing products suited to this growing market, resulting in a greater range and affordability of vegetarian and vegan options — that itself enables the trend towards reduced intake of meat.<sup>55</sup> As more people change their practices, social norms have followed suit, meaning that diets ranging from vegan to flexitarian have become more acceptable, desirable and accessible, particularly among millennials<sup>56</sup> and through developments in the hospitality sector.<sup>57</sup>

In a similar way, recycling behaviours over recent years have become more widespread, normalised and expected — enabling and being enabled by changing social and physical conditions. Whereas it once required substantial effort and conscientiousness on the part of citizens to recycle common household materials, weekly kerbside collections in which the majority of households participate have now become both routine and unremarkable.<sup>58</sup>

In both these cases, there are two features of personal action that are often overlooked in debates about low-carbon behaviours. First, while a personal decision to eat less meat or recycle diligently may be driven by one's own concerns or attitudes, it also has the potential for ripple effects whereby other people take notice

<sup>53</sup> Stewart, C. *et al.* (2021)

<sup>54</sup> Alae-Carew, C. *et al.* (2022)

<sup>55</sup> Saari, U.A. *et al.* (2021)

<sup>56</sup> Alae-Carew, C. *et al.* (2022)

<sup>57</sup> Riverola, C. *et al.* (2022)

<sup>58</sup> Thomas, C. & Sharp, V. (2013)

and act similarly; in this sense, personal action is a precondition for creating those very social norms and cultural shifts that favour or proscribe certain actions. Second, policy and structural measures that become more likely and feasible as a result of shifts in people's behaviour — whether vegan options on menus or local rules on household rubbish — are themselves able to accelerate and lock in desired ways of acting; a person's behaviour in this sense is neither entirely down to individual choice nor directed totally by circumstances, but arises from a mutually reinforcing interaction between personal agency and broader social and physical conditions. Such positive feedback loops between personal action and societal change have been termed 'spiral scaling',<sup>59</sup> through which the potential exists ultimately to enable more fundamental shifts in governance, culture and values that are more in line with genuinely sustainable societies. From the point of view of policymakers, these mechanisms should not be relied upon; rather they should be seen as opportunities that can be supported and accelerated; they may indeed proceed at a slow pace in the absence of any deliberate interventions to consolidate them.

It is also important to recognise special cases of personal behaviour and engagement that have the potential to exert outsize influence in the social and political sphere. Nielsen *et al.*<sup>60</sup> point to the particular role of wealthier groups in helping to address climate change as 'social change agents', including by acting as role models, in their roles within organisations, and as investors. Other influential and respected groups in society, such as health professionals and scientists, are likewise in a strong position when it comes to signalling the need for change, both through leading by example and by participating in advocacy and social movements pushing for more ambitious climate action.<sup>61</sup>

While behavioural change can be part of accomplishing wider social change in these ways, in other cases the actions of a subset of people will nevertheless struggle to compete with prevailing forces. For example, while there has been some evidence of nascent social norms emerging in opposition to regular flying,<sup>62</sup> even among those with high levels of environmental concern this practice remains commonplace.<sup>63</sup> Alongside this, there has been little to no action on the part of policymakers to change the conditions that promote and enable this carbon-intensive activity in the first place, such as by addressing the continued UK-wide expan-

<sup>59</sup> Newell, P. *et al.* (2021)

<sup>60</sup> Nielsen, K.S. *et al.* (2021)

<sup>61</sup> Cooke, E. *et al.* (2022), Capstick, S. *et al.* (2022a)

<sup>62</sup> Becken, S. *et al.* (2021); Gössling, S. *et al.* (2020)

<sup>63</sup> McDonald, S. *et al.* (2015)

sion of airports<sup>64</sup> or remedying pricing structures that favour flying over rail travel.<sup>65</sup> This is an example whereby the conditions set by current policy have not enabled initial changes to attitudes or personal action to lead to wider social change, despite the fact the prospect that society may be ‘just at the edge of tipping in the realm of social norms and beliefs’ concerning attitudes that are unfavourable towards air travel.<sup>66</sup>

Similarly, in the case of residential solar panels, there is persuasive evidence of peer effects or behavioural ‘contagion’, whereby the installation of a system by one household has the effect of measurably raising the likelihood of neighbouring homes following suit.<sup>67</sup> Nevertheless, an upward trend in installations in the UK in the early 2010s was replaced by a steep decline from 2015 as the financial support mechanism enabling this growth was curtailed.<sup>68</sup>

In contrast to these examples, some cases illustrate behavioural trends and enabling conditions that are counterproductive to climate action, such as the rapidly growing sales of inefficient and resource-intensive SUV vehicles dwarfing those of electric vehicles during the 2010s, partly enabled by cheap finance for consumers.<sup>69</sup>

The lesson across these examples is that behavioural and lifestyle change can help to set in motion climate-friendly social transformations; however, this is far from being an inevitable outcome of personal action and can be either facilitated or undermined by policy frameworks, or indeed by their absence. The mechanisms by which policymakers might support positive trends and inhibit negative ones will vary, but can broadly go with the grain of positive trends (for example, a desire among homeowners to instal solar panels) or conversely to push back against those trends which are counterproductive.

The next section discusses in more detail how governments and other stakeholders can facilitate and support behavioural change in line with net zero in more detail.

### **How can behavioural change for net zero be supported?**

Behavioural change is a central element of delivering net zero and is particularly needed where individuals, households and communities are able to contribute to

<sup>64</sup> Chapman, A. & Postle, M. (2021)

<sup>65</sup> Bell, L. (2021)

<sup>66</sup> Otto, I.M. *et al.* (2020)

<sup>67</sup> Graziano, M. & Gillingham, K. (2015)

<sup>68</sup> BEIS (2021b)

<sup>69</sup> Watson, J. (2019)

changes that reduce emissions. Different policy approaches are available that can be used to promote low-carbon behaviours, including but not limited to infrastructure investments, taxation and price incentives, bans or restrictions, and funding for community initiatives that promote low-carbon lifestyles.<sup>70</sup>

Low-carbon behaviours are driven by various factors, including (a) individual knowledge, values and emotions; (b) social factors (e.g. norms, group identity); and (c) practical factors, such as functionality, accessibility and price (e.g. of affordable sustainable food or low-carbon transport options).<sup>71</sup> Of these various drivers, individual factors such as knowledge have been found to be less influential in changing behaviour than wider social or physical factors.<sup>72</sup> Consequently, policy interventions that target individual decision-making or motivation (e.g. information provision) tend to be less effective than those that change conditions to make low-carbon behaviour easy, attractive and normal. These are typically referred to as ‘downstream’ and ‘upstream’ interventions, respectively.<sup>73</sup> While upstream measures, such as regulation, incentives and infrastructure changes,<sup>74</sup> have the potential to remove behavioural barriers that enable those motivated to act to do so, recent reviews suggest that policymakers still have a preference for less successful downstream approaches.<sup>75</sup>

Upstream interventions that remove barriers to behavioural change are key enablers for behavioural change. For instance, the expansion of cycling networks has been associated with a significant increase in cycling of up to a 24.7 per cent modal share in an analysis across European cities<sup>76</sup>. In fact, a modal shift away from car use towards active travel (i.e. walking and cycling) might only happen when the right infrastructure is put in place, as demonstrated by a quasi-experimental study in the UK.<sup>77</sup> In other areas, such as food, taxation and price incentives have been found to be effective. For example, the introduction of the ‘sugar tax’ in the UK has been found to reduce obesity amongst children, especially for those living in deprived areas<sup>78</sup> and a 30 per cent financial incentive on fruit and vegetables was found to be effective in increasing fruit and vegetable purchases amongst consumers

<sup>70</sup> Nicholas, K. (2019)

<sup>71</sup> Stern, P.C. (2000)

<sup>72</sup> Nisa, C. *et al.* (2019)

<sup>73</sup> Verplanken, B. & Wood, W. (2006)

<sup>74</sup> Nisa, C. *et al.* (2019)

<sup>75</sup> Kelly, M.P. & Barker, M. (2016), House of Lords: Environment and Climate Change Committee (October, 2022)

<sup>76</sup> Mueller, N. *et al.* (2018)

<sup>77</sup> Song, W. *et al.* (2017)

<sup>78</sup> Rogers, N.T. *et al.* (2023)

in supermarkets.<sup>79</sup> These and other examples illustrate the important role policy-makers and governments play in supporting behavioural change for net zero. But, crucially, interventions aimed at changing individual behaviour need to be embedded in wider systems thinking to deliver on the transformational change needed to reach net zero.<sup>80</sup>

Evidence further indicates that interventions are more effective when they (a) are targeted to the specific needs and abilities of the intended audience(s);<sup>81</sup> (b) are implemented at times when people are most open to change,<sup>81</sup> for example travel behaviour of residents who have recently moved, because they do not have fully formed travel habits yet and therefore are more amenable to change;<sup>82</sup> and (c) combine different measures that address multiple behavioural drivers and barriers at the same time, for example combining information with financial incentives and provision alternatives has been found to be more effective at promoting coffee cup reuse than information alone.<sup>83</sup> There is, however, a need to identify approaches that are scalable to establish society-wide change. Many interventions have shown effective increase in specific samples or populations, often under controlled conditions. Larger scale trials in real-life settings are therefore needed to establish whether the interventions can be used to engender change across the population.<sup>84</sup>

Integrating psychological concepts and evidence from individual-level approaches with more community and population-level approaches is key to understanding the role people may play in the net zero transition.<sup>85</sup> Most psychological research focuses on people's roles as consumers and has neglected other roles they may have in society. People can also reduce their emissions as citizens, investors, participants in organisations and community members. Personal actions to address climate change are therefore not limited to individual 'consumer' behaviour, such as reducing energy consumption or using public transport, but also include political action (e.g. voting), participation in grassroot activities (e.g. engaging in community initiatives), activism (e.g. taking part in a protest), engaging in climate conversations (e.g. with family and friends) and more<sup>86</sup>. These actions can set in motion processes that will produce the wider societal changes needed to reach net zero. Climate activism can put pressure on economic and political actors to change

<sup>79</sup> Taufik, D. *et al.* (2019)

<sup>80</sup> For a more nuanced debate, see also Chater, N. & Loewenstein, G. (in press).

