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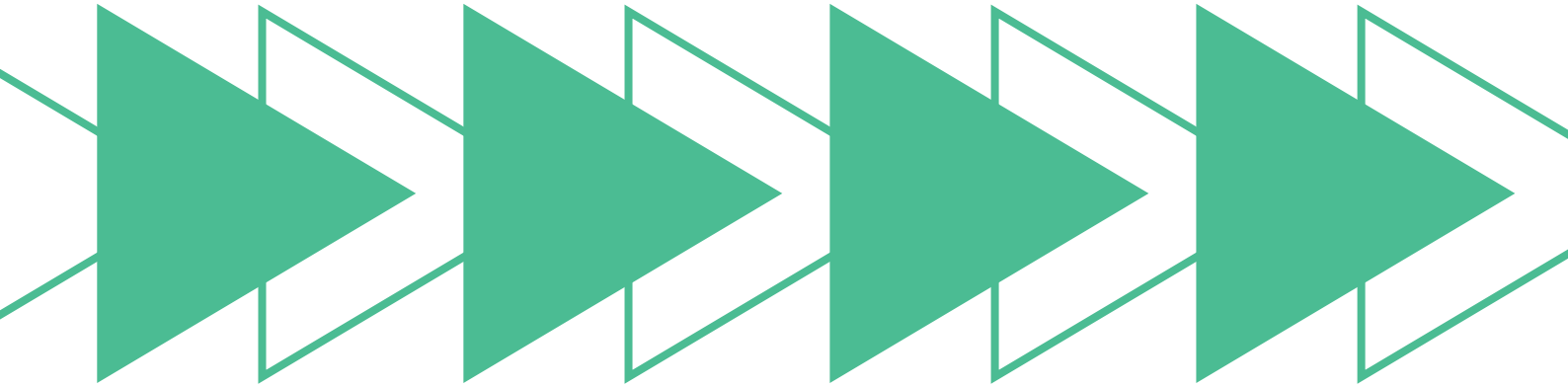
Our journey to net zero:
Understanding household and community participation in the UK's transition to a greener future



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About the Institute for Community Studies

The Institute for Community Studies is a research and evidence centre with people at its heart. We believe that involving communities leads to better decision-making. Powered by the not-for-profit organisation, The Young Foundation, we work to influence positive change, bridging the gap between communities, research, and policymaking.

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Executive summary

Reaching the UK's decarbonisation goals requires the participation of everyone, in all parts of the UK. But it carries risk, due to the need for large-scale change in how we live, spend, travel, work, eat and have fun.

Current debates about the transition to net zero focus mainly on industry and technological solutions. There is a lack of discussion, evidence and policy that addresses real, human questions about the action needed from different households and communities, different sectors and places, and the impacts that transition will bring. This is a significant gap when essentially, transition to net zero requires change by households to every area of life. The research documented in this report aims to change where the debate currently sits, to bring to the fore the human impacts, and positive opportunities for communities, of net zero transition.

A just transition seeks to ensure that the benefits of net zero transition are shared widely and to mitigate harms or provide support to those who stand to lose. However, if policymakers fail to consider the distribution of costs and benefits, and to organise policy to fairly deliver the impacts and opportunities of transition across households and communities, there is a risk that existing inequalities in society will be exacerbated, and new ones created.

This research develops and explores scenarios for how the transition to net zero might affect households and communities. It identifies where there are chances of unequal impacts or risks of households being left behind, and the barriers to and opportunities for households taking part in a just transition. It also finds many opportunities for how participation in low-carbon living can be built across different areas of household and community life – and shows the potential, positive benefits people see transition having for their lives at home, their local communities, and their experience of fairness in how key areas of life are organised.

Undertaken by the Institute for Community Studies at The Young Foundation, the University of York, the University of Leeds, and Trinity College Dublin, the first stage of the research brought together, for the first time, in-depth participatory primary research, a systematic review of the poverty and social justice literature, with literature and data on scenarios of change towards the UK's net zero future. Findings were then shared with local government and with communities in four local authorities in a process of policy co-production, looking at what incentives, levers and policies might unlock greater, inclusive participation in transition.

This process produced an original framework for use by policymakers, profiles of households and communities most at risk, and key recommendations for what a different system to support people through transition could look like.

A person-centred, place-based framework for policymaking in net zero transition

Through this work, our research presents a framework to support policymakers, investors and civic actors to strategically – and collectively – plan for a just transition. The framework prioritises how to achieve fairness outcomes alongside decarbonisation in the necessary, collective shift to low-carbon living required for a sustainable future for the UK. It is intended to support policymakers, investors and civic actors to strategically plan for and manage a just transition, in a way that unlocks households' capabilities for transition and identifies pathways to build inclusive, fair participation. Figure 1 presents this framework, below.

Figure 1: A person-centred, place-based approach to supporting household and community capability for net zero.

The framework demonstrates the need for a radically different approach to shaping policies for a just transition. It presents what we call a '**person-centred, place-based approach**' that accounts for the variable opportunities and risks faced by different households and communities. The framework is built from understanding in the round how areas of life will change for households in transition to net zero and the way the risks of exclusion, types of participation, and mediating effect of place and community conditions interact to make change harder or easier.

As achieving the UK's decarbonisation goals requires action from every household, '**person-centred**' means we focus on policy that offers a number of necessarily differing pathways to build inclusive, fair participation across all households. Our research also recognises that people have intersecting barriers to participation that need to be removed for them to participate. '**Place-based**' reflects that households exist within local communities, which have different social, economic and infrastructural conditions that make net zero transition – and those pathways to participation – more or less accessible. This approach recognises that changes in each area of life will be shaped by people's ability to participate, which is in turn affected by the household they are part of, and the features of their community, including social and geographic factors.

Moreover, peoples' vulnerabilities to change in different areas of life are found to be interdependent in the context of net zero transition. Where a household faces greater pressure in one area (eg, increased food or energy prices) this will have knock-on effects to their access to and agency for change in other areas of life (such as greener transport or leisure activities). Applying the framework to design policy with communities therefore helps us understand the interconnectedness of the areas of life affected by net zero, and see where removing one key barrier, or putting in place one key policy lever, can unlock multiple low-carbon choices and build participation.

Applying the framework as part of a policy process enables policymakers to:

- understand key profiles of household and communities at risk;
- recognise different starting points to making low-carbon choices for households;
- identify different pathways for participation where barriers need to be removed;
- prioritise opportunities to build participation that can in turn be designed into policy.

The key findings and policy recommendations for each part of the framework are as follows.

Risks of exclusion from net zero transition

Without change to existing policy and strategies around transition, the evidence and data reviewed in this research finds multiple existing inequalities will entrench or fluctuate throughout transition, and new, unique inequalities will emerge and need to be addressed. We already find that even working and 'once managing' families have struggled with the recent increases in food and fuel prices. Families facing such struggles are less able to make low-carbon choices because they do not have the resources, financial or social security, or time, required for such behavioural change.

There is little evidence that current national government schemes focused on the poorest households work at all, with support for upfront costs for investing in the majority of forms of household decarbonisation unattainable. The evidence in this report shows if these households are left behind running old technologies and inefficient energy systems whilst other households switch; or if they cannot change to low-carbon diet, work, shopping and leisure options; they will likely face higher costs, deepening economic inequalities. If they are unable to access the means to retrofit homes or to change from polluting vehicles to electric cars or green public transport, the same households may also incur penalties and tariffs. These are just two parts of a poverty premium emerging around net zero, meaning households who cannot take part pay more and incur more volatile financial risk; whilst households who can share the cost of adaptation with government schemes or financing, avoid penalties and see reduced costs over time.

As indicated above, financial struggles, specifically spending power, debt, and credit ratings, have the greatest impact on enabling or restricting meaningful participation. As high-carbon job markets close and economies shift to green sectors, the risks of exclusion from the current lack of reskilling opportunities for poorest households, are two additional economic exclusion factors affecting household transition to net zero.

Participation of households and communities in net zero transition

Despite the political commitment to net zero being uncertain and in flux at national government level, our research finds a majority of households and communities want to see change towards a greener future and to understand their routes to participate. This research reveals compounding factors are making vulnerable households and communities willing to participate in transition. Extreme weather impacts, and experiences of fluctuating living standards, budgets and security in the cost-of-living crisis, are all contributing to the urge to see change and leadership towards net zero.

Taking an approach that recognises household agency, we conceptualise that the changes in each area of life that are required to reach net zero will be shaped by people's ability to participate. Household participation in net zero can be characterised as falling into four different categories: economic; social; civic and political; and employment, education and skills. How readily a household can participate in each of the different areas of life, determines how a household can envisage, afford – and choose – to engage in transition. This is a core part of the person-centred framework we propose from this research.

Participation is also empowered or constrained by the features of community, including social and geographic factors. This research finds varying levels of 'place readiness' for net zero across local authorities and hyper-local places in the UK – and proposes how a comprehensive Readiness Index for assessing local places can be developed. The structural and infrastructural conditions; composition, diversity and legacy of industry, housing and the local economy; community assets, community strength and social infrastructure; and crucially – the agency communities themselves hold – all mediate or accelerate how easily households can participate in net zero transition.

Enabling economic participation underpins all the other areas of participation by which households can reach net zero. Our research shows if the economic barriers to low-carbon choices are removed, and the economic risks to households of changing their homes, transport choices and ways of life are accounted for by financial schemes and incentives, then households feel more able to make low-carbon choices in the home. We also find economic participation will enable households to feel they can participate more actively in all other aspects of participation (civic, social and education/skills) and change necessary to decarbonise their lives.

Our research also found many other levers for change that can transform households' capability to engage with low-carbon living and facilitate them to participate in net zero transition. From community-led housing retrofit to micro 'sharing economies' at neighbourhood level; to shared, local plans over green space use – opportunities are many. However, they are currently underappreciated and underused by governments and not considered as a part of net zero policy or approaches.

Taking collective action to support participation in net zero transition

From our findings, we can identify and recommend how policy, systems, local institutions and communities, and households themselves, can take collective action within a just transition to net zero. The research contributes a framework to support policymakers, investors and civic actors to strategically plan for and manage a just transition in a way that unlocks households' capabilities and identifies how to build inclusive, fairer outcomes. We propose this requires clear division of responsibilities and accountabilities across multiple layers of devolution and government, and by diverse sets of actors, working towards net zero. This is because our framework shows factors that either leverage or create barriers to participation are interdependent at the household level, and households' capabilities are in turn constrained or enabled by the infrastructure, economy, governance system and characteristics of the places they are part of.

Building fairer outcomes requires the participation of households in the design of policy and schemes to support net zero transition, in order to understand the barriers and risks in the round that could occur from policy choices. This requires more than just community voice in consultation – it needs processes of policy engagement designed and accessible at hyperlocal and local level. Our research provides a 'Methods Playbook' as a toolkit for some approaches we have found to work.

We find a lack of information is holding back participation. Consistent, trusted information campaigns are needed to inform and drive the types of participation needed from households and communities. The research indicates the importance of reinforced, consistent messaging – from government, local government, and from key actors who carry influence and leverage such as employers – on areas for household action. Our research also finds that schools, colleges, social networks and community infrastructure in many places, are already supporting peoples' climate and consumption literacy and creating the intergenerational support and cooperation we find households need to take the steps towards sustainable living. However, these key civic institutions, and households and communities themselves, are disconnected from policymakers leading net zero, meaning the efforts in each individual silo are failing to add up to the collective action that could accelerate a just transition.

Key recommendations from this research

1 **Apply the framework of a person-centred, place-based approach to policy development at local and national government level.**

Revisit existing net zero policies – particularly those with limited or unfair uptake – to identify how these are being constrained by, or could be enabled better by, the person-centred approach; and consideration of the levers or barriers of local environments.

2 **National policy should remove the most significant barriers for the poorest households and take a person-centred approach to design economic incentives that support participation in transition.**

Policies for economic support must account for households' whole spending power and budget constraints, and a whole-household foundational grant should be provided to the poorest to enable home adaptation.

3 **Explore alternative levels of governance for net zero policy with distributed powers.**

We propose an integrated system for a fair transition, with policy built within place around both decarbonisation and fairness aims, based on the integrated care system, with clear strategies for distributed effort across local authorities, employers, anchor institutions and communities.

4 **Engage households and communities in the design of fairness outcomes.**

Local government and key civil society actors need to engage communities in place-focused, inclusive debates on what fairness outcomes look like during, and as a result of, net zero transition.

5 **Local leaders, civic actors and investors should adopt a data-driven, 'place readiness' approach.**

Local government need to make investment in place 'evidence-led' on the basis of addressing areas of capacity and vulnerability in net zero, so in-bound investment and action is targeted to accelerate net zero.

6 **Government should recognise and engage the role of other trusted actors.**

Local employers are found on the majority to be key influencers of participation for households in making low-carbon choices; alongside research identifying a greater role for investors and the private sector in enabling greater upskilling and transition into the green economy.

7 **Update the existing Climate Change Committee (CCC) Risk Assessment.**

Extend the existing CCC Assessment to fully account for place, expanding its current scope beyond hard infrastructure, and accounting for a much greater set of social, asset-based, social infrastructure measures.

Introduction

To date, the transition to net zero has mainly been thought about in terms of technical change to policy and systems, rather than the impacts it will have on peoples' lives or the communities they live in. The research presented in this report seeks to challenge this perspective: by exploring how all households, communities and places can participate in the transition to net zero.

This research stems from hearing repeatedly from communities that the UK's journey to net zero 'lacks a local narrative'. Over two-thirds of UK households fear being left behind in transition, and the majority of families struggle to 'draw transition down to a local level' to understand how it will affect their lives and how they can engage to make low-carbon changes (Institute for Community Studies, 2020). Net zero transition requires mass engagement to be successful, within a short but sustained time horizon.

This is important both to reach the decarbonisation necessary in all areas of life and society, but also to ensure people are not 'left behind' by the fundamental changes that must happen in order to become a green society. We argue that supporting public participation in net zero, and ensuring that net zero policies do not produce unwanted, harmful or unfair impacts on people, are critical and intertwined parts of policy for a just transition.

Recognising that different actors hold different roles and powers in the transition, the findings shared in this report intend to support the ecosystem of people and institutions who hold power and decision-making over net zero transition. We understand this ecosystem as made up of many: those designing policy, strategy and incentives in national and local government, those supporting different groups to take action at home, hyper-locally and through support programmes and campaigns in the voluntary and community sector; and those working to transform homes, services, infrastructure and systems within place through public-private partnership.

The findings and recommendations seek to support this ecosystem to work inclusively with households and communities to build participation and to ensure no place or household is left behind in transition. In particular, the research seeks to encourage these actors to integrate and mitigate the risks of social exclusion into their planning and policy development. Conversely it also seeks to inform all these actors how to maximise equality of participation and fairer outcomes in how places and people experience and progress to reach net zero.

Neither the magnitude and breadth of change in the way peoples' lives are lived, nor the potential for unequal impacts on different households and communities, are currently emphasised in policy, in evidence-based comment, or in political visions of net zero. Yet, the disadvantages that may happen to different groups, such as the question of the human impact of tariffs on non-electric cars for those households who are car-reliant, but cannot afford new technology, are frequently emphasised by those who are against transition to net zero, sometimes provoking political flashpoints and civic revolts concerning 'rights and freedoms'. A good example is recent discussion around low emissions zones, leading to so-called 'protest votes' in a local by-election. The lack of a strong, positive narrative from government is creating a space for transition policy to be misunderstood and mobilised against the chance for positive change. This risks polarising communities on environmental policy and holding back political leadership.

Similarly, existing research and engagement is typically limited to a focus on one dimension of change (eg, transport), often narrowing discussions to technical risks or public perception. Our research departs from this, working directly with households and local communities at risk of being left behind in the transition, to build rich and detailed accounts of what meaningful participation would look like in the context of different people's everyday lives.

Existing and emerging inequalities will shape who is adversely affected by both climate change and mitigation measures. This necessitates deep reflection on the risks of how net zero policy is designed. Our research aims to facilitate a just transition, as well as the eventual goal of reaching a fairer, sustainable society. This means we consider how to achieve the decarbonisation necessary to reach net zero while seeking to ensure fairness. It is vital that net zero transition does not become a discriminatory process; that no one is excluded or left behind.

Identifying risks of social exclusion is therefore, critical. Equally, recognising trade-offs between different areas of life, and different policy designs, will be necessary to mitigate such risks. The potential unintended consequences of decarbonising supply chains, infrastructure and home environments for entrenching social inequalities are profound. As such, in this research, we seek to find ways to reconcile decarbonisation and justice outcomes across all areas of policy.

Introducing a new approach to policymaking

In this report, we introduce a person-centred, place-based approach to the UK's transition to net zero, considering the multiple and intersecting impacts of low carbon policies, and people's ability to meaningfully participate. We articulate the different areas of everyday life that are likely to be affected, built inductively from our analysis of scenarios for net zero transition. We used this approach to enter into dialogue with people from neighbourhoods in Leeds and Newcastle, sharing with them the existing visions of net zero in the public domain. We asked them to reflect on the likely impacts the wide-ranging changes expected under net zero might have on their everyday lives – and the agency, or lack thereof, they have to affect this.

It is well understood that 'change—extremely rapid social change—is the most important fact of life today' (Nolan and Lenski, 2011, p. xiii). We consider net zero transition to be a significant if not the most significant, all-encompassing process of social change since the industrial revolution. Our research draws together how macro, micro and psychological dimensions intersect: in family life, and in local communities, and places. We also foreground the notion of agency through a capabilities approach, looking at what people must do in transition, and the assets, resources and agency they have – or do not have – to participate.

The rest of this introduction sets out our research objectives and methodology. Section one introduces our conceptual person-centred, place-based approach – which has been developed from findings from an extensive evidence review and primary research, and which we put forward as valuable to others engaging in research and policymaking on the transition to net zero. Section two presents our analysis of the changes we expect to see in order to achieve net zero, and our assessment of how these will affect households and local communities. This assessment is taken from the existing evidence base through the extensive evidence review we conducted for this project. Section three presents our findings from the secondary and primary research. Section four puts forward policy recommendations in support of a person-centred, place-based approach for a just transition. Finally, section five proposes a plan for a different, integrated system that could deliver on these recommendations.

Research objectives and methodology

Responding to the research aims, the research sought to address the following research questions:

1. How can we systematically evidence the current and anticipated impact of the transition to net zero on households and communities?

2. How can we understand different profiles of risk and capability in households and communities to guide local and national policy considerations in welfare and net zero transition?

3. How can we collectively understand and mitigate the inequalities of social, economic and wellbeing impacts on households and local communities in the transition to net zero?

4. How can we identify and understand the interactions of community and place-based factors to the vulnerabilities and risks for households during net zero transition?

The research took a mixed-methods approach. An extensive review of existing evidence was undertaken, to understand the possible impact of scenarios of transition on families. For the purpose of consistently modelling the challenge of decarbonisation for families and how this would vary according to social and spatial inequalities, we found it was essential to select 'households' as the unit of analysis that represents the 'family' in this study. We appreciate that most families do not live in single household structures, and our review of the evidence therefore also explores what is known about relationships between families and how this may be affected by transition to net zero. The participatory research we conducted with representatives within communities then also explores familial structures and interdependencies between household units, in order to overcome the limitation of the majority of relevant statistical and survey data being organised 'per household'.

Some 375 pieces of evidence were reviewed, bringing together a technical literature base around the policy changes needed to reduce carbon emissions and the policy instruments most likely to achieve this (eg, subsidies, taxation, etc), with literature on environment and climate justice, social policy, social inequalities, and social exclusion. The review of literature sought to understand the impacts on families and communities and consider how to reconcile or mitigate these within transition. Secondary survey data analysis referenced in the literature was used to identify how the carbon footprint and, therefore, the challenge of decarbonisation, varied between different profiles of households. Finally, secondary survey analysis of the UK household carbon footprint survey; ONS surveys; Understanding Society and the Community Life Survey was also conducted to understand what is already known about individual, household and community capacity to engage in the transition to net zero.

Seeking to fill the gap between integrating social policy insights about inequalities today, and policy to bring about net zero futures, findings were distilled into a conceptual framework orientated around participation. The framework set out to identify opportunities and barriers to household and community participation, that would enable action towards decarbonisation, mitigate negative net zero policy impacts on households, and increase fairness and justice in the transition to net zero.

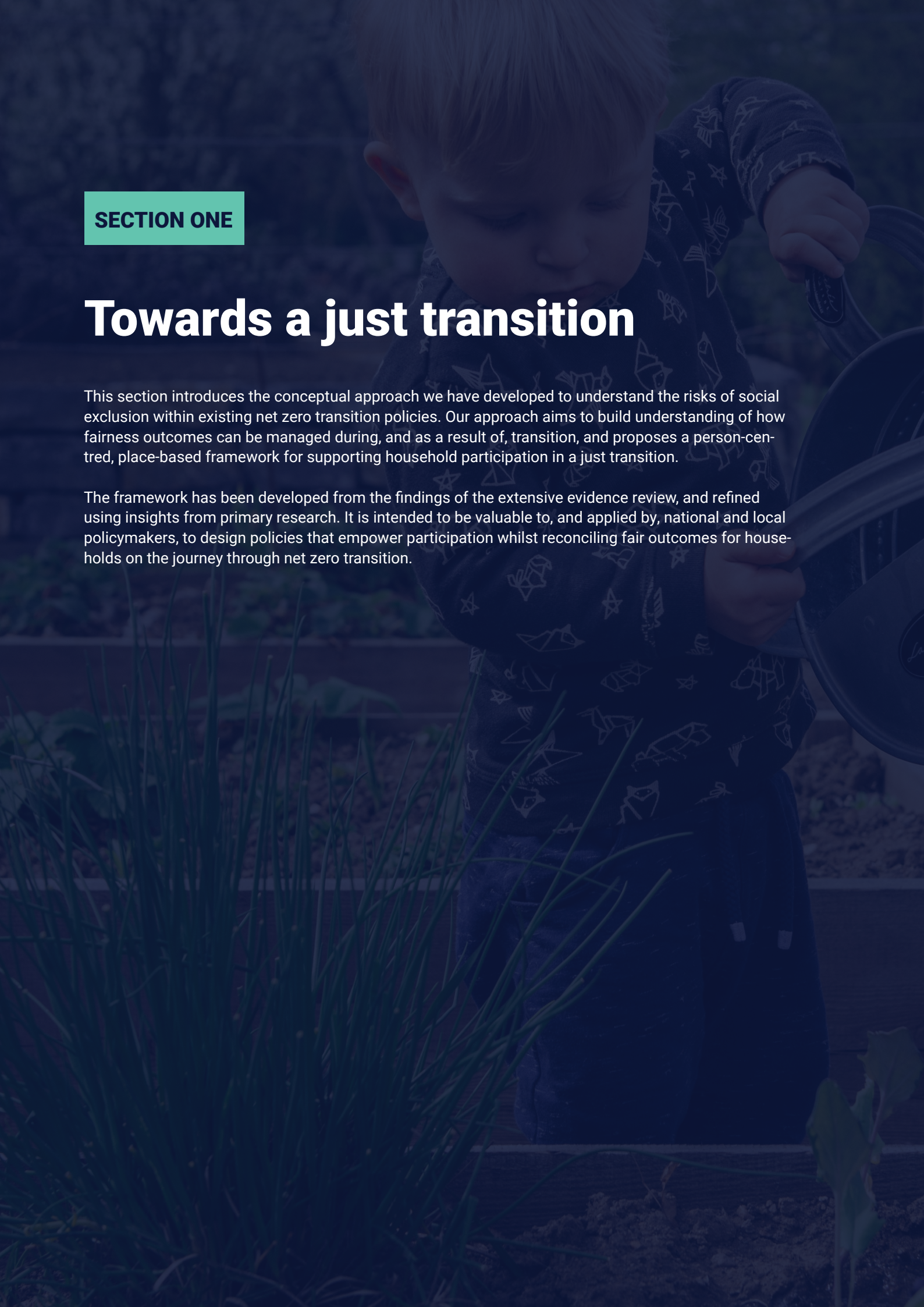
In depth primary research was undertaken to test the validity of the conceptual framework and ground it in lived experience. This involved repeatedly engaging over 100 people living across seven urban neighbourhoods in the north of England as a panel, through neighbourhood level workshops. Given the transition to net zero today is not explicitly grounded in principles of inclusion and social justice, the primary research sought to respond to the reality that those who might be defined as 'vulnerable' are often denied full participation in research (Aldridge, 2016), by adopting qualitative participatory research approaches.

People taking part in the research attended three compensated workshop sessions, which prioritised mutual learning and building autonomy amongst participants (Vaughn and Jacquez, 2020). Those we worked with represented a range of family and household economic and social circumstances, with a particular focus on financial precarity. A more detailed account of our approach and methodology can be found in Annex A.

We recognise that research and policy often risk leaving out the experiential knowledge of those considered 'vulnerable', overlooking contextual and needs-orientated insights about their experiences (Goedhart et al, 2021). As such, we have developed a methods playbook, sharing our approach and lessons learned, for the benefit of other practitioners and policymakers. This can be found in Annex B.

This group is the first time anyone has asked my opinion [on net zero].

Participant, Leeds



SECTION ONE

Towards a just transition

This section introduces the conceptual approach we have developed to understand the risks of social exclusion within existing net zero transition policies. Our approach aims to build understanding of how fairness outcomes can be managed during, and as a result of, transition, and proposes a person-centred, place-based framework for supporting household participation in a just transition.

The framework has been developed from the findings of the extensive evidence review, and refined using insights from primary research. It is intended to be valuable to, and applied by, national and local policymakers, to design policies that empower participation whilst reconciling fair outcomes for households on the journey through net zero transition.