<sup>81</sup> Galvin, R. (2013), Verplanken, B. & Whitmarsh, L. (2021)

<sup>82</sup> Bamberg, S. (2006)

<sup>83</sup> Poortinga, W. & Whitaker, L. (2018)

<sup>84</sup> Indig, D. *et al.* (2018), Balvanera, P. *et al.* (2017)

<sup>85</sup> Nielsen, K.S. *et al.* (2021)

<sup>86</sup> Whitmarsh, L. *et al.* (2021)



their policies and behaviours,<sup>87</sup> and sway public opinion on the topic.<sup>88</sup> Engaging in conversations with friends and family has been shown to spread awareness and enable and normalise low-carbon lifestyles.<sup>89</sup>

### **How can people be involved in decision-making on net zero?**

Perceptions of fairness are a key predictor of policy acceptance,<sup>90</sup> which includes the notion that all perspectives are sufficiently considered as well as that the outcomes of the policies are distributed fairly.<sup>91</sup> As such, effective public engagement through participation (i.e., processes that involve people in decisions) can build an important public mandate for action.<sup>92</sup> Public involvement in decision-making is important for fostering acceptance and addressing contextual factors or constraints to efficacy. For example, at a local authority level, public engagement processes (e.g., citizen jury, citizens' assembly) can be used to involve citizens in local transport and other planning processes.<sup>93</sup> It is also important for building awareness of the need and support for change, revealing the multiplicity of values and circumstances of different groups across society, and ensuring that policies and interventions are enacted in a fair way.

Interactions between people and government institutions commonly involve three processes of information flow, most of which tend to be one-way, such as from policymakers to the public (e.g. communication campaigns, advice services) or from the public to policymakers (e.g. responses to consultations or surveys). Public *participation* is a form of engagement that enables a two-way flow of information (e.g. policymakers ↔ public).<sup>94</sup> It is widely accepted that all three forms of information flow are needed to successfully achieve policy goals around net zero.<sup>95</sup> Nonetheless, the majority of existing government approaches tend to rely on one-way mechanisms. While they are more resource intensive, methods that enable two-way information flows are particularly important for 'wicked' issues (such as climate change) that involve complex socio-cultural and technical concerns, high levels of uncertainty, are value laden, and where no single solution exists<sup>96</sup>.

<sup>87</sup> Fisher, D.R. & Nasrin, S. (2021)

<sup>88</sup> Swim, J.K. *et al.* (2019)

<sup>89</sup> Goldberg M.H. *et al.* (2019), Beery, T. *et al.* (2021)

<sup>90</sup> Ipsos and the Centre for Climate Change and Social Transformations (2022)

<sup>91</sup> Cherry, C. *et al.* (2018), Demski, C. *et al.* (2015)

<sup>92</sup> Howarth, C. *et al.* (2020)

<sup>93</sup> Cherry, C.E. *et al.* (2021)

<sup>94</sup> Rowe, G. & Frewer, L.J. (2005)

<sup>95</sup> Demski, C. (2021)

<sup>96</sup> Butler, C. *et al.* (2015)

Collaborative and participatory approaches by contrast, offer a way to engage in dialogue between government, businesses and stakeholders, including members of the public, about the different ways of addressing such a wicked issue.<sup>97</sup>

Common examples of forums that aim to encourage participation include public hearings and planning consultations, which are often used to, at least in part, inform local decision-making. More recently climate assemblies and juries<sup>98</sup> at national and local levels have also attempted to include members of the public in more strategic decision-making. This form of two-way exchange invites randomly selected members of the public to learn about, exchange views, and provide recommendations on climate policies and actions. These public engagement exercises all differ in scope, structure and design and hence their outcomes are diverse, with some more integrated into actual policy-making than others.<sup>99</sup> Across all of them, however, the inclusion of diverse groups is a central principle, but is often difficult to achieve especially when certain groups in society are not represented or face barriers to engaging fully.<sup>100</sup> Barriers include having the time and resourced to attend events, or the knowledge and confidence to contribute within the format of an invited space of engagement. For example, research has shown that those on the margins of society (e.g., on low incomes or experiencing homelessness, groups facing systematic discrimination, young people) often do not have the confidence to voice their views in many formal engagement processes.<sup>101</sup>

One way to enable greater diversity in perspectives is to empower and listen to emergent forms of participation<sup>102</sup>, in addition to two-way incited participation as discussed above. Such citizen-led forms of engagement may include grassroots or social innovations such as energy community groups, energy co-ops, faith-based or school initiatives and so on. These more informal places of engagement allow particular groups of people (e.g. children, ethnic minority groups) to express what is important to them and what they need to participate in climate action. Such citizen-led engagement can bring to the fore viewpoints on net zero policies that may otherwise be missed in invited engagement processes.<sup>103</sup> Groups engaged in this form of participation could provide useful intermediaries for decision-makers attempting to understand more diverse perspectives on net zero policies. For example, local authorities could systematically recognise local/community

<sup>97</sup> Fiorino, D.J. (1990)

<sup>98</sup> OECD (2020)

<sup>99</sup> Cherry, C.E. *et al.* (2021)

<sup>100</sup> Berry, L.H. *et al.* (2019)

<sup>101</sup> Cornwall, A. (2002)

<sup>102</sup> Chilvers, J. *et al.* (2017), Burke, M. *et al.* (2018)

<sup>103</sup> Wesselink, A. *et al.* (2011)

engagement efforts that are already happening in their area to better understand the effects policies and decisions might have on different groups within a particular place. Funding innovative ways for community building, for example providing access to local community food initiatives for low-income households, can connect otherwise disconnected groups with their local community while also participating in low-carbon lifestyle practices.<sup>104</sup>

Research has also shown that participatory engagement is most successful when combined with other approaches (e.g. climate assemblies combined with communication strategies), involves continuous rather than one-off activities, and is appropriately targeted (e.g. well-identified local challenges or policies requiring input from residents).<sup>105</sup> Given this, a government-led public engagement strategy should provide coordination and joined-up thinking to develop genuine societal dialogue on net zero that combines existing approaches (e.g. communications, consultations, surveys) with new forms of participation (assemblies, community engagement). This would include enabling (e.g. through resourcing, providing overarching communication strategies) different actors (e.g. local authorities, trusted organisations) to deliver diverse but connected public engagement initiatives across scales. Indeed, effective dialogue on how to reach net zero will need to go beyond a two-way exchange between government and the public and comprise multiple stakeholders including those from private and third sectors to debate and discuss solutions.

### **How does climate change intersect with other societal challenges?**

It is important to acknowledge that climate change does not exist in isolation but intersects with other societal crises and challenges, and this has implications for public engagement with climate change. In previous decades, increased public concerns about non-climate issues have typically reduced concern for climate change. This is thought to happen because people have a ‘finite pool of worry’ and as such do not have the capacity to worry about multiple issues at the same time.<sup>106</sup> For example, during the financial crisis of 2008, the salience of climate change as an important issue declined dramatically as concerns about costs and the economy rose sharply.<sup>107</sup> This suggests that more immediate concerns, such as economic hardship, crowd out more ‘psychologically distant’ risks, such as climate change.

<sup>104</sup> Verfuherth, C. *et al.* (2023)

<sup>105</sup> Demski, C. (2021), Sippel, M. *et al.* (2022)

<sup>106</sup> Weber, E.U. (2006)

<sup>107</sup> Capstick, S. *et al.* (2015)

More recent research, however, shows that this is changing, and high climate concern is now a stable part of public perceptions.<sup>108</sup> This concern about climate change has *not* diminished in the face of two of the most prominent crises facing the UK in the last few years — the COVID-19 pandemic and the energy price and cost-of-living crisis.

Concern about climate change remained high, or even increased, during and after the COVID-19 pandemic.<sup>109</sup> Indeed, at the height of the pandemic, concern about COVID-19 was only slightly higher than concern for climate change.<sup>110</sup> In 2022, worry about COVID-19 markedly declined (27 per cent reported being very or extremely worried), but concern about climate change remained at record levels — 46 per cent reported being very or extremely worried.<sup>111</sup> Support for climate mitigation policies, such as measures to decrease meat consumption and flying, was higher during the COVID-19 pandemic than in 2019 and continues to enjoy high support<sup>112</sup>. This trend appears to be replicated in the face of the cost-of-living crisis currently facing the UK and many other countries. As concerns about energy security and the cost of living are at an all-time high (71 per cent very or extremely worried), concern about climate change also remains high (46 per cent very or extremely worried). Moreover, those who are more worried about the cost-of-living crisis also tend to be more worried about climate change and are more willing to engage in energy saving behaviours and support related policies (e.g. phasing out of gas boilers, regulations on energy efficiency).<sup>113</sup> This indicates that concerns about climate change and cost of living go hand in hand and lend support to policies that can address both concerns.

Indeed, action on climate change has numerous potential co-benefits across a number of other areas such as health and well-being.<sup>114</sup> In fact, most behaviours (i.e. 79 per cent) associated with reducing carbon emissions have been linked to subjective well-being; for instance, diet change with health benefits, active transport with improved air quality.<sup>115</sup> Similarly, a cross-country study showed a positive link between subjective well-being and low-carbon behaviours across diverse cultures in both the Global North and Global South.<sup>116</sup> Isham<sup>117</sup> *et al.* found that

<sup>108</sup> Evensen, D. *et al.* (2021)

<sup>109</sup> Whitmarsh, L. *et al.* (2022)

<sup>110</sup> Whitmarsh, L. (2020)

<sup>111</sup> Demski, C. *et al.* (2022b)

<sup>112</sup> Whitmarsh, L. *et al.* (2020)

<sup>113</sup> Demski, C. *et al.* (2022a)

<sup>114</sup> Karlson, M. *et al.* (2020)

<sup>115</sup> Creutzig, F. *et al.* (2022)

<sup>116</sup> Capstick, S. *et al.* (2022b)

<sup>117</sup> Isham, A. *et al.* (2022)

materialistic values, which are strongly associated with high-carbon lifestyle choices (e.g. materialistic consumption), are negatively linked to sustainable well-being behaviours. Moreover, research shows that public concern for other societal challenges (linked to these co-benefits) is also high. For example, in 2021, alongside concerns for climate change, people also reported high levels of concern about the destruction of biodiversity (51 per cent) and air pollution (37 per cent). Similarly, strengthening social cohesion is highly valued by those involved in grassroots community initiatives.<sup>118</sup> These findings suggest that climate policies and interventions should be designed in a way that maximise potential co-benefits and address concerns beyond climate. Showing how action can be taken across multiple challenges is also important for net zero public engagement and communication more widely.

Communicating the co-benefits of climate action has been shown to be effective for motivating climate engagement. It enables messages to tap into more than just environmental values, and highlights how action can address multiple concerns people have about transitioning to low-carbon futures.<sup>119</sup> For example, in a study across 24 countries, Bain and colleagues<sup>120</sup> found that messages highlighting benefits framed around economic and scientific advancement, or a more caring community, were effective in motivating diverse climate actions. Other studies have found that messages focused on public health or national security can be similarly motivating.<sup>121</sup>

Simple framing of communication is, however, not always effective,<sup>122</sup> and tailoring communications to audiences and the target behaviour or policy is important.<sup>123</sup> For example, a research programme examining what narratives of climate action are more likely to appeal to Conservative voters in the UK<sup>124</sup> found that a narrative on reducing waste produced more agreement among voters from across the political spectrum, whereas a narrative on justice tended to polarise participants, with Conservative voters finding this narrative less appealing.<sup>125</sup> Highlighting particular issues over environmental concerns can also backfire. This may be the case especially for economic and cost-saving frames. Messages that focus purely on cost saving are likely to undermine further climate action (e.g., by limiting

<sup>118</sup> Furness, E. *et al.* (2022)

<sup>119</sup> Demski *et al.* (2022a), Demski, C. *et al.* (2015), McLoughlin, N. *et al.* (2019)

<sup>120</sup> Bain, P.G. *et al.* (2016)

<sup>121</sup> Maibach, E.W. *et al.* (2010), Myers, T. *et al.* (2012), Badullovich, N. *et al.* (2020)

<sup>122</sup> Bernauer, T. & McGrath, L.F. (2016), Wolstenholme E. *et al.* (2020)

<sup>123</sup> Kotcher, J. *et al.* (2021), Herrmann A. *et al.* (2020)

<sup>124</sup> Shaw, C. *et al.* (2019), Shaw, C. & Corner, A. (2017)

<sup>125</sup> Whitmarsh, L. & Corner, A. (2017)

positive behavioural spillover from one action to another) because people's environmental values are not activated.<sup>126</sup>

This suggests simply leaving climate out of the conversation is not a recommended communication strategy. Messages intending to motivate climate action need to show people how low-carbon choices are consistent with their wider value set, addressing multiple concerns they have about the kind of world they want to live in, and telling a positive story about a desirable future. Research on values and future visions of low-carbon lifestyles have found a range of concerns that people want to see addressed, such as health; fairness; autonomy and choice; energy security and safety; environmental protection; passing over a good world to our children; protection of vulnerable groups; social cohesion, etc.<sup>127</sup>

Indeed, research shows that people expect governments to take responsibility<sup>128</sup> and show leadership, for example by setting out an overarching strategy for how to achieve climate targets.<sup>129</sup> As such, a successful engagement strategy should have, at its core, a set of integrated engagement efforts to co-produce such a vision and build a mandate for the types of social transformations required to meet our climate targets. Such an overarching narrative could raise awareness of the scale and speed of change required, emphasise how different policies and strategies (e.g., across sectors and scales) are integrated to achieve an overarching goal, and showcase how people's collective and personal actions can contribute to wider societal transformations.

## Conclusions and policy recommendations

Taken together, we have demonstrated that there is a clear need for a more people-centred approach to achieving net zero and for a public engagement strategy on climate change. Achieving these two aims is not trivial and needs to consider a broad range of issues. We have discussed key research insights around four important questions to help policymakers and others develop a people-centred approach and successful public engagement strategy for net zero.

***How do climate-friendly social transformations happen?*** Behavioural and lifestyle changes are not inevitable outcomes of personal action, but require supportive policy frameworks and interventions to effectively drive climate-friendly

<sup>126</sup> Evans, L. *et al.* (2013), McLoughlin, N. *et al.* (2019)

<sup>127</sup> Demski, C, *et al.* (2015), Sippel, M. *et al.* (2022), Climate Assembly UK (2020)

<sup>128</sup> Steentjes, K. *et al.* (2021)

<sup>129</sup> Demski, C. *et al.* (2015)

social transformations. As such, social transformations need active engagement of multiple actors including non-governmental organisations, business actors and citizens, and to recognise the connections between these groups. Individual behaviour can create ripple effects that influence wider society — by reshaping social norms, signalling market demand and providing a mandate for political action — equally, government policy and business activity can help create supportive conditions for low-carbon actions by individuals.

***How can behavioural change for net zero be supported?*** To understand the role of people in achieving net zero, policymakers must integrate multiple approaches at different levels, including individual, community and population levels. Political action, participation in community initiatives, activism and engaging in climate conversations all have the potential to drive societal changes necessary for reaching net zero. ‘Downstream’ approaches that focus solely on changing individual behaviour are less effective than ‘upstream’ approaches that remove contextual barriers, such as an absence of feasible low-carbon transport options in many communities. Targeting approaches to different needs and key decision-points, alongside an ongoing process of public engagement is crucial and a process that needs to be co-led by policymakers and other stakeholders.

***How can people be involved in decision-making on net zero?*** Public participation in decision-making can raise awareness of the need for change, provide a mandate for policy, identify possible barriers to change and ensure policies are fair. Interactions between people and governments typically involve a one-way flow of information (e.g. public information campaigns, opinion surveys). However, for public participation in decision-making processes, ongoing dialogue is needed. A government-led public engagement strategy should develop a genuine societal conversation on net zero that combines existing approaches (e.g. communication, consultations, surveys) with new forms of participation (e.g. assemblies, a national climate conversation and community-based engagement).

***How does climate change intersect with other societal challenges?*** Climate change intersects with many other societal crises and challenges, which has implications for public engagement on net zero. We demonstrated that concerns about climate and other priorities (e.g. cost of living) are closely connected and can lend support for policies that can address multiple concerns. Political leadership is needed to set out an overarching strategy and narrative to achieve net zero targets, demonstrating how this can deliver wider societal benefits.



Policy recommendations:

- To foster societal transformation, governments at all levels (national, devolved, local) should provide clear leadership and design fair and consistent policies that facilitate behavioural and broader systemic change, maximise potential co-benefits and address concerns beyond climate based on active engagement from people across society.
- To change behaviour, governments should develop policies (including regulations and economic measures) that reduce barriers to climate action and make low-carbon behaviour easier and more attractive for the public and businesses. This includes promoting investment in infrastructure and projects that enable low-carbon lifestyles (e.g. food production aligned with healthy diets low in meat and dairy) while also ending or discouraging investment in those that are counterproductive or encourage the continuation of high-carbon lifestyles (e.g. airport expansion). Approaches to changing behaviours and lifestyles must go beyond the current limited framework of small-scale and voluntary consumer choices.
- To achieve net zero, governments need to create a public engagement strategy, which:
  - recognises that social transformations occur through a mutually reinforcing interplay between personal actions and structural conditions, which can either facilitate or hinder wider social change;
  - develops genuine societal dialogue on net zero by combining existing approaches (e.g. communication, consultations, surveys) with new forms of participation (assemblies, community engagement) to integrate multiple voices across society;
  - co-produces a clear vision for net zero and builds a mandate for the social transformations required to meet our climate targets;
  - informs and raises awareness of the need for change, the direction of travel, and the roles people can play in helping achieve net zero with clear examples of low-carbon living;
  - includes communication about net zero that shows how a net zero future aligns with wider societal goals and values (e.g. health, social cohesion, economic security);
  - invests in innovative interventions and trials, with a view to disseminating and scaling up what works (and avoiding ineffective approaches).

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# Going down the local: the challenges of place-based net zero governance

*Tom Bedford, Philip Catney and Zoe Robinson*

*Abstract:* Place-based decarbonisation is emerging as a significant element in the UK government's net zero agenda, specifically through central government devolution deals. Such localised governance has the potential to reap social and economic benefits for communities whilst also potentially delivering on net zero goals. However, pre-existing institutional constraints and unresolved tensions remain, such as the uneven distribution of initiatives across areas and the fiscal limitations within local authorities. These could potentially exacerbate regional inequality rather than promote a just transition.

This report characterises the current governance regimes and challenges to net zero delivery in four parts of the Midlands: Coventry, Nottingham, Leicester and Staffordshire. It highlights variation in local-scale action and identifies the constraints to multi-scalar governance for net zero. It recommends cultivating policy innovation, particularly to align planning with the net zero transition and identifies the potential role of regulatory sandboxes to this end as well as community ownership.

*Keywords:* Net zero, place-based decarbonisation, multi-scalar governance, policy innovation, regulatory sandboxes, community ownership.

*Note on the authors:* see end of article.

## Introduction

Place-based decarbonisation refers to reducing greenhouse gas emissions and transitioning towards a low-carbon economy at various spatial scales. This approach recognises that different places have different opportunities and challenges when it comes to reducing emissions and transitioning to renewable energy sources. Both the recent Skidmore Review<sup>1</sup> and Climate Change Committee<sup>2</sup> reports emphasised the need for place-based decarbonisation to drive ambitious local action across the UK. Place-based transitions also have the potential to offer lower-cost decarbonisation, with greater social benefits (though largely expressed by government in economic terms)<sup>3</sup>. The Climate Change Committee sees the importance of recognising the local challenges and enablers for action as crucial for climate action by local areas.<sup>4</sup> An example of how the UK government characterises local action can be seen in March 2023's *Powering Up Britain — The Net Zero Growth Plan*:

**Local areas play an integral role in supporting the transition to net zero.** Local authorities have strong powers, assets, and responsibilities across many of the areas where emissions reductions are needed, and civil society organisations can enable communities to take collective action to accelerate the net zero transition in their neighbourhoods. Local government is also uniquely placed to attract private sector net zero investment that wouldn't otherwise be obtained; maximising the local opportunities the transition will bring, such as the growth of green jobs and skills.<sup>5</sup>

In this view, place-based decarbonisation is a model of decentralised governance which encourages networking between local organisations to produce incremental changes at the local scale. Local government is central to this approach by developing climate action plans and orchestrating coordinated local action between institutions and groups. This is a technocratic, depoliticised conception of the role and potential of the local scale and it can be contrasted with the more radical view of various environmental movements that seek to produce more transformational change through local action.<sup>6</sup> These are two archetypes for identifying the differences between the dominant government discourse on net zero and more radical projects which seek to transcend materialist, growth-centred political projects. While the latter approaches contain much that is imaginative in challenging

<sup>1</sup> Skidmore, C., Rt. Hon. (2023)

<sup>2</sup> CCC (2022)

<sup>3</sup> Innovate UK (2022)

<sup>4</sup> CCC (2020)

<sup>5</sup> DESNZ (2023a)

<sup>6</sup> de Moor, J. *et al.* (2021). See also Catney, P. & Doyle, T. (2011)

economic orthodoxy and dominant systems of production, our concern in this paper is to explore the ways in which the government-centred model is materialising on the ground. This is important because, while place-based solutions are much vaunted, there is little agreement on what institutional and leadership form this can and should take. There is hence a need to better understand the important role of governance, its uneven geographies, and the agency open to subnational governments in England in driving net zero action. We seek to examine the variegated forms of local activities emerging in different areas and assess whether current policies directed towards the net zero transition are adequate to address the overlapping and systemic dangers of climate change. This paper offers an overview of the challenge of developing a policy framework that could support a context-sensitive, place-based net zero transition.