Participation for a just transition to net zero

Effective participation that accounts for different barriers to taking part, is the key to ensuring no families and communities are left behind during a transition to net zero. As this research focuses particularly on the poorest households, it is important to remember that these households have particular challenges that may already exclude them from participation in society (Lister, 2004). Their active participation is fundamental to achieving social inclusion within our society, as explained in Levitas et al (2007). Taking this logic and applying it to the concept of a just transition that foregrounds fair and inclusive outcomes for all, means the poorest and most disadvantaged families and communities must be able to remain active and involved participants in our society as we experience the shift towards new and different ways of living sustainably.

Having established that all households and communities must be active participants in net zero if we are to realise a just transition, we can then ask the question *what can people do* to contribute to achieving this aim in an asset-based, rather than deficit-based, way. All households can make changes, if they have the resources and the agency to move towards low-carbon living, but they must be enabled to do so. We need to ask what barriers they face, and what opportunities can be provided, to enable them to move towards net zero living.

At the same time, we must acknowledge that the skills, capacity, resources and access to opportunities of households and communities can and will change over time, affording greater or lesser risks of inclusion and taking part. There is a risk that we see the process of transition as a series of static, isolated moments in time and the status of households' ability and accessibility to take part as finite. The opportunities to participate and the risks of exclusion will change as economies, infrastructure and the ways we need to live our lives adapt to meet decarbonisation targets and to mitigate climate impacts. For this, we integrate the work of Sen (1999) – namely, the capabilities approach. This considers how the opportunities to which people have access are made feasible, or are constrained, by personal and external factors, and that this is a constantly changing process.

Building on Lister, and integrating Sen and Levitas, offers a conceptual understanding by which people gain resources, capacity and choice to take part in a societal shift as fundamental as transition to net zero (Sen, 1999). This goes beyond the current, dominant discussions in the academic and policy literature about engaging the public in net zero policies, which have foregrounded 'behavioural change' as the dominant concept, and 'nudging' or 'compliance' with net zero measures as the principal approach.

Furthermore, it is important that communities and households understand that they have agency alongside choice – political and otherwise – to determine how they live and participate in a green society; that they are able to build a life they see value in, that is also low or carbon neutral, and have agency to shape their household's and communities' futures. The changes needed to reach net zero will become evident in all aspects of people's lives as the UK moves towards decarbonisation; but if access to transition is to be fair and equitable, then people must have choices about how this is achieved. We understand this as a trade-off, between reaching the levels of decarbonisation necessary and protecting fair outcomes for peoples' lives, which can be managed more fairly with the voice and participation of the households and communities it affects.

In drawing together the literatures on fairness, social exclusion and inclusion, and the literature on capabilities for participation, we can see that participation is a powerful lever of change by which vulnerable households and communities can more inclusively reach net zero. We begin to see participation is a process that can unlock opportunities for households and communities to move towards net zero, transforming nascent or low participation starting points into a powerful movement towards decarbonisation, on fair terms. Taken together, the conceptual framework we present in this study provides new, people-centred grounds for understanding what the risks and opportunities are in net zero, and a new approach for policymakers and leaders to act through, to accelerate the transition of households and communities to net zero.

What does participation look like in the transition to net zero?

To create a comprehensive view of participation in everyday life, first, we consider four key ways in which people interact in society: economic; social; political and civic; and through education and employment (Levitas et al, 2007). The following examples show how the four types of participation materialise in the transition to net zero, as identified in the existing evidence base.

Social participation

- Taking part in common social activities that use energy, produce waste or require travel - including leisure or culture opportunities.
- Holding meaningful social roles including decision-making over energy use and spend on food, fuel or how the home is run.
- Travelling to take part in other social activities.
- Using public and green spaces.

Economic participation

- Making economic decisions to reduce carbon emissions, which requires spending power and the ability to take financial risks.
- Making upfront investments in technology that contributes to the reduction of carbon emissions, which requires access to capital or affordable credit.
- Access to decent paid employment.
- Ability to withstand budget change, through personal and household financial resilience.

Civic and political participation

- Having a say about the transition to net zero, including through voting and peaceful, lawful protest.
- Participation in formal engagement mechanisms around the transition to net zero (eg governance processes, citizens juries).
- Access to trusted information about how the net zero transition will happen, which in turn requires digital access and access to civic spaces.

Education, employment, and skills participation

- Access to knowledge, training, and life skills to adopt low-carbon behaviours.
- Acess to education and (re)training to take up jobs in a low-carbon economy.
- Access to educational materials and information about the transition to net zero, including online and in local communities.

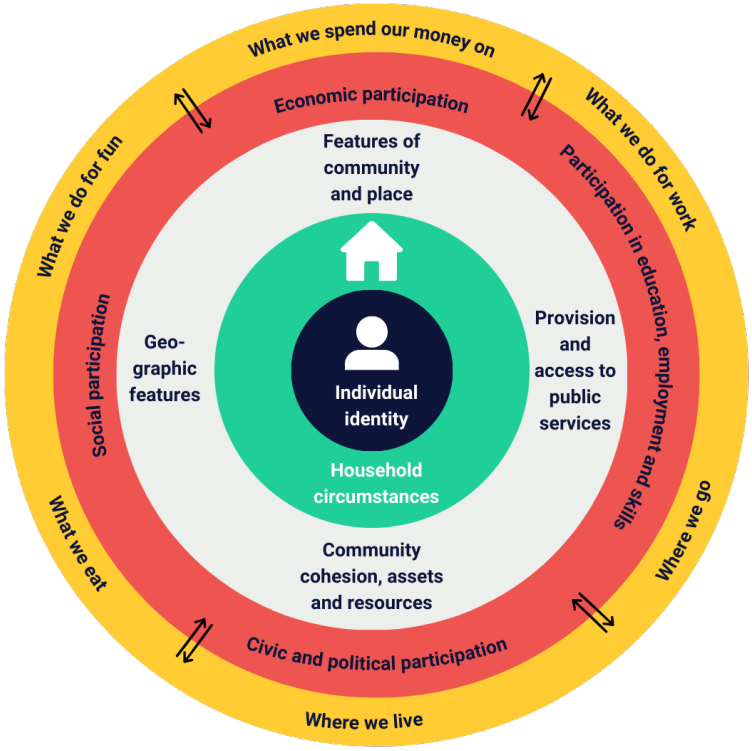
From the evidence base, we understand that participation is affected by household and community characteristics and conditions. Our approach therefore focuses on what people can and cannot do at different points and times, with the resources available to them. This means we can both see where people have agency (are able to participate) and understand the structural constraints that prevent people's capabilities for participation (Emmel, 2017).

Looking at opportunities for participation helps us to understand the interconnectedness of the areas of life affected by net zero, and see what affects the ability of people, households and communities to engage – or not – with changes to low-carbon practices. Bringing these ideas together with the findings from our literature review, we characterise in Figure 2, **a person-centred, place-based approach** to net zero.

What we mean by 'areas of life'

How people are affected by the transition to net zero will depend on how and where they live, where they work and their occupation, what they eat, what they do in their free time and how they spend their money. We use language that can be understood by people who are not experts in the field. For instance, 'where we go' is more intuitive than 'mobility' or 'transport'. Further, we know that people visualise their own lives in this way – thinking about home ('where we live') and leisure ('what we do for fun') as being associated with different needs, having various resources or monetary costs associated with them, and having a range of priorities in decision-making and budgeting.

Figure 2: A person-centred, place-based approach to net zero; showing the interconnectedness of the areas of life affected, individual, household and community characteristics.



This approach recognises that changes in each area of life will be shaped by people's ability to participate, which is in turn affected by the household in which they live, and the features of their community, including social and geographic factors. Moreover, changes in one area of life will affect the ability of individuals, households and communities to participate in change in other areas. Where a household faces greater pressure in one aspect (eg, increased food or energy prices) this will have knock-on effects in other areas of life (such as mobility or leisure).

The person-centred, place-based approach shows that households and communities are taken as two critical and intimately linked forms of social relations, that shape people's ability to take action, and affect their associated vulnerability in the contexts of changes happening in their life. Policymakers and those acting towards transition need to acknowledge that households; their resources; and decision-making constraints, are all inter-related.

Households intersect with communities, and people have agency in both spaces depending on their circumstances (Hargreaves and Middlemiss, 2020). The changes expected in the transition to net zero need to consider the quality of people's social relations as potential mitigating or leverage factors to support their agency for change, as well as the potential impact of policy changes on these relations (ibid).

Accounting for place conditions that make transition easier or harder for households within a location is then important. The place conditions that make transition easier or harder may be due to availability and proximity of green and public infrastructure, services, green spaces, and amenities; to the diversity, resilience and green potential of the local economy; or to the existence of assets, engagement structures, and social infrastructure that support trusted information sharing, civic engagement and the enabling of agency.

All are identified in the existing evidence base, even if how they will affect the efficacy of local net zero strategies is not currently discussed 'in the round'. This is a further gap that this research seeks to contribute to.

What could greater, more inclusive participation mean for transition policy?

Understanding participation through the person-centred, place-based approach helps identify opportunities for policy to respond more effectively, to build in greater inclusivity and wider participation in the transition process. It allows us to cut across the usual presentation of the role of individual behaviours and public choices in net zero, which is typically only shown through distinctive policy areas, such as housing or transport. Instead, participation allows us to consider the more rounded impacts transition could have on peoples' lives; and also a more holistic sense of the potential benefits. For example, transition to a more sustainable way of life is likely to improve people's sense of wellbeing, or make them more involved in their community, thereby reducing any feelings of isolation. It may also have a positive effect on their social mobility through improved education, employment and participation in the green economy locally.

We must also acknowledge via the integration of Sen's (1999) work on capabilities, the need to ensure people can lead full and dignified lives and sustain engagement through the decades-long period of net zero transition. Sen's work highlights equity, and the integration of this enables us to consider how to mitigate the risks of entrenching inequalities or backsliding during transition, as well as how to achieve fairer social, economic, place and equity outcomes. But we also need to look beyond this.

There is a foundational need for greater inclusivity, which connects participation to the fundamental rights of citizenship and to the social contract that should determine how the UK collectively reaches a fairer, more sustainable society (Arnstein, 2007; McBride, 2012). This relates to the need for policy and political decision-making, including net zero policy, to take a 'do no harm' principle, if the social contract is to be maintained between people and government.

Central to the human dimension of net zero transition, will be the ability to manage volatility and build collective resilience to protect households and communities from fluctuations or degradations in the decency, quality and cost of living, while empowering lives and livelihoods to take part in becoming carbon neutral.

This is important because we understand how economic circumstances, such as poverty, already constrain agency, and specifically restrict a household's or communities' ability to respond to circumstances that require immediate or shorter-term changes to behaviour, practices or areas of life. The likelihood of these volatile, short term changes alongside the long-term shifts to foundational areas of life – such as the efficiency of the home, or the regular mode of transport – is amplified in the net zero context because of how significantly and rapidly systems that households rely on have to change – from energy, to food security, to the availability of employment.

Summary

Understanding the transition to becoming a net zero society through a person-centred approach, allows us to understand it as a challenge of ensuring the fullest possible participation in society. It helps us to tackle the shortcomings of current policy design outlined above, and the consistent failure to take into account existing inequalities within how people and communities experience environmental policy. Importantly , it mitigates the tendency to approach net zero as solely a technical, not a social problem.

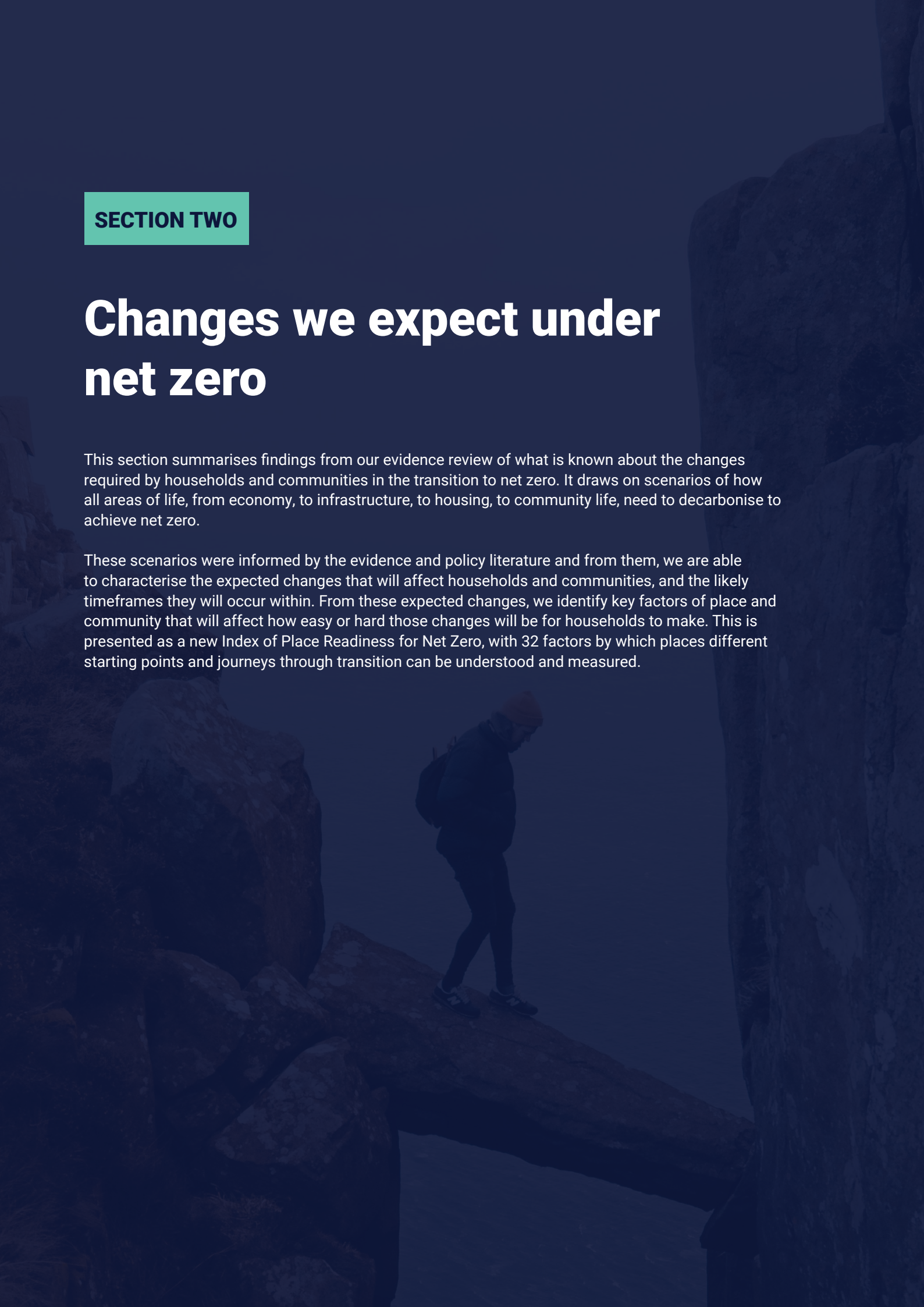
The next section discusses scenarios of change expected under net zero and how and where they will affect areas of life in households and local communities. It discusses characteristics that variate and exacerbate how certain income groups may be affected, and profiles how different households and communities may experience changes in the transition to net zero. These different areas of change, and the variations in how households and communities will be affected, need to be understood if we are to respond strategically to the transition to net zero.

SECTION TWO

Changes we expect under net zero

This section summarises findings from our evidence review of what is known about the changes required by households and communities in the transition to net zero. It draws on scenarios of how all areas of life, from economy, to infrastructure, to housing, to community life, need to decarbonise to achieve net zero.

These scenarios were informed by the evidence and policy literature and from them, we are able to characterise the expected changes that will affect households and communities, and the likely timeframes they will occur within. From these expected changes, we identify key factors of place and community that will affect how easy or hard those changes will be for households to make. This is presented as a new Index of Place Readiness for Net Zero, with 32 factors by which places different starting points and journeys through transition can be understood and measured.



Identifying key changes in six areas of life

The transition to net zero means households and local communities will need to change many aspects of daily life over a relatively short and continuously shifting timeperiod. This represents a radical social transformation. Decarbonisation in the UK has been described by some as 'both a unique opportunity and threat' (IPPR 2018:3), and several attempts have been made at forecasting scenarios for how a net zero future may look. (eg, BEIS, 2021; CREDS 2021; Climate Assembly UK, 2020; CCC 2021, 2020a, 2020b).

The research we reviewed details the areas of life that are likely to change for people, the expected developments and advancements in technology, and the things people will have to do to meet net zero targets. However, these scenarios present a largely uniform vision of life under net zero, which is often technical and focused on discreet policy areas. They do not reflect the diverse experiences of individuals, their families and communities.

Looking at transport, for example: there is detailed discussion by the CCC on how to reduce the climate impact of transport systems through a shift from petrol and diesel to electric vehicles, a ban on the sale of new internal combustion engine vehicles in the early 2030s, and the electrification of public transport systems. However, what is rarely discussed in any detail, is how a day-to-day reduction in mobility, through reduced access to public services or increased remote working for jobs, might affect family life and people's ability to socialise.

Table 1 below presents a summary of what is known from evidence and literature about the changes required across households and community life, in order to reach the decarbonisation measures needed to achieve net zero.

Table 1: A summary of the changes likely to come about under net zero, summarised from the scenarios created by government, citizens and academics (Climate Assembly UK, 2020; BEIS, 2021; CREDS 2021; CCC 2021, 2020a, 2020b). Some of these changes, such as a shift to EVs or retrofitting homes, are already happening (Skidmore, 2022).

Area of life	Key changes that may be required for the transition to net zero
Where we live	• More localised energy systems for heating the home • Increased home or community-based energy micro-generation • Greater use of heat pumps and other energy sources such as hydrogen, or more flexible use of energy • Increased used of 'smart' home technology and systems • Greater reduction in home energy use through more efficient appliances
Where we go	• Shift away from petrol or diesel to electric vehicles • Provision of infrastructure for active travel, such as cycling • Provision of green public transport • Reduce number, and length, of journeys
What we do for work	• More jobs in the 'green' economy and fewer in carbon-based industries, such as mining or steel • Increased access to (re)training and skilling for 'green' work • More flexible, and home, working arrangements
What we eat	• Shift towards plant-based or lower-carbon diet • Less food waste • Reduction in carbon footprint of food, including less packaging and shift towards locally sourced and seasonally available foods • Changes to agricultural practices to reduce emissions
What we do for fun	• Shift towards local or virtual social and leisure activities • Development of infrastructure to increase 'green' social and leisure activity • Reduced carbon-intensive activities, such as flights for overseas holidays
How we spend our money	• Flexible buying and consuming: some high-carbon products become more expensive as a result of taxation, while low-carbon products become cheaper • Discontinuation of some products as standards and regulations require lower-carbon production and consumption • Preference for households and communities to shop locally to reduce buyer and supply chain carbon emissions • Reduction of waste, such as packaging and single use products

What we know about peoples' starting points for transition to net zero

The evidence is clear that net zero transition will lead to potential trade-offs between social, economic and environmental objectives. Both evidence and policy assessment suggest that these objectives are challenging to satisfy concurrently (Gillard et al., 2017; Hasegawa et al., 2018; Hussein et al., 2013; Robinson and Shine, 2018), and there is an urgent need for greater policy integration (Mandelli 2022). As the UK government's own Mission Zero (2022) report notes: transition is not 'risk free' for households and communities.

We can see from the evidence that households and communities in the UK do not start their journey towards transition from a place of equality. Households have different carbon footprints currently (see Figure 3) and different existing inequalities that affect their quality of life, opportunities, and lived experiences, of the different areas of life where changes will have to occur to reach net zero (see Table 2, below).

As a result, substantial concerns have been raised about the potential for the transition to net zero to disproportionately impact those already experiencing disadvantages (Caplan, 2017; Kennedy and Snell, 2021; Snell, 2022). If these trade-offs are poorly managed, the transition risks pushing already vulnerable families and communities further into deprivation, exclusion and crisis. Furthermore, these groups are most likely to be affected by both climate change impacts, and policy choices associated with net zero. Table 2 sets out the existing and new inequalities likely to be associated with a transition to net zero.

Table 2: Existing and new inequalities likely to be associated with a transition to net zero.

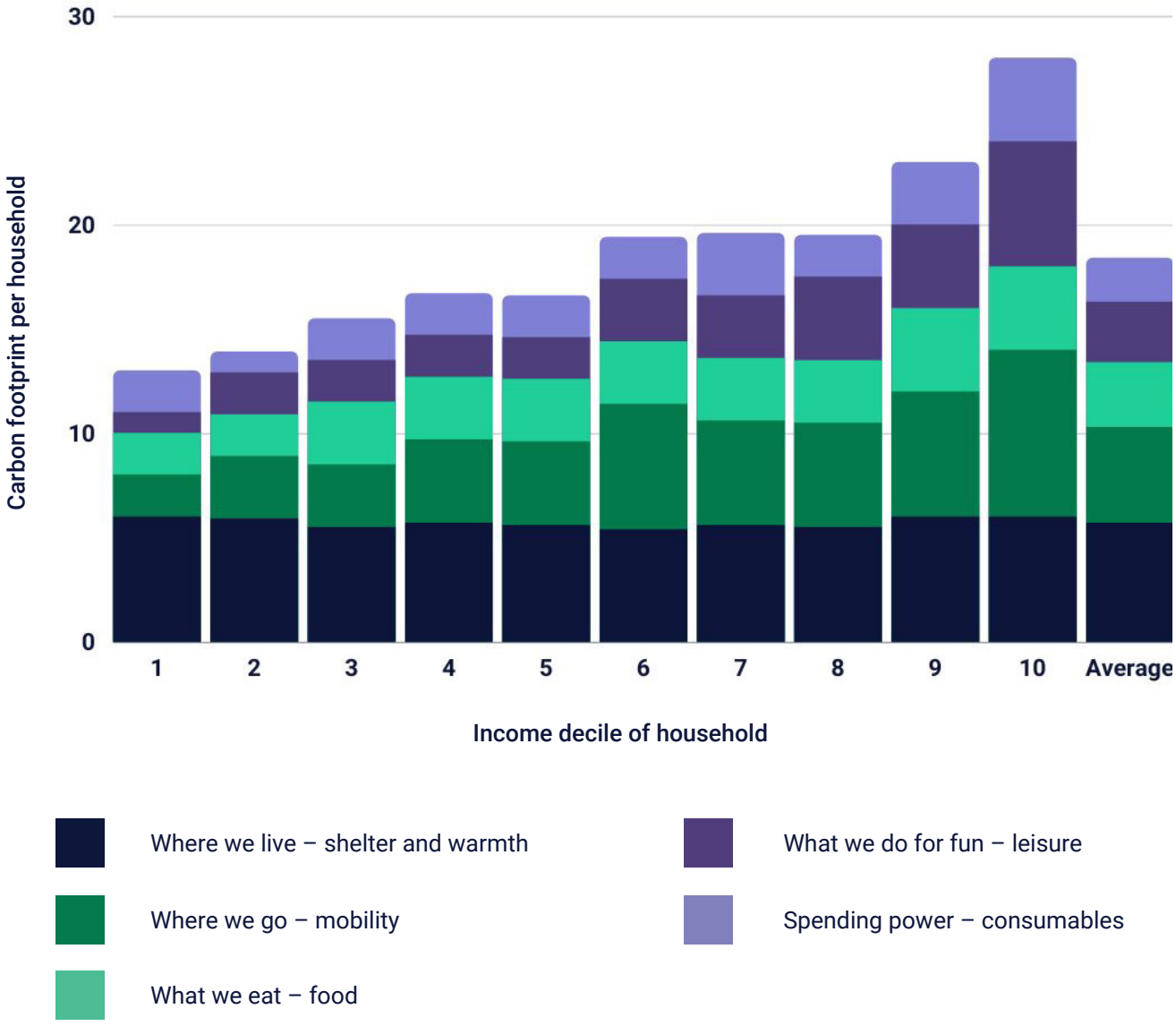
Area of life	Existing inequalities	New inequalities
Where we live	Poor quality, inefficient, cramped housing (producing energy poverty); housing stock variable across regions and by tenure type (eg, privately rented are in a worse condition).	Inequalities of what is called 'flexibility injustice', with residents locked in to old, increasingly expensive systems and technology; and an escalating digital divide.
Where we go	Affordability of private transport, and inaccessibility of public transport; lack of safe, appropriate active travel, such as cycling.	People forced to retain old vehicles that are increasingly expensive to maintain; lack of access to, and poor EV charging, infrastructure.
What we do for work	Limited employment and training opportunities and options.	Unemployment as carbon-intensive industries restructure; area-based decline.
What we eat	Availability of affordable and nutritious food, such as fresh fruit and vegetables.	More expensive food; risk of stigmatising groups who do not have means to change from cheaper diets.
What we do for fun	Affordability and availability of local leisure, such as health clubs and cinemas.	Localising leisure and cultural activities may reduce opportunities for fun and interaction.
How we spend our money	Affordability of existing products.	People with high-carbon needs may have to pay more.

To understand the changes that might occur in transition, it is useful to consider the distribution of carbon emissions across different areas of life, and between households with different characteristics. Differences across income levels are particularly marked. Figure 3 shows the environmental impact of household consumption by income decile, divided into the different areas of life we have identified in our review.[1]

It is clear that environmental impact increases with income. Those on the highest incomes (decile 10) have a carbon footprint more than two times larger that of the lowest decile for equivalent household composition. The relationship between income and environmental impact is well known and holds true both within and between nations (Büchs and Schnepf, 2013; Hubacek et al., 2017; Ivanova and Wood, 2020; Oswald et al., 2020; Owen and Barrett, 2020; Steinberger et al., 2010).

1 Household spends have been equivalised for comparison to show the impact of a two-adult household in each decile, the standard household type used by the OECD and UK government when making comparisons by income decile.

Figure 3: Equivalised two-adult household carbon footprints (UK-wide, 2018 data, Source: Owen, A, University of Leeds).



We can see lower income households have a lesser carbon footprint, yet emissions do not increase with income across all the areas of life. For instance, in the UK emissions associated with 'where we live' remain largely consistent regardless of income decile. While this means changes to homes must be consistent across income deciles, they will likely be experienced differently across level of income.