The paper is organised into three parts. The first part offers an overview of the governance and policy context for place-based decarbonisation, focusing particularly on the existing structures, processes and policies for supporting the transition, particularly as these apply to varying geographical scales and issues of environmental justice. In the second part, we draw upon recent fieldwork which engaged with local actors from four areas of the Midlands to understand the current state of net zero governance. We conclude by exploring how our research can inform the broader net zero governance landscape and what governance system could be developed to address the challenges of multi-scale governance for net zero.

## **Policy context**

### **The changing nature of governance in the UK**

Alongside commitments to reduce emissions in line with their pledged Nationally Determined Contributions (NDCs), the UK has pledged to reduce emissions to net zero by 2050.<sup>7</sup> However, action and policy do not currently align with commitments, as evidenced by the 2022 High Court<sup>8</sup> ruling against the UK government for an inadequate net zero strategy with a lack of policy in place to reach its targets. In the UK, emissions come from a variety of sectors with 25 per cent of all emissions linked to energy supply, 18 per cent from business, 34 per cent from transport and 17 per cent from domestic properties.<sup>9</sup> To keep global warming below the critical

<sup>7</sup>UK Government (2019)

<sup>8</sup>Friends of the Earth, Client Earth, Good Law Project v Secretary of State for Business, Energy and industrial Strategy [2022]

<sup>9</sup>DESNZ (2023b)

threshold of 1.5 degrees Celsius,<sup>10</sup> rapid decarbonisation must occur. This requires different ways of working and the need for dynamic, collaborative relationships across different spatial and temporal units.<sup>11, 12</sup> This need for multi-scale action has long been recognised in academic debates, and it is increasingly becoming incorporated into public policy agendas. The increasing prominence of the concept of polycentricity — in both academic debates and increasingly in policy practice — is indicative of the growing recognition of the need to work across different scales, particularly the importance of local-scale experimentation with systems of governance.<sup>13</sup>

England offers a challenging case for place-based decarbonisation as it has one of the most centralised governance structures in the developed world.<sup>14</sup> Despite this growing acceptance of polycentric approaches, there remain contrasting interpretations of the role of the local scale by governments but also how different localities see their own potential role in terms of experimenting with new policies and technical innovations or being policy takers, waiting for national or regional governmental leadership. In devising place-based action, there is hence a tension between policy agendas often set in Westminster and Whitehall and locally coordinated action between actors concerned with achieving decarbonisation. Both the Climate Change Committee<sup>15</sup> and Skidmore Review<sup>16</sup> recommend that the role of local authorities as leaders in this challenge should be enhanced, due to their understanding of their ‘place’. In their 2020 report on local authorities, the Climate Change Committee,<sup>17</sup> notes that local authorities have the capacity to influence roughly one third of local emissions (through their operational activities and other local engagement and influencing activities). However, in practice, local authorities, particularly two-tier authorities, are constrained in their legal powers with many unable to leverage action on key areas such as transport and agriculture. Hence, this limits the potential for policy innovation as local areas have limited scope for niche policy development, which could then enter mainstream policy discourse. These constraints are recognised by the Climate Change Committee, which adopts a realistic approach to local authorities as leaders, recognising local authority major budgetary constraints as a limiting factor for action and differing local powers.

<sup>10</sup> IPCC (2018)

<sup>11</sup> Leck, H. & Simon, D. (2013)

<sup>12</sup> CCC (2020)

<sup>13</sup> Ostrom, E (2012)

<sup>14</sup> Copus, C. *et al.* (2017)

<sup>15</sup> CCC (2022)

<sup>16</sup> Skidmore, C., Rt. Hon. (2023)

<sup>17</sup> CCC (2020)

To address these concerns, Westminster and Whitehall have enacted policies to devolve powers to different regions of England to potentially create more policy flexibility. By 2024, over 50 per cent of England's population is expected to be covered by a mayoral devolution deal, a significant rise from 20 per cent in 2014.<sup>18</sup> The Department for Levelling Up, Housing and Communities sees mayors as key strong local leaders in these devolved areas<sup>19</sup> and a key element of delivering on the goal of levelling. The Skidmore Review echoes this view, emphasising the importance of local leadership: 'Each community will have a different path to net zero.' Skidmore highlights major metropolitan areas such as Manchester as exemplars for achieving net zero, offering such areas as models of success which should be replicated. This devolutionary process in England has been selective and has created a complex and uneven system of multi-scalar governance.<sup>20</sup> The interrelationships between local actors, including local authorities, metro-mayors, and other local actors, are poorly defined and with much confusion about how much local areas can engage in policy innovation to develop place-based approaches and how their policies feed into national policy.<sup>21</sup> This asymmetrical process of spreading institutions and resources has not been ameliorated by the levelling-up agenda, which has the declared aim of reducing regional inequality and improving the scope for local action. A recent assessment of the levelling-up process<sup>22</sup> outlined several shortfalls with the new devolution deals, particularly resulting from national short-termism, funding constraints, and 'a patchwork approach to devolution which leaves local areas lacking capacity, powers, or finance'.<sup>23</sup> Indeed, the levelling-up funding model approach was recently criticised for creating a begging bowl culture by West Midlands Metro Mayor Andy Street,<sup>24</sup> based on political considerations rather than project merit. Given these constraints and the growing challenges for tackling climate change, it is expected that local areas will face many impediments to delivering the necessary rate and scale of decarbonisation action, a notion that is reflected in the broader literature.<sup>25</sup>

From what started as a (select) few devolution deals, most of England's population will soon be covered by some form of devolution deal. This has offered major cities a privileged position from which to begin their net zero journeys. In

<sup>18</sup> Institute for Government (2023)

<sup>19</sup> Ibid

<sup>20</sup> Catney, P. & Henneberry, J.M. (2016)

<sup>21</sup> Billing, C. *et al.* (2019)

<sup>22</sup> Fransham, M. *et al.* (2023: 12)

<sup>23</sup> Ibid

<sup>24</sup> Street, A. (2023)

<sup>25</sup> Gudde, P. *et al.* (2021)



contrast, smaller settlements are hamstrung in their scope for local action due to their generally weaker ability to lobby national government for more resources and have potentially limited ability to network with well-resourced organisations to engage in innovative approaches.<sup>26</sup>

The challenge of delivering a just net zero transition — where communities are not disadvantaged in pursuing action due to their location and associated major employers — is one that has received limited attention from national policymakers. By developing various institutional innovations without an overarching design, insufficient regulatory flexibility and distributing resources without a clear framework to ensure genuine levelling up, national government has created a system which lacks the coherence of federal systems and hampers the potential learning capacity of a genuinely polycentric system. As we discuss in the next section, in the context of place-based decarbonisation, some areas have benefited from this process, but the system overall has produced a bias towards larger and better-resourced areas, although there is evidence that even these areas have not been enabled to pursue an advanced form of collaborative action.

### Place-based net zero

As noted above, the dominant government discourse and practice around place-based decarbonisation has been focused on the technology mix within a specific area, for example, implementing housing retrofit or diversifying the energy supply.<sup>27</sup> The strength of this approach is that different technical opportunities within any given place are to a degree recognised and encouraged. However, this technocratic approach does not by design ensure that justice for communities is served. Several aspects of a just energy transition are commonly cited in social science debates and are worth outlining here: 1) managing the *distributional* impacts of new energy infrastructures to ensure that the poorest are not technologically left behind; 2) ensuring *procedural* justice is adhered to so that local communities can feed into decision-making that affects them and their areas; 3) ensuring *recognition* is given to past cases of injustice and being sensitive to the importance of *restorative* justice.<sup>28</sup> A place-based decarbonisation process may involve introducing new technologies and ways of living into an area, curtailing particular activities, which impact the lived experience of the community in which

<sup>26</sup> Ibid

<sup>27</sup> Devine-Wright, P. (2022)

<sup>28</sup> See Catney *et al.* (2014), Bouzarovski, S. & Simcock, N. (2017), Heffron, R.J. & McCauley, D. (2017), Lacey-Barnacle, M. (2020)

change occurs, having significant sociocultural impacts.<sup>29</sup> There is also a need to recognise the inherently spatial nature of (in)justice in pursuing a just transition approach to decarbonisation strategy.<sup>30</sup>

An important element of managing the distribution of benefits and costs involved in the net zero transition is being sensitive to those potentially disadvantaged by the process, but there also needs to be some scrutiny about who benefits from the process and the extent to which these are locally based. For example, the owners of assets (e.g., wind farms or other renewable technology) may be based outside of the place where technology is deployed, resulting in financial outflows.<sup>31</sup> A further round of inequality is driven by a recursive process from previous rounds of policy action and the devolution process. Devine-Wright<sup>32</sup> notes that, in the dominant UK net zero policy discourse, there has been a growth in the prominence of industrial ‘SuperPlaces’. A recent example in the net zero policy space is the deployment of new carbon capture utilisation and storage (CCUS) in places like industrial clusters in North East England. In short, these are areas which have become testbeds for various decarbonisation technologies, and which endow these places with the ability to draw down potential further rounds of technological development and financing. The logic of SuperPlaces is reproduced in the March Net Zero Plan with the combined authorities in Greater Manchester and the West Midlands being the first places to be given more powers over building retrofit from 2025.<sup>33</sup>

Injustice with SuperPlaces is not simply one of spatial justice across the country but also within these spaces. Such SuperPlaces are often top-down, government-identified spaces for policy and technological innovation. Devine-Wright<sup>34</sup> contests this top-down approach, emphasising the untapped capacity for the co-creation of alternative futures with communities in these areas. This top-down approach, without genuine local engagement, risks exacerbating existing social injustices by failing to understand the variability in community and industry dynamics within any given SuperPlace.<sup>35</sup> A broader academic literature recognises that greater community-based social learning is critical in informing local change, particularly

<sup>29</sup> Devine-Wright, P. (2022)

<sup>30</sup> Banerjee, A. & Schuitema, G. (2023)

<sup>31</sup> Mundaca, L., *et al.* (2018), Hanke, F. *et al.* (2021)

<sup>32</sup> *Ibid*

<sup>33</sup> HM Government (2023: 109)

<sup>34</sup> Devine-Wright, P. (2022)

<sup>35</sup> Garvey, A. *et al.* (2022)

for decarbonisation (see Cherry *et al.* 2022<sup>36</sup>). Cherry *et al.*<sup>37</sup> note that there is also a necessity to understand the broader social acceptability of each modality for decarbonisation across places to ensure that a place-based model is beneficial to people within that place. Given the variable local histories, local capacities and social contexts, an optimal place-based approach should not be a list of ordained policies and processes focused on technological rollout, but should recognise the need for local integration of social context and disparate policies linked with achieving place-based decarbonisation.