For example, low-income households might reduce energy consumption by radically changing consumption habits at home, but higher-income households might switch to more energy efficient technology (which is often costly), without much change to their consumption habits (Khaykin and Kreacic, 2023).

In contrast, emissions associated with 'where we go' and 'what we do for fun' vary drastically with income level. The emissions associated with 'where we go' (through commuting and essential journeys) and 'what we do for fun' (namely leisure and holidays) are almost four and almost five times larger for the highest income decile, than for the lowest decile.

The requirement to reduce carbon emissions in these aspects of life is therefore unequal across households of different incomes. Changes to 'where we go' and 'what we do for fun' would require change that is proportional to current use level. For example, between 2006 and 2018, 20% of households in the UK took 75% of flights, with much of the discrepancy in use associated with wealth (Büchs and Mattioli, 2021).

Here we have demonstrated differences in the experiences of the transition to net zero across income. However, other existing inequalities – for example gender, race and ethnicity, disability, age, education, citizenship status and geography – are all highlighted within the literature as factors that may mediate how people experience change.

Community is also acknowledged as an organising force. At the local level, capacity, assets, information flows, social ties and community strength may mediate – positively or negatively – households' cooperation with, and capability to participate in, net zero. The distribution of local and national government resources over the last 10 years (Harris et al., 2019), and different approaches to leadership in declaring climate emergencies, has also resulted in a situation where some places and communities are further ahead than others in shaping, determining and implementing their transition strategies.

Understanding which households are currently contributing more or less to climate change emissions, and in what ways, helps us understand the scale of household change that might be required in order to participate in the transition. It also helps us understand *what* changes in *which* areas of life require more or less action by which household profiles. Alongside this, reviewing the evidence on existing inequalities helps us assess what capacity, and what barriers, exist, for different households to take action towards shifting to low-carbon living as part of the transition.

Additionally, household and community inequalities are often embedded, and intertwined with, the inequalities experienced at different scales of place from hyperlocal to regional level (McCann, 2016). Indeed, our person-centred, place-based approach highlights the intimate links between household, community, and place. As such, understanding the different starting points across *whole* places such as neighbourhoods in which households and communities experience daily life, is crucial for enabling more inclusive and widespread participation in net zero transition.

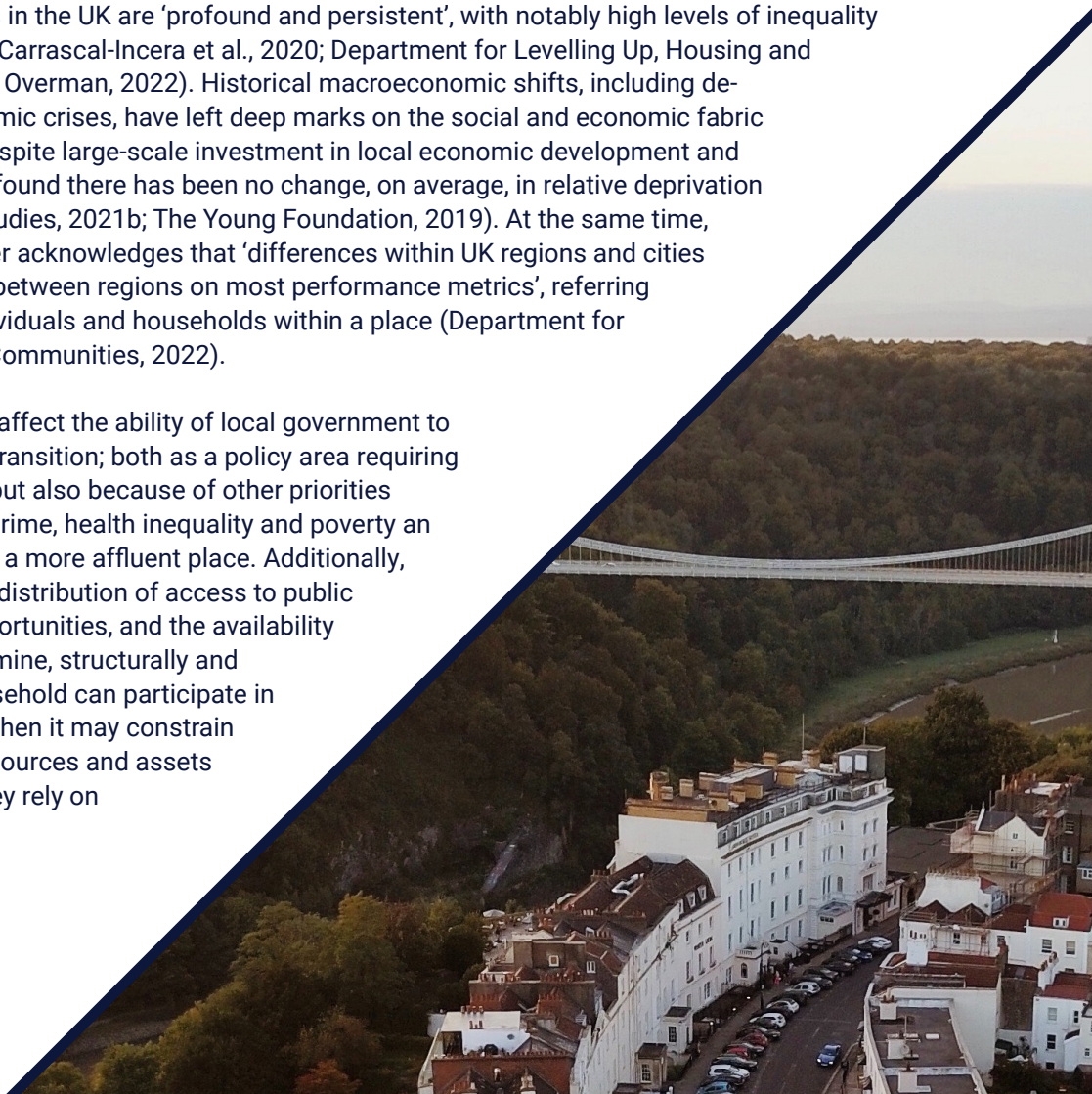
Understanding different starting points: An index of readiness

The second phase of our project drew from the likely net zero scenarios and the evidence on how local communities will be affected, to identify whether it was possible to assess how much vulnerability a community had to net zero transition through a data-led approach. Through interviews with local authorities and review of the literature, the concept of 'readiness' was raised: with different local places aware they had different starting points for decarbonisation due to their unique make up of infrastructural, economic, housing, population and other factors - but unable to statistically evidence the scale of the challenge, or to see it in the round. This section introduces the concept of an Index of Place Readiness, which responds to this need to understand and break down the relative and variable challenge for different places to specific factors, and to be able to measure progress against these factors.

Our evidence review finds that transition to a net zero carbon economy will take place within an existing structure of societal inequalities (Caplan, 2017; Kennedy and Snell, 2021; Snell, 2022). This includes deeply entrenched place-based inequalities. The findings from the participatory research, shared in the following section, also highlight this and can inform policymakers and those shaping transition strategies. While households and communities' participation and readiness are shaped by individual socio-economic and demographic inequalities, they are also deeply affected by *place*; in other words, the social and economic factors affecting their neighbourhood, local authority, city, or region (McCann, 2016).

Disparities between regions in the UK are 'profound and persistent', with notably high levels of inequality by international standards (Carrascal-Incera et al., 2020; Department for Levelling Up, Housing and Communities, 2022; Xu and Overman, 2022). Historical macroeconomic shifts, including de-industrialisation and economic crises, have left deep marks on the social and economic fabric of places across the UK. Despite large-scale investment in local economic development and regeneration, research has found there has been no change, on average, in relative deprivation (Institute for Community Studies, 2021b; The Young Foundation, 2019). At the same time, the Levelling Up White Paper acknowledges that 'differences within UK regions and cities are larger than differences between regions on most performance metrics', referring to differences between individuals and households within a place (Department for Levelling Up, Housing and Communities, 2022).

These regional inequalities affect the ability of local government to prioritise and resource the transition; both as a policy area requiring incentives and resourcing, but also because of other priorities relating to the deprivation, crime, health inequality and poverty an area may face compared to a more affluent place. Additionally, the level of deprivation, the distribution of access to public services and economic opportunities, and the availability of community assets determine, structurally and relationally, how well a household can participate in the transition; particularly when it may constrain their access to services, resources and assets from other places which they rely on in everyday life.



To understand how different places have different starting points, a data-based assessment of readiness would be valuable. It would diagnose how well places can access the opportunity of, and respond to the challenges of, transition to net zero, across different indicators. By readiness, we mean the combined level of perceptions; acceptance; tools, levers and resources, and the agency of the place-based community, to shift to low-carbon living through participation. This will fluctuate and change over the period of transition, and therefore readiness is dynamic, not static.

In the proposed assessment, we acknowledge and account for factors that are determined by local conditions, resources, heritage, and governance (eg, public service infrastructure and quality of housing); structural factors that are determined by macro dynamics of power and resources that go beyond just being determined by place (eg, poverty, vulnerability and strength of economy); and agency factors determined by micro dynamics of power and resources, experienced at the person or household level (eg, social relationships, income and tenure). The performance, condition and interdependency of all these factors can either prohibit or facilitate the unlocking of a community's capabilities, making transition to net zero easier or harder to achieve. The impact of these factors in some cases are consistent; however, the interdependency of factors is unique to each place. The technical note in Annex C provides information about the data integration and metrics used to pilot a calculation of readiness in net zero.

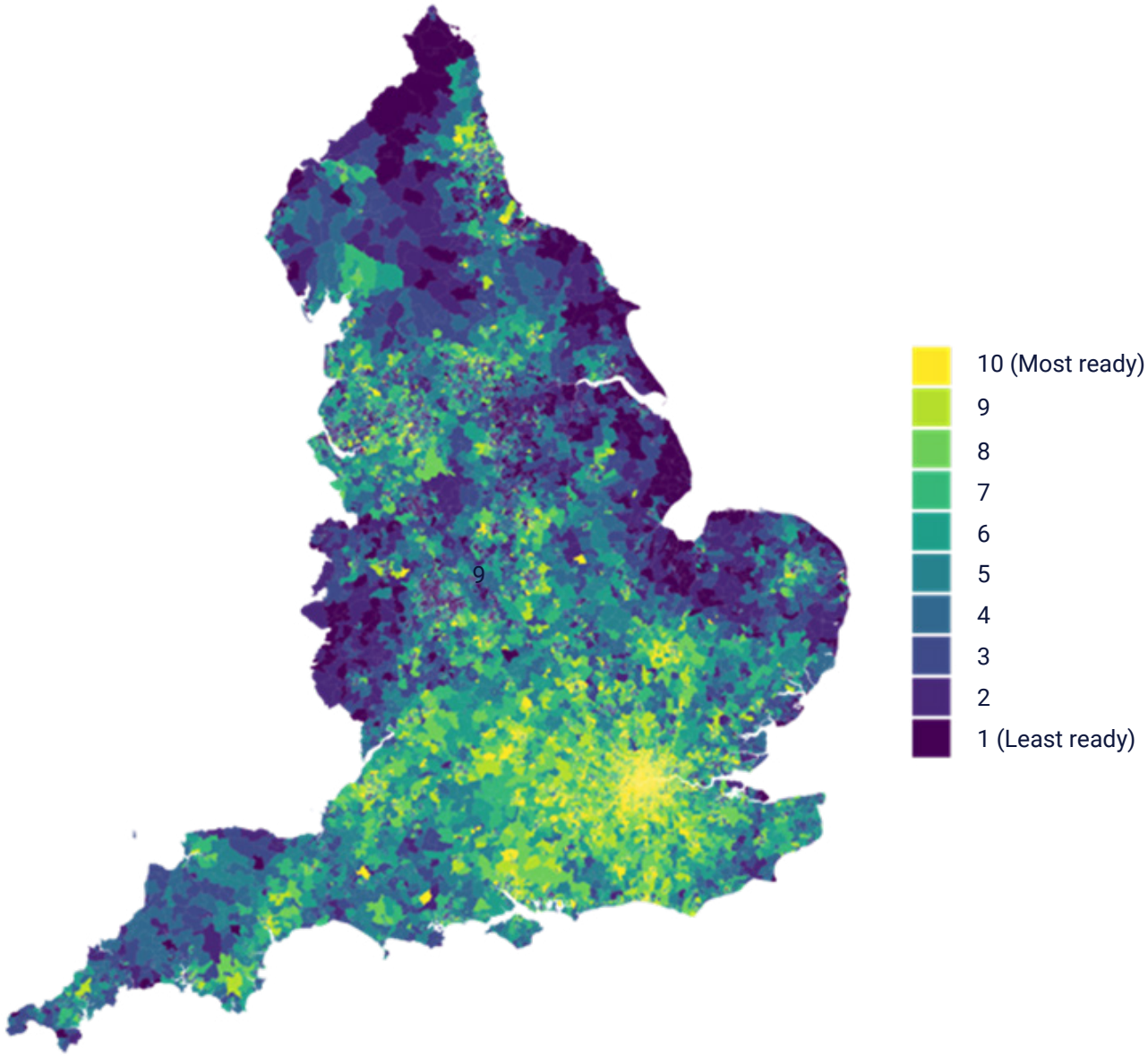
The aim of the index is to support local policy design, and steer priorities for the distribution of public funding and powers and priorities for investment. This includes intelligence for where public-private partnerships and their Environmental, Social and Governance (ESG) commitments can target their investment to increase a place's readiness. It will require collaboration between local authorities and private investment to identify how to respond to the Index in order to start, or accelerate, a place's transition to net zero.