The lack of a clear government plan to ensure a fair process and the fair distribution of support for decarbonisation initiatives is compounded by the nature of English local government institutions which have been required to be risk averse in nature, limiting their scope for autonomous action.<sup>38, 39</sup> Place-based decarbonisation as a concept, therefore, faces major barriers to real-world implementation. The government's approach to place-based decarbonisation has been to produce top-down policies which are highly selective and produce recursive benefits to some areas while also, at the same time, perpetuating injustices in these places. If the government seeks a strategy on place-based decarbonisation which recognises the importance of trust and social acceptance of this process to reach the national net zero target, further work is required to improve local climate change governance and empower local areas to take action on place-specific climate issues and recognise local histories, conditions and capabilities.

### **Multi-scalar governance for net zero: planning for net zero?**

A key insight from social science literature regarding multi-scalar governance is that no one scale can operate effectively in isolation. Rather, what is required is effective collaborative governance systems which can support the 'right-sizing' of policy action. Polycentric systems have been proposed as developing the experimental capacity and legitimacy to achieve positive environmental outcomes.<sup>40</sup> Although local authorities in England are set within multi-scalar regimes, they lack the level of resources and scope for local action which is associated with genuinely polycentric systems. The UK system of multi-scalar governmental relations is characterised as one governed by semi-coherent structures which unify a

<sup>36</sup>Cherry, C. *et al.* (2022)

<sup>37</sup>Ibid

<sup>38</sup>Harris, P.G. (2014)

<sup>39</sup>Traill, H. & Cumbers, A. (2022)

<sup>40</sup>Gillard *et al.* (2017). See also Sandström, A. *et al.* (2020)

multiplicity of actors each with their own institutional logic.<sup>41</sup> In the context of net zero, local authorities are largely ‘policy takers’, required to comply with the policies of various national ministries (e.g., the Department for Levelling Up, Housing and Local Communities, the Department for Environment, Food and Rural Affairs, the Department of Transport, and HM Treasury) which often have contradictory policy objectives. In this context, the challenge of achieving effective multi-scalar governance derives from the conflicting institutional logics which are based on predefined assumptions, values, meanings, and material practices.<sup>42</sup> While local authorities are in theory well placed to resolve these conflictual logics, in practice this is seldom the case.

The Climate Change Committee attributes the limited contribution to effective decarbonisation by local government to the lack of coordination between levels of governance, and their limited ability to integrate policies locally.<sup>43</sup> Furthermore, recent work commissioned by Innovate UK has shown that there is a ‘lack of a clear mandate for local authorities’ to be the key agents of local net zero delivery, indicating a worryingly low level of local readiness across different English local authorities to drive action.<sup>44</sup> This lack of readiness does not, however, apply to all local authorities, and calls for strong local action have come from local authorities themselves. An example of this was the collective call for climate change action when over 75 per cent of local authorities declared climate emergencies throughout 2018/19, helping increase pressure across different scales of governance for improved national legislation,<sup>45</sup> leading to the updating of the 2008 Climate Change Act with a target of net zero by 2050. However, despite these local authority statements of commitment to climate action, this has not translated into delivering appropriate scales of action, as few (2 per cent in 2021) had even created delivery plans two years on.<sup>46</sup> There are a few factors which explain this limited local leadership:

*The dominance of a pro-growth ideology:* The priority in local areas is to pursue conventional pro-growth policies, despite the Local Government Act 2000 declaring the need for local government to promote the social and environmental well-being of their areas.<sup>47</sup> These latter goals are subordinated to growth-centred policies and plans, or at least are claimed to be compatible with these. Despite the growing

<sup>41</sup> Miörner, J. & Binz, C. (2021)

<sup>42</sup> Chipidza, W. & Leidner, D. (2019)

<sup>43</sup> CCC (2020)

<sup>44</sup> Innovate UK (2022)

<sup>45</sup> Gudde, P. *et al.* (2021)

<sup>46</sup> *Ibid*

<sup>47</sup> UK Government (2000)

interest in ideas associated with planning for degrowth,<sup>48</sup> conventional development pathways remain the standard ones for local government. Where there have been advocates for more ambitious net zero policies and plans, these voices, often from council officers, are confounded by the preferences of elected officials who reject these ideas.<sup>49</sup> Rather than confront the long-term imperatives of a climate emergency, elected politicians have generally preferred operating to shorter time horizons, principally related to the electoral cycle.<sup>50</sup> Rather than engage in challenging conversations, local authority officers have tended to look for leadership at a national level for policies which can drive local action.<sup>51</sup> The pro-growth ideology that currently guides England's national planning system means that the development of a pro-net-zero regime is a distant prospect.

*National planning centralisation:* The limited willingness to engage in climate leadership is partially conditioned by central government's dominance within multi-scalar governance. This is most clearly demonstrated with local housing targets. As councils face economic sanctions for failing to meet building targets, pressures to reach them by relaxing planning permission limit their capacity to ensure that the correct type of housing is provided for the local area, including low-carbon housing.<sup>52</sup> This speaks to the broader systemic tensions which exist within the planning system in England and its suitability for the net zero transition. The centralisation of the English planning system, which allows the right to appeal planning decisions to national government where local planning bodies have rejected permission for development, limits the potential of planning bodies to pursue more radical policies for the net zero agenda. Moreover, the centralised nature of regulatory frameworks limits the scope to pursue genuine local policy innovation. This can be demonstrated in the context of buildings in conservation areas. Fetzer estimates this housing is responsible for 3.2 million tonnes of avoidable emissions annually.<sup>53</sup> Rules on conservation areas such as the Planning (Listed Buildings and Conservation Areas) Act 1990<sup>54</sup> and the 2021 National Planning Policy Framework<sup>55</sup> set out principles for protecting such historic areas. But the relatively strict approach to regulating the deployment of retrofit to homes in conservation areas limits the scope for effective carbon savings, disadvantages

<sup>48</sup>Nelson, A. & Schneider, F. (eds) (2018), Xue, J. (2022), Xue, J. & Kębłowski, W. (2022)

<sup>49</sup>Porter, J.J. *et al.* (2015: 420)

<sup>50</sup>Walker, B.J. *et al.* (2015: 2254)

<sup>51</sup>Similarly, Laffin notes the long-term tendency to look to national ministries for policy leadership: Laffin, M. (1986).

<sup>52</sup>UK Parliament (2022)

<sup>53</sup>Fetzer, T. (2023)

<sup>54</sup>UK Government (1990)

<sup>55</sup>Ministry of Housing, Communities and Local Government (2021)

communities in these areas and inhibits local planning authorities from engaging in innovation more generally. Centralisation does not, however, reach as far as imposing an energy mandate on local planning authorities,<sup>56</sup> which could stimulate action where local ambition is for net zero. Hence, centralisation in the UK is consistent in reinforcing growth policies and limited in the pursuit of net zero principles.

There could be scope to produce greater policy experimentation and place-specific learning through processes to produce more local experimentation and wider regulatory change to facilitate effective net zero action. One approach which has emerged in the past decade to enable greater policy learning, innovation and regulatory change is a 'regulatory sandbox'. The idea was to promote non-traditional models of business and governance which would in ordinary circumstances not be legally permitted in the current regulatory environment, which is a highly monitored and low-risk environment.<sup>57</sup> By enabling greater flexibility to emerge in different places in the UK, there is the potential to impact regulatory change across different places. In the UK, the energy regulator Ofgem used sandboxing to explore the scope for regulatory flexibility on key areas such as short-term rule breaches.<sup>58</sup> This exercise invited innovators to trial novel products and services on the energy system which would not normally be permitted such as peer-to-peer energy trading (due to a lack of regulatory framework for buying and selling energy at a domestic level) and highlight critical regulatory constraints.<sup>59</sup> Such sandboxes can provide a space for experimental learning, which could then lead to new phases of policy development, resulting in faster evolution of the regulatory environment to changing demands for new technology or other aspects of the transition.<sup>60</sup> However, the actual efficacy of this method is still a topic of academic and practitioner discussion; a principal concern is how less sizable organisations can contribute to sandpits and not be drowned out due to their weaker capacity to engage in advanced policy discussions compared to larger organisations.

*Inertia in the planning system:* Addressing net zero requires rapid and effective action to reduce emissions from across key sectors. However, repeated failures to improve policy to compel key actors to reduce emissions across the lifecycle of products and services have limited rapid decarbonisation.<sup>61</sup> The UK land-use planning process has, in theory, some potential to set the direction for net zero at the

<sup>56</sup> Sugar, K. & Webb, J. (2022)

<sup>57</sup> Schneiders, A. (2021)

<sup>58</sup> Ibid

<sup>59</sup> Ofgem (2020)

<sup>60</sup> Beckstedde, E. *et al.* (2023)

<sup>61</sup> Hobbs, M.S. *et al.* (2023)

local scale. However, it has been criticised for its essentially reactive nature to development proposals and for not being proactive when it comes to setting ambitious environmental standards (including for carbon savings), particularly in terms of housebuilding.<sup>62</sup> For example, the recent changes to Part L of the Building Regulations<sup>63</sup> for energy-efficiency requirements for new buildings and the upcoming Future Homes Standard will help to drive decarbonisation in buildings, the potential emissions reductions remain lower than is needed for deep decarbonisation. Moreover, as previously noted, stringent planning laws greatly limit the redevelopment of existing buildings — particularly in conservation areas — to reduce their carbon impact through measures such as retrofit, EV charger installation, heat pumps and solar PV installation. But problems with land-use planning are not just evident with buildings but also with issues such as urban design to enable better environmental protection (including biodiversity net gain), addressing flash flooding, and enabling the better strategic use of the Community Infrastructure Levy for community benefit. Where there might be scope for local discretion to be exercised, this has often been rejected by planners due to feeling exposed for decisions for which they might be blamed, particularly given the centralised nature of the planning process in England, hence they use inaction to avoid blame.<sup>64</sup>

*Limited capacity for long-term planning:* Even where there might be a willingness to act, local areas lack the skills and capacity to create net zero plans, particularly in smaller areas. At a time when local authorities struggle to deliver on their statutory duties, additional non-statutory requirements, in a newly developing and often contested field such as delivering on net zero, have been side-lined or outsourced to the community without the agency to drive the necessary scale of change.<sup>65</sup> Financial pressures resulting from austerity alongside reduced staff capacity — a general trend towards fewer in-house planners in local authorities — have limited long-term thinking in planning, essential when considering 2050 net zero targets. Critically, in a review of planners in England, it was clear that planners were not trained or aware of key climate issues and their connection to planning beyond flooding.<sup>66</sup> This knowledge gap, particularly in considering how complex systems operate, has the potential to be a major barrier to deep action on climate change at a local level, particularly with a lack of central policy to improve the planning framework. Local authorities have the capacity to improve local

<sup>62</sup>Ibid

<sup>63</sup>DLUHC (2023)

<sup>64</sup>Catney, P. & Henneberry, J. (2012)

<sup>65</sup>Sugar, K. & Webb, J. (2022)

<sup>66</sup>Murtagh, N. *et al.* (2019)



planning with supplementary plans, mandating the developers to build to lower-carbon standards.<sup>67</sup> However, there are limits to what planning can achieve. Eighty per cent of the buildings that are set to be around in 2050 are already built, meaning additional work is needed to address the existing housing stock,<sup>68</sup> something the planning system struggles to address because it is essentially reactive to development proposals.

To summarise, there is a clear lack of concerted action for net zero. This arises from both national and local factors. First, there is a pro-growth ideology which permeates local planning policy. This is held by local politicians as much as national ones. Having conversations about alternative pathways is challenging. Second, even where there is a desire at the local level to consider such ideas, there is a lack of local autonomy that has resulted in English local authorities being followers of centralised policies rather than innovators of unique place-based policy.<sup>69</sup> This is supported by Goldthau and Sovacool,<sup>70</sup> who emphasise that in place-based decarbonisation, clear authority for leading the transition at a local level is absent, resulting in a fragmented system of multi-scalar governance.<sup>71</sup> Third, taking the necessary action requires both financial and staff capacity and appropriate mechanisms to influence change, particularly through the land-use planning system. However, local authorities have had funding stripped back substantially in the years since 2010, with central government grants — the main mechanism for local authority funding in the UK — decreasing by 37 per cent in real terms between 2010 and 2020.<sup>72</sup> Whilst many of the dominant financial and policy mechanisms to drive change are held centrally.<sup>73</sup> Under current circumstances, the potential for action by local authorities is likely to be limited, although the nature of the ongoing devolution process could affect this, although this could possibly increase the spatial unevenness of net zero action. To address these limitations, Localis has proposed the idea of a Local Resilience Act to impose a statutory duty on local authorities — with clear funding measures to support this mandate — to develop clear climate adaptation measures.<sup>74</sup> It would also rationalise policies like transportation and biodiversity policies to enable local authorities to develop novel, place-based actions. Given the enduring centralism of the UK government in

<sup>67</sup> Jankovic, L. *et al.* (2021)

<sup>68</sup> McKinsey (2021)

<sup>69</sup> Tingey, M. & Webb, J. (2020)

<sup>70</sup> Goldthau, A. & Sovacool, B.K. (2012)

<sup>71</sup> Hodgson, M. *et al.* (2018)

<sup>72</sup> Atkins G. & Hoddinott S. (2020)

<sup>73</sup> Cowell, R. *et al.* (2017)

<sup>74</sup> Localis (2022)

multi-scalar governance, it would take a significant culture change for such a policy to be implemented in full.

## Research overview

This section is based on primary research carried out in late 2022 which explored the variability of place-based net zero leadership. In undertaking this research, we aimed to identify a cross-section of local governance structures within the Midlands region, including at least one city where a new devolution deal is in operation. We also sought to understand the variety of actions on climate change. To do this, we utilised the recently published Council Climate Scorecards<sup>75</sup> as a proxy to identify places that appeared to have variable preparedness on net zero leadership and community engagement. The Scorecards appraise the extent and effectiveness of local authority plans on climate action. Included within these scores is an evaluation of ‘Governance, Development and Funding’, defined as ‘who will lead the plan, the net-zero targets, the council’s commitment to the plan, funding and costing, council limits and monitoring, reviewing and updating the plan’.<sup>76</sup> However, this definition does not consider local challenges/characteristics, differences in institutional capacities, or the variable will of local political leaders. Our research attempted to offer a preliminary assessment of these aspects to examine this place-based net zero governance in practice.

From this process, four case study areas were explored: three distinct city councils (Nottingham, Leicester, and Coventry) and an area with considerable rural areas (Staffordshire). Cities have particular importance in the net zero transition as they have a disproportionate impact on global emissions relative to their population, as they are responsible for 70 per cent of carbon emissions yet house only 55 per cent of the global population.<sup>77</sup> Staffordshire County Council was included in our analysis to incorporate insights into a different form of local authority structure (that is, a two-tier system of the county council and borough and district councils, some of which surround Stoke-on-Trent City Council). Furthermore, the inclusion of a county area with significant rural areas (74 per cent urban population, 26 per cent rural population)<sup>78</sup> offered potential insights into achieving place-based net zero leadership in other areas with these characteristics. The city

<sup>75</sup> Council Climate Scorecards (2022)

<sup>76</sup> Council Climate Scorecards (2022)

<sup>77</sup> Huxley R. *et al.* (2021)

<sup>78</sup> Data from Census 2021, in Varbes (2023)

study areas scored 14, 19, and 0, respectively, out of 21 for their climate governance (noting Coventry had no plan at the time of plan appraisal), whilst Staffordshire scored 6.

In November 2022, 14 semi-structured interviews were undertaken in the three city local authorities covered. Approaches were made to both climate change portfolio holders and climate change officers (or where one was not present, to an appropriate substitute, e.g. environment, recycling, biodiversity). Representatives from Nottingham City Council and Coventry responded. Leicester City Council did not respond to the request to participate in this study. To gain further insight into these areas, mainly where no local authority participation was offered, additional interviews were undertaken with leading local stakeholders in these areas, including community groups, local businesses, membership bodies, and academic institutions. The groups were identified using a variety of local networks available online and mapping of key institutions, for example, educational institutions. In addition to local stakeholders, a further four interviews were carried out with a variety of regional actors who had a strategic overview, including the Midlands Net Zero Hub, Midlands Engine, East Midlands Chamber of Commerce and D2N2 (Nottingham and Derbyshire LEP). Following the interviews, all were transcribed, coded, and thematically organised. The material below follows the themes identified from these interviews.

A different approach to the research was adopted in Staffordshire. Due to the authors' proximity — including professional practice<sup>79</sup> — to the actors, policies and dynamics of the area, there was judged to be less need for capturing an overview of the governance networks. Instead, we sought to understand the extent to which communities view the net zero challenge (including the theme of the cost-of-living crisis) and the potential for collaborative forms of governance. To this end, a citizens' assembly was hosted in Spring 2022 which worked with local stakeholders and community members in North Staffordshire.

### **Competing priorities and partisanship**

One feature noted in the interviews, and which contrasted across places, was the priority given to net zero compared to immediate welfare needs. Despite their clear differences, Leicester and Staffordshire illustrated the tensions caused by political

<sup>79</sup>All the authors have extensive experience as local climate educators and practitioners within Staffordshire, working with public, private and community groups to deliver change. Robinson (as chair) and Bedford sit on the Staffordshire Climate Commission, a cross-sector climate collaboration within the county.

party divergences.<sup>80</sup> One interviewee from Leicester noted that ‘sustainable development was keeping themselves alive on a week-to-week basis rather than worrying about carbon reduction initiatives’. This emphasised that meeting basic needs was politically more important than delivering on net zero, a characteristic which was shared by stakeholders and members of the public from Staffordshire. In Staffordshire, collaboration across a two-tier authority with a unitary city council (Stoke-on-Trent) limited action as the local authorities struggled to align, given differing political priorities (particularly in relation to the urgency of climate change action), internal constraints and perceptions of public demand. Similarly, in Leicester, there were issues of cooperation and shared vision at the local scale due to differences in political control of the county and city levels of government. From our review, while there was evidence of the challenges of working across party lines, such as a case where the city council was controlled by Labour and the county by Conservatives, the challenge of collaboration also transcends partisan differences. It was clear that there were limitations to collaboration due to the contrasting perceptions of individual places and their leadership teams of what their vision of net zero is and how it should be pursued. The extent to which local areas asserted their uniqueness challenged their willingness to work across areas and scales.

As noted above, a barrier to net zero governance is the dichotomy between officers and elected officials. In Staffordshire, there was evidence of this political support gap, with officers able to see the impetus for net zero action but hampered by local politicians. Without local political support or clear national mandates or mechanisms for coordinating local action within local areas or between local areas, inertia or incremental changes are probable. Without mechanisms to encourage inter-local collaboration, including means to pool resources and produce regional and sub-regional structures for policy learning, effective joint working on regional issues such as transport will continue to be fragmented.