It is important to state that understanding place readiness does not reduce the need for foundational support for the poorest households. Our research corroborates the Treasury's assessment (2022) that the poorest households will need a foundational financial grant to make the 'big changes' necessary to reach net zero. Exploring household barriers to participation with participants adds detail to the understanding of what a foundational support package should entail. A combination of welfare, public education, public finance, and skills-focused support within a policy or scheme for economic support for households might better activate mass participation of the poorest households in net zero transition, rather than the one-off grants for energy switching or boiler upgrades that are currently available.

Additionally, our research has captured the distinctive risks, challenges, opportunities and pathways individual neighbourhoods and local authorities face as they move towards net zero. We have drawn on our findings to identify various metrics (see Table 3) that reflect the different place, structural and agency factors that affect readiness. Our proposed index goes beyond previous analyses of the spatial distribution of risks and opportunities of different industries, job markets, and regions in transition, to arrive at the hyperlocal level, where these challenges and opportunities are most immediately and strongly felt.

Taking a sample of the 20 Lower Layer Super Output Areas (LSOAs) – in other words, neighbourhoods – with the highest overall readiness scores, and 20 LSOAs with the lowest overall readiness scores (out of a possible 33,755 LSOAs), this shows those with the highest readiness scores are all in London. However, while many more LSOAs in the south of England have a higher readiness score, the index identified a dynamic beyond the typically cited 'North-South' divide. The 20 LSOAs with the lowest readiness scores are concentrated across coastal areas in the east of England, in particular between Norfolk and the East Riding of Yorkshire, and the east coast of County Durham. This suggests significant shared characteristics and conditions, despite the vast geographical stretch.

Figure 4: A heat map visualising the spatial distribution of readiness scores across England. Annex C provides a brief technical note of how these scores were calculated.



The findings from this scoping exercise also indicate common relationships between three different factors at the hyperlocal level. Of the LSOAs with the 20 highest and 20 lowest place factor scores, those with higher place factor scores (average 0.94) had slightly higher structural factor scores (average 0.58) but lower agency scores (average 0.21). Meanwhile LSOAs with significantly lower place factor scores (average 0.08) had relatively low structural factor scores (average 0.399) but much higher agency scores (average 0.58). This might indicate an inverse relationship between place and agency factors; caused by how places enable or prohibit a households' ability to make low-carbon choices. For example, if Place A has really good public transport infrastructure but it is costly, so people with low incomes cannot enjoy it; or place B includes more households with higher spending power but no local, green economy or no choices of low-carbon technology to spend it on. We have identified some common dynamics such as these, but many are specific to their place, so we would suggest that this is further explored through participatory processes with households and communities, with the aim of understanding the levels of commonality and difference in how different factors of economy, agency and place impact on households' participation in net zero transition.

Table 3: Metrics used to build the Index against the key findings from the research. Marked with an asterisk (*) are metrics desired for inclusion that are currently unavailable at the necessary geographic level.

	Construct	Metric(s)
Agency factors	**Spending power**: Families experiencing income deprivation, food insecurity and fuel poverty are at greater risk of exclusion because they can't afford to participate in the transition to net zero or have greater financial risk aversion as a means of resilience.	Household income; food insecurity; fuel poverty; disposable income; savings*.
	Inflexible costs: Families experiencing inflexible costs, including costs due to disability and limiting health conditions, or family composition given age/size, face more barriers to adopting changes that would come with transition.	Presence of disability or long-term health condition; household composition (size, age)*; proximity to extended family*.
	Political disengagement: Families and communities who are civically or politically disengaged have poorer access to decision-making mechanisms about how the transition to net zero will affect their lives.	Political participation; community strength*; residents with non-voting citizenship*.
	Tenure: Families face specific challenges to participation depending on their housing tenure and the restrictions it may impose. Private rented tenants, including those living in unlawfully rented properties, and those in temporary accommodation and social rented tenants, will have very limited bargaining power to make decisions about changes to their home. Homeowners under leasehold may also face some restrictions regarding what structural changes they can make given freehold or planning restrictions.	Tenure status.
Structural factors	**Economic decline**: Long-term economic decline will affect how families and communities experience and participate in the transition to net zero across multiple areas of life. This includes how economic decline causes conditions for unemployment, reducing resources available to households, communities and places to manage both current and future decision-making, and leading to political disengagement.	Economic decline; job density; unemployment.
	Public perception and knowledge: Broader negative public perception and knowledge of the transition to net zero can reduce participation. This includes details of the transition and related changes, perceptions of fairness and equality , trust in decision-makers, and division of roles and responsibilities. This can also impact on building collective bargaining power and influencing decision-making.	Trust in government*; awareness of net zero*.

Place factors

Construct	Metric(s)
Physical connectivity: The transition to net zero will reduce mobility generally and increase dependence on electrified transport systems and active travel, such as cycling. Families and communities living in places that experience poor infrastructure or expensive transport connections, will find it challenging to participate.	Access to public transport; EV charging points; active travel infrastructure; ruralness*.
Access to green space: Families and communities living in places with limited access to public and private green or outdoor space, will be limited in their options for nearby social and leisure activities, and sourcing local food.	Access to green space.
Social and community infrastructure: Places with less social and community infrastructure result in families and communities having less social interaction and poor access to public services that might otherwise help them build knowledge, access resources and tools, and manage trade-offs during the transition to net zero.	Digital exclusion*; local authority borrowing or debt; community strength*.
Housing stock: Some places are populated with homes and buildings that are harder or more expensive to decarbonise, due to the nature of the build or the state of disrepair. Such families and communities are less likely to be able to make the home improvements required in transition, such as installing new technology or making structural changes to improve energy efficiency.	Net zero-friendly heating; EPC rating; local green energy production*.

SECTION THREE

Understanding participation today

This section presents the lived experience and household perception of each of the four types of participation in the transition to net zero, as introduced in Section one. We draw on our person-centred, place-based approach to a just transition, to think about participation comprehensively and how it surfaces in everyday life and practice. Below, we explain what is meant by each type of participation economically; socially; politically and civically; and through education and employment. We summarise existing evidence about risks of exclusion from participation across all four types in the short, medium and long-term.

We then collate accounts and examples of people's participation today from the participatory research conducted with the poorest households and communities, drawing out consistencies in how households told us they are currently able to participate, and where there are structural constraints that prevent them in doing so in the context of transition to net zero. Finally, we reflect on what our findings mean for existing policy interventions that exist today.

Our findings paint a comprehensive picture of how the change associated with net zero will impact on households and communities, and what can be done about this. This is intended to help policymakers identify, understand and support two key outcomes in the just transition: to mitigate negative net zero policy impacts as outlined in Table 2 of Section two: Changes we expect to see under net zero, and to increase fairness and justice in how families and communities experience the transition and how equitably, and how far, they can take part.

Economic participation

Economic participation relates to whether or not people can keep up with the cost of changes associated with the transition to net zero. It also considers whether they have the capabilities to make economic decisions that enable them to reduce their carbon emissions.

Being able to participate economically is about being able to live a decent life (as noted in Table 1 of Section two: Changes we expect to see under net zero). Under net zero, economic participation will involve being able to afford change to small purchasing decisions, such as shifting to lower-carbon food sources or greener consumables, as well as large investments in essential home retrofit and new equipment related to the home, transport or energy-saving. To afford the high upfront costs of new low-carbon technology households will need capital or affordable credit, flexibility of spending power, and the ability to take financial risks. The size, timescale and pressure on their overall budget impacts the ability of different households to participate.

Economic participation is necessary in most of areas of life under net zero. Where we live, where we go, what we eat, what we do for fun, and how we spend our money require direct spending by households and any changes to the cost of goods and services will affect households' ability to participate. Such changes could be a direct result of policy (the tariff on plastic bags being a micro – but impactful – example), or due to changes in markets that make goods, particularly technology more accessible. Equally, access to decent employment that complies with net zero goals, ie, what we do for work, will also shape households' ability to participate economically.

What evidence already exists about economic participation in the transition to net zero?

Table 4 summarises the existing evidence on the risks shaping net zero transition in the short, medium and long-term, and the policy instruments that might be used to mitigate these. The Treasury's assessment warns that within each technology transition, there will be 'a range of factors that affect the degree to which a household could be exposed to costs, and how soon they could experience the benefits of the new, low carbon economy' (HM Treasury 2021, 6).

The key population of concern, with regard to economic participation, is low-income households, where coping with price fluctuations is hard or impossible. Low-income households might have limited or no money to fund changes to the home or low-carbon choices in transport, lifestyle, housing or even, diet (Gillard et al., 2017). The risk is not exclusive to households which are low income, however; other characteristics affect this differently. Some middle-income households that were not previously experiencing financial precarity, might now be due to the rising cost of living in the UK.

Focusing on low-income households for the moment, they are unevenly distributed, both socially and spatially, across the UK. For instance, higher wages are concentrated in a handful of cities (notably London) and the south of England, while the north of England and some coastal and rural areas have lower average wages (Xu and Overman, 2022). The bottom 10% of earners make a similar amount everywhere (£8-9 per hour), placing low-income households in high-income regions at a greater disadvantage.

Table 4: Key risks shaping economic participation in net zero in the short, medium, and long-term.

When might key risks emerge?	What key risks might emerge?	What might some of these risks be, according to the literature?
Present day issues that are holding back the transition	Fuel poverty prevents engagement with net zero	Fuel-poor households are struggling with current aspects of the transition for multiple reasons, exacerbated by socio-economic, demographic and spatial inequalities with evidence of north-south, urban-rural disparities (Calver and Simcock, 2021; Chapman and Okushima, 2019; Gillard et al., 2017; Johnson, 2020; Kelly et al., 2020; Powells and Fell, 2019; Snell et al., 2018a).
	Prohibitive cost of upgrading poor quality housing	Less energy-efficient homes largely owned by people on low incomes who struggle with higher costs of renovations (LGA, 2022). Spatial impacts of fuel poverty indicate north-south and urban-rural inequalities (BEIS 2023).
	Poverty premium leaving insufficient funds for net zero	Less energy-efficient homes largely owned by people on low incomes who struggle with higher costs of renovations (LGA, 2022). Spatial impacts of fuel poverty indicate north-south and urban-rural inequalities (BEIS 2023).
	Rising costs of living leaving insufficient funds for net zero transition measures	High cost of basic goods and services hits low-income households hardest (Davis et al., 2021).
	No control over decision making for net zero transition	Tenants have to pay more for energy because landlords will not upgrade home due to 'split incentive' (Ambrose et al., 2016).
Medium term (within next five years)	Financial risk aversion resulting in being left behind	Households are reluctant to invest in risky expensive technology (Calver et al., 2022; Markkanen and Anger-Kraavi, 2019; Snell et al., 2018).
	Prohibitive upfront costs for retrofit and vehicles technology	Buying an electric car (Markkanen and Anger-Kraavi, 2019), converting heating from gas to electric (Calver et al., 2022), investing in solid wall insulation is out of reach for low-income households.
	Financial impact of increasing use of Demand Side Management (DSM) to manage electricity grid	Financial risk of higher energy prices for those who can't engage with DSM (where energy prices are briefly increased during the course of the day). (Adams et al., 2021; Skidmore, 2023; Calver and Simcock 2021; Powells and Fell 2019).
Long-term (within next 10 years and beyond, as policies interact and accelerate)	Rising costs of more 'desirable', energy-efficient housing	Risk of 'renoviction', 'green gentrification', and rising rents as results of increased investment in housing and changing energy regulations (Platten et al 2020; Skidmore, 2023; Goulden and Healy, 2023).
	Rising costs associated with electric vehicle gentrification	Installation of low-cost electric vehicle charging points in low-income areas can attract wealthy newcomers, risking disruption and displacement of established communities. Significant spatial impacts (Henderson 2020).

Potential increased energy costs associated with net zero	Concerns that heat pump and hydrogen roll-out has the potential to increase energy costs in the north of England initially (without appropriate intervention). (Savage et al. 2021; Scott and Powells 2020).
Increased transport poverty as a result of net zero	Where net zero polices are focused on private transport, they could force more low-income households to give up their cars on the basis of cost (Sovacool et al., 2019c). This is described by Henderson as creating a 'kinetic elite'. In terms of leisure, net zero-associated taxes on flying could reduce access to tourism for those on low incomes (BIT, 2023).
Phasing out of cheaper high-carbon products, and higher financial penalties associated with their use (eg, carbon taxes) resulting in households being left behind	Expensive to run and maintain internal combustion engine (ICE) cars and inefficient homes (Simcock et al., 2021; Sovacool et al., 2019c). ICE car owners miss out on 'green' incentives, such as reduced vehicle excise duty (King, 2020), congestion charges, and parking charges (BIT, 2023). Where financial policy instruments are introduced to encourage low-carbon living (including charges on energy, fuel, clothing, electrical goods, household goods, food), this could result in skewed or limited food choices for those on low incomes (BIT, 2023)

Policies to ensure a 'just transition'

Present day and medium term:

- Provision of capital funding to households that cannot afford outlay.
- Investment in infrastructure – eg, a large-scale rollout of deep retrofit targeted at the poorest households, to remove the largest cost burden from them.
- Public and active transport networks.
- Regulation that penalises non-compliance with net zero policies; and, in turn, regulation that supports take up of new zero schemes (eg, policies that incentivise landlords to insulate homes; support them to adopt insulation schemes; and finally penalizes them if they do not make homes more energy efficient).
- Place-based approaches for housing-related issues (NZIPb, 2022).
- Interventions that improve trust or incentivise investment for those who can afford it (eg, 'one stop shops' for advice on retrofit (Nice and Sasse, 2023).

Long-term:

- Preventative measures so that households are not left behind (see above).
- Caution taken with regard to carbon taxes and impact on fuel poverty (Berry, 2019; Bouzarovski and Simcock, 2017; Robins et al 2019).

What people taking part in the research said about economic participation in the transition to net zero

Most people taking part in our research were experiencing some kind of financial uncertainty (see Annex A for more detail on our sampling approach). They expressed fears that the transition would exacerbate any existing financial challenges and economic inequalities they faced. Their accounts described struggling to meet the costs of basic needs, reduced spending power, and greater aversion to financial risk. These were all noted as barriers to making changes to low-carbon living, and additional to existing financial 'coping' strategies.

The research was carried out during an energy and cost-of-living crisis, which saw consumption-related expenses dramatically increase for many. However, data (Institute for Community Studies, 2021) shows economic participation as the highest barrier to taking part in transition likely pre-dates these crises. People taking part in the research expressed concerns for low-income families and communities, as well as an emerging group with significantly reduced, disposable income, due to the cost-of-living crisis. Risks to this group were raised given they were often not eligible for grants or government support to make changes and participate in the transition, due to the thresholds set.

At the same time, participants demonstrated a strikingly high 'consumption literacy' – meaning they were aware how much energy they were using and could estimate where the 'non green' parts of their lifestyle exist. In particular, they were motivated to participate in changes to the transition to net zero where it created cost-saving benefits, conditional on those changes being accessible to them. Our research identified the following key concerns in relation to building economic participation in net zero transition.

1 High upfront costs, and high running costs of technologies that are not green or sustainable

Making changes to either the energy efficiency of the physical fabric of the home, or to home-based consumption, were the highest areas of interest and most frequently discussed issues. Participants gave examples of exercising agency to make changes on the scale that was economically viable for them. This was typically small scale for poorer households (for example, discussing home energy-saving 'hacks' such as bulk cooking, or the installation of draft excluders).

However, most said any changes in transition that required high upfront costs were unattainable. This was mostly discussed in the context of making structural adaptations to the home (double glazing, insulation) and investing in larger-scale, energy-efficient technologies including changes to home energy sources (electric vehicles, heat pumps, solar panels).

> *We've done all we can in the house to reduce our energy consumption – all I could afford. I've got a new boiler, but it's not the heat pump one because...I can't afford it...I'm making draft excluders, I'm going to make curtains to some of the doors...not turning the heating on and all that. But, of course, that's more economic necessity....I can't afford anything more than I've done.*
>
> **#2, Neighbourhood 1**

Additionally, uncertainty and lack of clarity about the future running costs of new technology was discussed as a barrier to upfront investments. Participants reflected on the risk of future policy 'U-turns' or changes to guidance, and how this reduced appetite today for making investments. This was connected both to trust and to past, lived experience.

Many reflected on the guidance on technologies that had changed over the years, such as diesel cars. This reduced their trust in adopting technologies such as electric vehicles and lowered their sense of a likely return on investment. This is despite the promise of personal return on investment, and the drive to contribute personally to reaching a greener society, being strong drivers for economic participation for many households. The possibility of saving money on monthly costs; and the perception that reaching net zero would have a positive impact on their lives, were also strong drivers. However, many participants had low confidence that the options for low carbon living, particularly in transport, would not be overturned in the future. This sense that trusted guidance or the expectation of how to make changes might shift, was a strong barrier to economic decision-making and participation.

> *It's a resource issue. And if you haven't got resources, then you can bang on about it all you like but people, you know, can't afford it. They can't afford it.*
>
> **#542, Neighbourhood 6**

> *If [electric vehicles were] ... cheaper, I would [switch]...How do we know if an electric's not going to be, like, more expensive than gas? How do we know that electric is not going to go up so much as gas is going up, or even more?... It could go sky high...*
>
> **#101, Neighbourhood 2**

2 Ongoing fluctuation to living costs as net zero changes come in

Participants shared concerns about the financial implications if households were unable to keep up with the cost of net zero-related changes. They reflected on the cost-of-living crisis and what that exposed about the fragility of our energy, food, fuel, and supply and purchasing security. The recent experience of rising and fluctuating prices had created these concerns, and those taking part in the research shared the impact this had on their household's financial wellbeing.

Among most participants, there was a fear of not being able to withstand fluctuating and rising prices in household budgets. This, coupled with a reduction in household savings, meant basic needs took priority over investment in the transition to net zero, even if such changes would directly benefit them. This was identified as a significant barrier to investing in goods or technology associated with decarbonisation.

> *Cost of living and everything has hit us all at the same time. So if you were already struggling… if you're already thinking how am I going to feed and heat… my kids, I'm not then replacing anything unless it comes from the charity shop. [Net zero] is just not going to be possible.*
>
> **#289, Neighbourhood 2**

This was strongly felt by low-income households, but was also a consistent finding across different groups engaging in the research. Notably, this included 'newly struggling' households facing high levels of financial precarity as a direct result of the cost-of-living crisis. This also demonstrated inflexibility of budgets due to income, debt, lack of savings, and dependencies.

I just worry about this current [cost-of-living] crisis we've got and whether they...are prepared to invest more because it will cost even more to make all of this happen...Unless they are willing to offer people who can't afford to put in a new heat pump or whatever, it's not going to happen.

#96, Neighbourhood 1

3 Restricted choice in available capital funding

Participants did not view government grants to be widely available or easy enough to access. Further, repayable loans or grant funding to cover a portion of overall costs were not seen as viable options for low-income households. Information about choice was seen as limited, and untrustworthy. While several government grants are currently available to make adaptations to the home, a large proportion of people taking part in the workshops did not know about, or had not tried to access, them.

Those who had some awareness of financial support available to help to afford new technology towards decarbonisation said uneven access due to strict eligibility criteria limits the efficacy and take up of grants. This included income and non-income related eligibility criteria. One participant shared the example of not being able to meet the conditions of a grant, because they could not afford to replace all their windows, making them ineligible for a grant to install new insulation in their home.

Some participants discussed exploring capital funding through non-government funded loans or financed investments. However, they raised that poor credit or low disposable income prevented them from accessing these alternative means.

You can be ... just £2 over the limit [for being eligible for a government grant]. Yeah, my mum's in this category…who finally got the pension. And she's something like £3 over not being able to claim anything at all… that's ridiculous.

#79, Neighbourhood 1

And if I apply for solar panels, first thing, all these companies do a credit search. They do a soft credit search instantly to see if you can afford [it].

#810, Neighbourhood 2

4 Split financial incentives

A strong finding across our research was that those who do not own their homes, particularly private renting tenants, were especially vulnerable to being left behind in the transition, due to the power relations embedded within tenancy relationships. It was consistently raised that tenants have limited capacity to upgrade the energy efficiency of their home, due to their lack of agency in making financial decisions about their home environment. From peoples' experiences, this appeared primarily due to the so-called 'split incentive' – where it is argued that landlords, seeing no gains from energy-efficiency improvements in the home, are less likely to make changes.

Split financial incentives also surfaced where participants sought to justify their lack of motivation to participate in changes that would support home decarbonisation. For example, homeowners whose house was expensive or hard to adapt given the nature and quality of the build, including newbuilds, did not feel like they should have the burden of the cost of home energy efficiency improvements. Some participants reported that when they had purchased their homes, it was difficult to find out about the energy efficiency of the property, nor was it something they were aware they should do.

> *Considering that there's so many houses that are rented...the landlord obviously didn't care about us. Even if we ask for things, they don't want to make that investment. I mean, I don't know what the rules are about [the new energy performance certificate regulations for rented properties]. But yeah, I guess it's really hard to make landlords pay for...tenants saving on the bill.*
>
> **#81, Neighbourhood 1**

> *It's quite hard, I don't really want to rip out the old windows and replace them with double glazing, which costs a fortune. so basically, don't put heating on as much, [I] put jumpers on.*
>
> **#577, Neighbourhood 7**

Summary

Enabling economic participation by removing economic barriers and improving financial resilience strongly underpins all other types of participation pivotal to achieving the just transition. At the same time, constraints on economic participation were the most significant barrier raised by participants in enabling households' transition to net zero. Low spending power is the most significant factor we identify in our study to achieving fair outcomes and net zero outcomes.

If the general economic resilience of low-income households and households with high levels of debt is not strengthened, and the widening inequalities between high and low-income households are not addressed, the UK risks a large proportion of households entering 'transition poverty' in addition to the current energy, food and fuel poverty they face. This is acute and poses grave and avoidable justice risks. Transition poverty can be defined as the impact of household budgets not being able to keep up with changing costs associated with net zero transition, impacting on households' quality of life and ability to meet basic needs. These costs can be caused by climate impacts affecting the market cost and supply of energy, fuel, food and other services, or by net zero policy not accounting for the cost burden to the poorest households of not being able to switch to low-carbon living and therefore how tariffs and fines can push households further into poverty.

In particular, given domestic energy use, home adaptation poses the most significant opportunity for unlocking household agency towards participation and achieving household decarbonisation and fairness outcomes. Home inefficiency, and the resulting energy costs, produce the highest carbon footprint for the poorest households and, as our research shows, create the most significant conditions of poverty and economic risk.

Our findings demonstrate how barriers related to high upfront costs for home adaptation – coupled with little or no economic agency due to tight or deficit household budgets – create a version of the 'Matthew effect' unique to net zero transition.[2] This will only worsen as energy, food and fuel systems go through further periods of crisis and change during transition. Removing the financial burden is highly likely to have a positive impact on net zero goals, and will also have the co-benefit of reducing fuel poverty.

An area of life with greater potential for improvement is in increasing households' agency to make small but significant changes to consumption, cooking and waste management practices in the home, contributing to goals of household decarbonisation. Yet, policies supporting the mass adoption of low-carbon living strategies at household, community and in local areas are at a level that can best be described as unsophisticated. Campaigns focusing on the 'little things' that work to reduce energy costs, which have been prominent since last winter, connect energy-saving measures solely to the cost-of-living agenda and the potential for household savings, not to reaching net zero.

2 The Matthew effect refers to where poorer households accumulate disadvantage, whilst richer households accumulate advantage – of social, economic, and in this case – faster, lower cost decarbonisation – due to their starting points of access or lack of assets.

While our research showed saving money to be a leverage point for supporting households' participation, we also found households taking social and health risks in terms of going without of heating; adopting unsafe cooking, fuel and heating behaviours; and even attempting DIY insulation measures that may pose fire or safety risks. Constructive, trusted information to regulate and promote safe sustainable household practices is much needed – with maintaining fair, decent and healthy standards of life, as well as saving energy, and saving money, needing to be the transparent focus of any future campaign.

At present, there remains a clear gap between the accounts of those taking part in the research about their daily lives, and the requirements of the net zero agenda. The lack of policy innovation and development in this space means households with little or no flexibility in their budgets cannot adopt new technologies or innovations. Our findings are supported by existing evidence that identifies a significant role for accessible, progressive financial support measures to support the poorest households. These might include shifts in the criteria around accessibility and repayment of net zero grants and loans that take into account poor credit and household debt. They might also include measures to ensure the affordability of energy, mitigating rises to price rises, and how to resolve the current financial (in)viability of electric vehicles. The evidence also highlights the significance of investment in infrastructure including energy networks and systems, public and active transport, community energy, and electric vehicle charging infrastructure.

Specific policy recommendations to support economic participation are made in the final section of this report.

Social participation

In the context of net zero transition, social participation means having the capabilities to take part in common social activities and engage in cultural and leisure activities. It also means being able to engage in meaningful social roles, such as a caregiver, parent or grandparent, a volunteer, or a community leader. The continued fulfilment of social roles under net zero will be critical to household and community resilience. At a neighbourhood level, social roles include representational, educational, socially organising, and elected – civic – roles.

Social participation is largely connected with place. Where a household is located, in relation to other households, can shape the extent to which families can access social and leisure activities, and engage in meaningful community-based roles. Movements and policy initiatives towards localisation, active travel[3] and active streets[4] will create different opportunities for social and leisure activities locally, for all ages, but can also change and shape the existing use of public spaces.