### **Local leadership: by whom and how?**

Viewpoints in the areas studied varied about the nature of what constituted leadership, who should provide it and how it could be distributed. There was a disparity in local interpretations of which actor is or should be the leading body for climate action for their area. Some interviewees asserted the necessity for local-authority-led efforts as a means of swift action. This was exemplified by a Coventry interviewee who stated ‘We know the science. We know the technology. We know

<sup>80</sup>In an America context this was seen in Bick, N. & Keele, D. (2022).

how the finance works. What's missing is leadership to drive change.' However, actors outside Coventry City Council noted that it was beginning to demonstrate dynamic and innovative leadership with increasingly nuanced methods of addressing climate change. The framing of climate action in the local area has increasingly been on using non-climate specific narratives for key issues — for example, framing energy retrofit in health terms — which could offer greater buy-in across other sectors. However, not addressing the issues of climate change directly drew criticism from climate-orientated interviewees. The challenge of local leadership was made more complex in Coventry where there was also a lack of clarity on whether the West Midlands Combined Authority or the Coventry City Council should be the local leader on net zero, highlighting the challenges but possible opportunities of attempting to initiate ambitious net zero policies across an increasingly dense institution landscape. In Newcastle-under-Lyme, a borough of Staffordshire County Council, the language used by senior politicians on net zero recognised the necessity of council-led work, although it was also recognised that the borough and the county are both poorly positioned to undertake the work unilaterally due to their lack of resources. Senior council leaders hence emphasised the importance of coordination across all scales of government to enable greater resource drawdown for local action.

In all cases, local authorities were seen as the organisation which should be leading on place-based solutions to climate change. Stakeholders within each area believed they were not leading on the issue, although there was some belief in the potential of local authorities to play more of a leading role. Regional body interviewees noted that this was likely due to a lack of local knowledge and skills to deliver on the net zero agenda, as net zero exists outside of the statutory obligations of each local authority. This led to decisions being made in many cases which were focused on only one source of emission (for example, delivering a heat decarbonisation scheme OR a transport decarbonisation scheme). In so doing, there is often a failure to recognise the potential for holistic action. Nottingham City Council recognised its potential for leading on the multiple challenges posed by net zero and we found it to be a leading model for net zero in the cases we examined. This approach to local leadership did not appear immediately and has been part of the city's long engagement with environmental matters (stretching back to the 1990s). The council has sought to take leadership in part through institutional means, by creating a variety of internal council posts directed at net zero. The breadth of the net zero challenge was recognised, and various roles were created rather than passing the action to a single position. Specifically, it created specialist roles to support particular elements of decarbonisation, such as retrofit and energy generation. But the approach in the city has been one that matches principles of

collaborative governance with members from key anchor institutions in the area ‘buying in’ to the need for action and hence ‘de-risking’ collaboration from other organisations in the local area. This hence enables a greater reach of civic actors involved in strategy and delivery for net zero. There is also a culture of engaging in active and honest dialogues between partner institutions around net zero, including a private forum to address challenges as they emerge. This offers the ability to engage in local problem-solving and to ensure that local actors are involved in the process. These local processes are supported by regional-level institutional development: the creation of a major net zero infrastructure body in the region, the Midlands Net Zero Hub, which was established in 2019 to support the delivery of decarbonisation technologies and to help with the leveraging of financial support from the public and private sectors. To date, it has been able to leverage £300 million to deliver decarbonisation projects within its geographical remit, supporting a variety of organisations and institutions to understand and take steps to decarbonise. But while these positive processes have been engaged in, issues with the planning system remain. Hence striking a balance between local innovation and national policy flexibility remains a key element of ensuring an effective net zero transition.

An additional challenge which was faced by all areas was how to act on net zero whilst ensuring there was broad public consent for actions. From this research, several modes of governance were identified as currently existing. The first approach was non-consensual decision-making. This top-down approach was seen to undermine the legitimacy of action, as public concerns and local priorities and needs of various communities and stakeholders were not adequately integrated into decision-making for net zero. This process of ‘localised centralisation’ (particularly by city mayors) was seen to be taking decisions away from local people, leaving them feeling a generalised disenfranchisement from political decision-making.

The second method identified was inertia,<sup>81</sup> as local areas did not or could not garner support for local action. Inaction was seen as the path of least resistance by local authorities. With a lack of a clear political mandate to act, political leaders felt they did not have the necessary consent to pursue ambitious net zero policies. However, this approach presents a major risk of missing the opportunities that will emerge from the green economy. Creative policies are needed to overcome potential inertia. An example of this can be seen in Coventry where messages and policies were cast in terms of other than climate change, which led to action and which produced community take-up. The strategic combining of decarbonisation goals

<sup>81</sup>Munck af Rosenschöld, J. *et al.* (2014)

with other issues where these could realise co-benefits for (particularly vulnerable) communities could have the potential to reduce inertia by creating demand for such actions.

The third process, particularly seen in Nottingham, was a process of ‘collective leadership’ on net zero, through a collaborative decision-making vehicle, the Green Partnership. The Green Partnership aims to bring together organisations from across the public and private sectors with academic institutions to co-create and advance Nottingham’s green future. The Partnership acts as a forum to deliver local strategies across different sectors. The City Council has representation and actively engages in collective decision-making. In part due to such mechanisms, the council embarked on riskier projects (for example, the municipal energy company, Robin Hood Energy), as there was a recognition of the public acceptability of such projects.<sup>82</sup> Similarly, interviewees in Leicester noted the City Council was an active leader in the challenge of net zero, specifically noting the active travel infrastructure which had been created. However, for some local actors, there was seen to be a prioritisation of actions which were more high profile in the environment over the softer and potentially more transformative issues. The novelty of Nottingham’s approach also stemmed from the local authority’s desire to ensure organisations participating were held to account for their pledges (by asking organisations to review their actions annually and report to the authority). This aimed to mitigate the risk of tokenistic gestures. This collective leadership model was occasionally criticised due to feelings that power should be more distributed and that communities should be further engaged to create holistic local plans. In Staffordshire, the recently established Climate Commission is looking to replicate this collective-governance-style mechanism.

### **Net zero communication**

While there were various net zero action initiatives being undertaken across the areas, there was a general lack of communication between those actions and the broader population. Notably, the language of net zero was not seen as politically acceptable to communicate with the population unless there was the perception of

<sup>82</sup> Our research offers a snapshot of action undertaken in 2022, but in trying to explain why areas like Nottingham or Leicester have adopted particular approaches to environmental matters, it is clear that the policy inheritance of past decades matters. Leicester, for example, has been considered an environmental leader for decades and hence wants to retain this reputation. Similar consciousness of past actions and reputation played into the decisions of Nottingham, the city where the Nottingham Declaration was agreed in 2000.



wholesale local acceptance.<sup>83</sup> Furthermore, challenges existed in communicating the complexity of the large-scale and holistic changes necessary across all sectors of the economy. This generally led to a piecemeal approach where a single policy sector was identified as the locus for decarbonisation, for example, transport decarbonisation through cycle networks. Critically, there was a major limit on the level of climate risk communicated within the local authority and externally to other community actors, as many interviewees did not fully grasp the level of risk that climate change presented. Nottingham was working to overcome this through its Carbon-Neutral Nottingham 2028 (CN28) programme, a strategy body which engages in active communication campaigns, for example, adding signage to the electric taxi ranks to explain why they were in place and the benefits to both people and the climate.

## Discussion

### Who owns climate action?

Across the study areas, in the absence of a clear framework to support action, local actors did not know whether the local authorities could lead on the net zero transition. Outside the local scale, regional actors lacked clarity on who was the key contact and driver of action within each local authority. In many cases, this resulted in inertia, blame avoidance or deflection as areas attributed responsibility for leadership across different layers of governance rather than owning action. This was clearly highlighted by the Citizens Assembly model employed in Staffordshire. This model invited a cross-section of local people to share their thoughts and insights on decarbonisation solutions within the area. The work was supported by local experts and the local authority. There was a divergence of views regarding who should own follow-up action on climate change, with citizens calling for greater support from local authorities to deliver place-based solutions and local authorities asking for greater citizen engagement and further views to legitimise any action taken. This highlights the unresolved tensions in providing leadership, noting the lack of clear systematic and structural interconnection between multiple layers of governance from individuals in the community and local government. The horizontal and vertical scales of governance need greater clarity, coordination and consistency,<sup>84</sup> a general and ongoing challenge to multi-scalar governance in

<sup>83</sup> Simcock, N. *et al.* (2014)

<sup>84</sup> Di Gregorio, M. *et al.* (2019)

England. Increasing institutional innovation and density at various scales — for example, climate commissions — is necessary, but it also presents considerable transaction costs.<sup>85</sup> This challenge of coordination for net zero was recognised with the Climate Change Committee's Local Authority report<sup>86</sup> which notes 'the onus is on local authorities to work their course based on piecemeal policy and communications from Government'. Three years on from their report, our work indicates that the issues are yet to be resolved.

### **Planning for net zero**

As discussed above, the planning system is a barrier to achieving net zero governance, but it is also an essential part of a successful transition.<sup>87</sup> Our interviews showed concerns about the current nature of the planning system, but there was also limited articulation by interviewees about the role planning could play in shaping alternative energy pathways. This lack of articulation of planning's potential is potentially reflective of its current shortcomings with failings in the planning process leading to considerable delays in the deployment of low-carbon technology. This is recognised in the Skidmore Review, noting that such delays and complications limit local action and ambition.

Our interview data suggest that the failure of planning is entwined with the failure of central government to provide a framework to support local net zero action. As discussed earlier, the lack of a clear national framework to support local leadership and innovation is a clear limit on action. This is clearly exemplified by one planner in Staffordshire who noted an infinite regress whereby action is not taken as they are waiting for a policy steer from central government and central government fails to act due to limited collective lobbying on the issue by local actors.

Therefore, a greater emphasis should be placed on upskilling and training planners to recognise their role in enabling, advising and investing in energy system futures within their locality.<sup>88</sup> Furthermore, training on the intersection between planning and climate will be needed to increase resilience to climate shocks — by encouraging planners to be aware of the likely implications of a warming world on their locality — and the critical role of planning in the net zero transition. Moreover, increased local knowledge has the potential to reduce deficits and improve local

<sup>85</sup> Torfing, J. *et al.* (2012)

<sup>86</sup> CCC (2020)

<sup>87</sup> Davoudi, S. (2013)

<sup>88</sup> Gudde, P. *et al.* (2021), Sudmant, A. *et al.* (2022)

capacity to support decision-making for local plans, by helping to shape local plans which are conducive to climate action or by helping local authorities develop place-based supplementary planning documents. Such action also has the potential to increase mobilisation at the local scale to improve policy frameworks.

From this research, Nottingham stood out as having adopted a different model of local governance from other parts of England.<sup>89</sup> Using a collaborative approach has the potential to mitigate risk within decision-making, by utilising a clear framework to facilitate a multitude of semi-autonomous actors' engagement with complex issues.<sup>90</sup> Nottingham has more effectively utilised this approach than other areas studied with the development and continued operation of the Nottingham Green Partnership. The partnership has invited a variety of actors into the decision-making arena, creating shared ownership of net zero as an issue and allowing stakeholders to positively engage with the necessary action, whilst continuing to act as a central point of leadership. Nottingham's interpretation of what leadership is and the need for collective governance to act on environmental issues within the broader social context of the area has played a major role in delivering on net zero. This approach has the potential to develop synergies between different actors in contrast to a unilateral/top-down approach to governance which can limit collaborative action on climate change and contrasts.<sup>91, 92</sup> Our research indicates that place-based local collaborative leadership is an important dimension to ensure a just transition (recognising the procedural and recognitional elements). A dialogic approach can potentially ensure that there is a flow of information and knowledge between actors at the local scale and better scales, particularly mitigating the harmful impacts of the transition of particularly vulnerable groups. It can also help with the distributional impacts of the transition, ensuring that local communities could benefit from the deployment and installation of technologies. A collaborative approach has the potential to reimagine community consent for projects by centring them in the heart of local decision-making. This builds on previous work noting the need for intermediary bodies for sustainability transitions — bodies independent of government with potentially greater trust, hence able to reach broader social groups — to be supported in their early stages, to build capacity, knowledge and greater institutional support.<sup>93, 94</sup>

<sup>89</sup> Ibid; see also Wade, F. *et al.* (2022)

<sup>90</sup> Carlisle, K. & Gruby, R.L. (2019)

<sup>91</sup> Ostrom, E. (1990)

<sup>92</sup> Underdal, A. (2010)

<sup>93</sup> Hambleton, R. (2014)

<sup>94</sup> Kivimaa, P. *et al.* (2019)

### **Planning regulatory sandboxes**

Although there were divergences in the level of success in leading climate action at a local level, there were shared frustrations regarding structural constraints. These include the lack of devolved power, planning regulations and finance to support action. To begin to overcome these challenges, policy and regulatory innovation are required with more agility within the planning framework. Different challenges exist in the planning framework in different places of the UK, with some areas facing particular challenges on the road to net zero, such as conservation areas. To enable local areas to overcome the diverse challenges which exist in this space, we suggested the exploration of regulatory sandboxes in various key challenge areas. Planning, as has been highlighted throughout this paper, remains a major constraint to deliver on net zero. Therefore, we suggest that a priority sandbox should be created and run by the Planning Inspectorate. Various outcomes from this might include allowing businesses to temporarily derogate on planning laws where this could lead to reduced carbon emissions aligned with the net zero strategies, such as changing the category of some net zero interventions to ‘permitted development’. Critically, learning from previous sandboxes in the UK, there should be greater inclusion during the lifetime of the scheme, enabling not only major industrial players to innovate but also community-based innovation. One potentially impactful way this could be implemented is by creating places — regulatory bubbles — where planning permission is less stringent when genuine community benefit can be realised through community-owned enterprise, distributing the benefits of any action within local areas. Alternatively, greater agency will need to be devolved to local planners to encourage the growth of net zero assets — both generational and demand reduction — where climate emergencies have been declared, reimaging the planning appeals process.

### **Design principles for collaborative multi-scalar governance**

Throughout this research, several emergent principles, that can be utilised to support collaborative multi-scalar governance, have been identified. First, there is a need for greater regulatory flexibility between scales of governance. As parts of the UK continue to be granted devolution deals, there is an opportunity for decentralised governance tools, increasing local ability to adapt to meet local needs. Second, the emergence of SuperPlaces in place-based decarbonisation has the potential to further exacerbate regional inequalities as resources are diverted to key industrial clusters or city regions in the UK, rather than being evenly distributed. It is therefore necessary to develop and implement mechanisms to ensure that

resources are spread geographically and can support genuine levelling up across the UK rather than being concentrated in resourcing hotspots. Third, while place-based decarbonisation action was being taken across all the case study areas, it was clear that these were sometimes aided by actions arising from organisations working across scales. For example, Net Zero Hubs have facilitated local access to funding pots to drive key initiatives. However, Net Zero Forums have limited resources and this has limited their scope to bring policy actors together to address complex issues. Therefore, refocusing and supporting regional and national policy forums should be pursued to facilitate knowledge exchange, grow local capacity — particularly important for smaller areas — and help novel policy innovations move into mainstream local policy discourse. This could also enable the growth of place-specific policies based on local knowledge exchange. Finally, the economic focus of historic initiatives can have local benefits; however, in many cases, genuine community participation is highly limited within governance structures. Given the emerging barriers to decarbonisation from misinformation and mistrust of net zero, deeper participatory community engagement is a necessity. Critically, this should utilise existing anchor institutions as a conduit to engage local people with policy processes such as local citizens' assemblies.

### **Promoting climate communicators**

Our research suggests that, while there has been significant progress in understanding the risks of climate change, there remains a need to increase the number of climate risk communicators to help local authorities and other local actors widen the social acceptance of radical net zero action. Critical to this is the need to build more locally sensitive narratives (including, for example, a recognition of the industrial heritage of an area) around net zero, considering the local issues which resonate with communities and areas in which place-based decarbonisation will occur. Howarth *et al.*<sup>95</sup> indicate that such narratives coupled with communication to local decision makers, can provide meaning to complex challenges and aid local action. To create an effective narrative, resources need to be available at a local scale for actors to understand the level of risk they face. Once a narrative is co-created with stakeholders and the community, one potential improvement is a greater emphasis on the role of communications to share narratives and facilitate public debate to improve governance in an area, which further facilitates civic buy-in of projects.<sup>96</sup> Nottingham City Council has achieved this by having dedicated

<sup>95</sup>Howarth, C. *et al.* (2020)

<sup>96</sup>Coffey International Development (2007)

members of the team working on engaging with the public whilst also building a positive brand image around the CN28 target. Our work with local communities in Staffordshire piloted this approach, seeking to bring together ordinary citizens with scientists and local council actors.

### **Reshaping the dominance of local economic development**

The past couple of decades have seen the institutional landscape for regional, subregional and local governance evolve rapidly and unevenly. The general trend has been towards institutional thickening, generally directed towards economic innovation. A key example is that of the development of Local Enterprise Partnerships, themselves potentially soon to be jettisoned as new fora are developed to try to address the increasingly complex challenges of uneven development. A thread running through these different phases of institutional innovation has been to make local authorities marginal actors. Yet, the place of local authorities in driving place-based net zero decarbonisation cannot be so limited if it is to succeed. A critical limit is the continued financial constraints confronting local authorities. However, as Local Enterprise Partnerships are removed from local governance models, with their decline there is an opportunity for a transformational rethink of local central support bodies of development. Our research has highlighted a fundamental lack of aligned and systemised support for decarbonisation across spaces even within close proximity, resulting in places reinventing the wheel continuously and facing similar challenges. Critically, in its current form, local net zero governance does not provide an adequate framework for the dissemination of knowledge across institutional boundaries. Therefore, it is essential to fill the gap left by the loss of Local Enterprise Partnerships with new institutions which focus on supporting organisations within their locality through the turmoil of net zero. Building on this work, these bodies need to move beyond an economic and business focus, building greater connectivity between state and non-state actors to deliver well-constructed and deliberative processes to support place-specific decarbonisation. In civil society there are examples of such inclusive approaches, which seek, to a degree, to offer a radical critique of production and consumption from which local government could learn.<sup>97</sup>

Our research has shown that local authorities lack clarity on which actions are best for net zero whilst national as well as local discourses remain focused on economic development. This discourse remains central from a national government perspective with the 2023 Spring Budget focusing on increased devolution with a

<sup>97</sup> de Moor, J. *et al.* (2021). See also Fourat, E. *et al.* (2020)

focus on local investment funding.<sup>98</sup> But actions to change this approach are starting to emerge. These are largely focused on improving access to information and supporting the delivery of net zero retrofit technologies and policies through Net Zero Forums (noted throughout the Net Zero Strategy) which can play an important role in overcoming challenges of capacity across different areas. For this not to be tokenistic, it must be coupled with new resources and tools to enable rigorous engagement with deep decarbonisation. To ensure that net zero is at the heart of local decision-making, there is a necessity to ensure that levelling-up partnerships and devolution deals include a clear and specific focus on net zero, alongside economics. With funding for Local Enterprise Partnerships ending in April 2024 this creates an opportunity to reimagine the focus of devolution and ensure economic empowerment is not the sole focus of decentralisation. But without a clear framework, it risks fuelling the division between SuperPlaces and the rest.

## **Conclusion**

A central pillar in determining the success of net zero delivery is likely to be local leadership and its capacity to be open, multi-stakeholder (that is, working within and across scales), and offering transdisciplinary solutions in their region. Place-based decarbonisation has the potential to play a critical, potentially cost-effective, possibly transformative, role in driving tailored local decarbonisation solutions. Local authorities are likely to be an increasingly critical actor in this as the number of devolution deals rises. It is therefore paramount to understand the governance systems which guide the net zero transition, as well as their potential limitations. Our research has offered a preliminary characterisation of the net zero governance regime in four different areas of the Midlands: Nottingham, Leicester, Coventry and Staffordshire. Each area had distinct approaches to governing the net zero transition, with differing levels of success. But these distinctive approaches were not necessarily informed by a deep reflection on the possibilities and challenges of net zero. In Nottingham, which used collective governance methods, there is some evidence of increased local support to address the challenges of net zero action (the citizens' assembly also showed evidence in Staffordshire). There were also indications that a more collaborative form of governance increased the agency of the local scale. Organisations engaged in a more open, reflexive, and inclusive approach to governance are more likely to engage in effective social learning. This open form of leadership is likely to inspire further action by other actors in other sectors and wider society.

<sup>98</sup>Hunt J. (2023)



However, further work is necessary to understand the ways in which local histories matter in developing robust net zero policies that work along the grain of local identities and norms on net zero and build on local opportunities afforded in the transition to net zero. Moreover, each area has encountered challenges, particularly in understanding and conveying risk. To overcome this, policies should be implemented which enable local areas to understand the risks they face, how to communicate those risks with the local population, and critically to consider the opportunities which can emerge from taking decisive and early action on net zero. Finally, even after several years and continued pledges to improve multi-scalar governance, there remains great uncertainty on sub-national leadership and which actors are and should be leading the net zero transition at a local authority level. This must be resolved to support local places to lead their own place-based net zero transition. It is suggested that central government provide a framework and support to enable local actors to have more confidence in pursuing more novel and cooperative governance models within local areas.

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