Changes to how people travel is likely to have localising effects on many aspects of everyday life – including employment, leisure and cultural activities, and social contact with friends and family. This may have positive impacts, as increased active travel is associated with reduced crime and greater social cohesion (Aldred and Goodman, 2021). Travel by air, and international travel more generally, will become less available, less accessible, and more expensive. The quality of the domestic environment is also likely to affect social participation, as people spend more time closer to home and reliant on availability of personal or public green space and living in healthy, damp-free environments.

Social participation in the transition to net zero will primarily require changes in where we go. This includes changes associated with how people socially engage with friends and family and the level and types of transport required. Households will also have to change what they do for fun, and shift away from certain cultural and leisure activities that require high electricity or energy use, as these will become less common or harder to do in the transition. Examples include gaming, using electronics at home, and going on holiday – although holidays account for a low proportion of emissions overall.

3 Active travel refers to journeys made with low-carbon transport options such as walking or cycling.
4 Active streets refer to the opening up of safe, low traffic areas for play, neighbourly encounter, wellbeing and fitness.

What evidence already exists about social participation in the transition to net zero?

Table 5 summarises existing evidence on the risks shaping net zero in the short, medium and long-term, and the policy instruments that might be used to mitigate these. There is a distinct lack of net zero specific information about how leisure, home-based social practices, social relations, and other community activities and social infrastructures, will need to adapt to net zero scenarios. But social participation is important, because it affects households' decisions about the running of their home; their day to day quality of life (such as choices of diet, parenting, or leisure time), and how they organise care for other relatives or family members. In this context, literature suggests that those most affected by these changes are likely to be:

1. people who cannot afford to switch to low-carbon travel: low-income households, and people experiencing other intersectional inequalities (Lucas et al., 2019; Sheller, 2020; Simcock et al., 2021);

2. people who live at a distance from their loved ones: for example, far away from in-country family, and migrants, who are likely to experience severance in relationships and decline in family support and social protection (Mattioli et al., 2021);

3. people who live in poorly-served communities: those with little or no access to public transport – in rural and peripheral areas; and where there are few leisure and cultural opportunities, may experience isolation, loneliness and wellbeing risks (Lucas and Musso, 2014);

4. people with lower capacity for mobility: including disabled people, who face more substantial cost and psychological barriers to using active transport, especially in areas with limited infrastructure (Mullen, 2021; Schreuer et al., 2019);

5. women and LGBT+ people who are less likely to walk, cycle or take public transport in potentially unsafe conditions (Doran et al., 2021; Koskela and Pain, 2000; Lubitow et al., 2020; Lucas et al., 2019);

6. people with disabilities, older people, younger people, and women who may need more support with changes that adapt the quality and use of the home (Adams et al., 2021; Johnson, 2020; Snell et al., 2018; Sovacool et al., 2021).

Considering social participation is particularly important because it is an area of high policy dependency. Whether or not services, social lives and leisure *need* to be localised depends on the availability of green, affordable public transport connectivity to other areas and to services and amenities. The reduction in polluting car use is of key necessity to reaching decarbonisation goals, and indeed to reducing air pollution – however EV schemes have proved ineffective at being accessible to the poorer households and recent statistics show a decline in take-up across *all* personal purchasing of EVs, with employers and businesses the major purchases of EVs. This has implications for those with car reliance but no opportunity to switch to electric cars, such as those with reduced mobility; disabilities; or safety concerns. If public transport is then not available or accessible; and if active travel is not an option – this could create constraints to the lives and social participation – as well as access to essential services and employment – of these groups.

Table 5: Key risks shaping social participation in net zero in the short, medium, and long-term.

When might key risks emerge?	What key risks might emerge?	What might some of these risks be, according to the literature?
Present day issues that are holding back the transition	Low mobility	People's ability to travel and fulfil social roles are shaped by income, disability, ethnicity and experiences of safety (Pagán, 2015; Sheller, 2020, Simcock et al., 2021; Verlinghieri and Schwanen, 2020, Lucas et al., 2019 ; Lucas 2012). (Lucas and Musso, 2014).
	Poor provision of leisure and cultural opportunities	Presence of leisure, cultural opportunities, public and green spaces locally become more important. Distribution of these amenities is shaped by neighbourhood wealth which is in turn shaped by how policies such as community ownership or asset transfer succeed to engage poorer communities, rather than those with existing high potential / civic strength (Mears et al., 2019; Mehta and Bosson, 2010).
	Poorly connected places further reducing people's mobility	Remote rural areas and lower-income neighbourhoods currently experience exclusion associated with inability to engage in active travel or low car ownership (Lucas and Musso, 2014).
Medium term (within next five years)	Reduced mobility deepened by net zero	Further reductions in mobility and resulting social severance for some groups if dependence on private transport continues, given the unaffordability of electric vehicles and likely increased costs associated with older petrol and diesel vehicles. Concerns are raised about the creation of a 'kinetic underclass' (Haas 2021, Gossling 2016, Henderson 2020, Sovacool 2019b, Sovacool et al., 2019a, p.214).
	Changes within the home that have exclusionary effects	Household routines change as a result of new types of energy and household systems. 'Normal' routines including preparing and cooking food, hobbies, and types of social connection (such as gaming and social media) may change, leaving some behind (Powells and Fell, 2019; Martiskainen et al., (2021), Adams et al. (2021), Johnson (2020), Calver et al. (2022) Adams et al. (2021).
Long-term (within next 10 years and beyond, as policies interact and accelerate)	Increasingly insular communities as a result of an emphasis on local amenities	Marginalising for outsiders or people who haven't historically engaged in community activities, potentially resulting in experiences of prejudice.

Policies to ensure a ‘just transition’

- Investment in active and public transport infrastructure to enable mobility. Subsidised public and active travel (Lucas and Pangbourne, 2014; Markkanen and Anger-Kraavi, 2019).
- Changes to the provision of essential goods and services – more locally-based provision to avoid carbon heavy essential journeys; more community-controlled provision to maintain neighbourhood diversity and choice of amenities.
- Education and information on low-carbon living approaches and routines; available through local social networks.
- Accessible, affordable and non-credit reliant financial instruments to support EV car ownership’ (Haas, 2021; Markkanen and Anger-Kraavi, 2019).
- The role of community networks, WhatsApp groups and support groups, operating through social infrastructure, in engaging and supporting the participation of individuals who might otherwise be isolated (The Young Foundation, 2022).

Insights from people taking part in the research on social participation in the transition to net zero

Accounts from participants demonstrated profoundly how social relations (within households, and between broader family, friends and community members) can shape, enable, or prevent the adoption of sustainable net zero practices in the home and in everyday social life. In particular, people were concerned with how associated reductions in mobility, energy or fuel use, might prevent them fulfilling their caring roles, or their ability to continue social activities that contributed to their sense of opportunity, wellbeing and community.

Participants expressed a reluctance to engage in social participation where they recognised that changes would disproportionately affect some groups, because it risked compounding existing economic and social exclusion. Our research identifies some key concerns in relation to building social participation in net zero:

1 Households with high or changing dependencies

Respondents engaging in our research discussed challenges for those with limited mobility due to age, poor health or disability, and as well as for households with young children or larger families. Many felt the shift towards public transport, active travel or electric vehicles was neither affordable nor attractive, given existing travel infrastructure, which was perceived to already be inconvenient and incompatible with meeting their social needs. Some participants raised circumstances about changing dependencies. For example, a household taking on another family member in times of need or support, and creating additional demands on social practices and caring responsibilities.

> *We've got a small car…that runs on petrol. I couldn't be without a car. I use it for so much. I've got a mum that I run around hospital appointments, to go shopping, I work [on] the other side of the ring road. I could walk but I'll have to set off at six at morning.*
>
> **#76, Neighbourhood 1**

> *One of my children who's had to come home because he really can't afford to live, you know, in rented accommodation at the moment. So he's joined the household again. Before he joined it, I had quite a nice organised, relatively 'green' household…My son is using up a huge amount of energy now he is back. I mean, I look at him in his room, and sometimes… he'll be talking on the phone at the same time the telly will be on. You know he's using practically 90% of the energy in the household so he can be a bit of a drain.*
>
> **#17, Neighbourhood 1**

2 Importance of sustainable social connectivity and infrastructure

Quality social participation was understood by participants to be dependent on an ecosystem of personal connectivity and infrastructure. They identified that most things – from local travel infrastructure to social and leisure facilities, and assets such as green space – need to be accessible for households and communities to engage with their communities.

Participants who lived in neighbourhoods where it was easy to identify good social connectivity and infrastructure felt more positive about interacting with others. Those living in more isolated or severed communities of identity or place felt the transition to net zero would ultimately deny them certain opportunities for a high-quality life that others would have access to – particularly if participants were facing additional social or economic exclusion.

People taking part in the research who lived by themselves, or said they experience loneliness or social isolation, were concerns that challenges to their wellbeing could be exacerbated in the transition. This was even more the case if households faced limited financial resources or digital capabilities, or had poor family relation knowledge about what infrastructure and services could replace carbon-intensive social activities. They also raised concerns over more localised social lives disrupting geographically disparate caring networks.

> *When you come from a deprived estate and you're living on the breadline, obviously, I feel my resistance to give up our car. If I did give up the car, it would have a massive impact on...what we can do for [our children]. So you know, things like being able to participate in sports club, being able to participate in after school clubs. The fact [is] that these things aren't on your doorstep and you do need to be able to toddle about to give them life skills and opportunities.*
>
> **#355, Neighbourhood 3**

> *Do I want to get rid of my car? No. OK, because I'd be stuck in the flat…Yes, I've got a bus pass. I haven't got a clue when a bus comes or when it goes and when it drops off. So I've never used it.*
>
> **#314, Neighbourhood 3**

3 Equipping informal structures that build social participation

Our research consistently found that information-sharing between family and neighbours has a high level of influence over the adoption of sustainable, low-carbon technologies and practices in peoples' homes. At the household level, participants gave many examples of social and leisure activities that were commonly shared, with food and travel being examples of how family members could influence and support each other to participate. Interpersonal relationships within the home also offered informal structures for sharing information about low-carbon practices between children and young people and adults, on the condition that either group were equipped with information.

At the neighbourhood level, having the spaces and relationships to interact and communicate helped households to identify together where they might undertake social activities in a more economical or environmentally efficient manner. Some participants said these informal structures were strengthened as a result of the Covid-19 pandemic, while others felt there was a lack of community cohesion and that no such informal structures were in place where they live.

Information sharing in online forums – such as community Facebook groups, WhatsApp groups between families and relatives, and across garden fences – were frequently described as having both agency-building and limiting impacts on households' willingness and trust to participate. Sharing information about the transition to net zero by word of mouth with friends and relatives s was seen as more trustworthy and accessible that information provided by the government.

> *I think from a community social point of view, we live in quite a close-knit community, we do often sort of share news .... we'll do that when we drop the kids off together, things like that. And there's a lot of passing of clothes and toys and things, so we were quite good at recycling.*
>
> **#486, Neighbourhood 5**

> *My 15-year-old … last year, he decided to become vegan ... I thought it was a phase but he's kept on with it. So basically, it's fruit and vegetables… He's been trying to lecture me about stuff, like living off the land about what sort of rubbish is in like food [...] you know, processed food and stuff like that. And he gives me lectures about what you should eat.*
>
> **#250, Neighbourhood 2**

Summary

There is a clear gap between our participants' social participation starting points, academic research on what a fair transition means, and day-to-day policy as decided locally and by government. Enabling widespread and sustained social participation in net zero poses some of the most complex ethical, wellbeing, and fairness issues. This includes supporting households to shift to low- or no-carbon social and leisure activities, including food consumption and home-based entertainment.

While social and leisure aspects have garnered less attention in existing literature, exploring social participation among respondents revealed a number of challenges. This also includes maintaining caregiving responsibilities, such as childcare or looking after an elderly relative, and maintaining a healthy lifestyle. Participants also raised concerns about the how the shift would affect children's and young people's education and development.

One of the biggest concerns was the shift towards using 'greener' cars and transport, and how this might affect disadvantaged families. Where local services and infrastructure were of a decent quality and choice, respondents felt more positive about switching to low-carbon transport. However, the majority of participants regarded owning a car to be very expensive but essential in daily life, and found the thought of shifting away from needing a car difficult.

They also felt existing public transport provision was not a viable substitute (something confirmed in the work of Lucas 2014), and this risked them being left behind, if they could not afford electric cars. Using outdated and expensive technology meant they faced reduced social participation in daily life.

A substantial leverage point to increase social participation in low-carbon behaviours at home that are matters of choice, not available infrastructure – and in sustaining it to build capabilities of respondents, is social relations. The social relations identified were family relationships, work colleagues, or friendships and acquaintances in the local community, in that order of influence over choices to adopt low carbon household practices. It is well-evidenced on other areas of policy or societal issues, that trust in neighbours can be higher than trust in many other actors, but that significant variations exist between levels of neighbourhood trust at the hyper-local level (Onward, 2023).

Further research is needed to find out how levels of family kinship and neighbour information-sharing and trust vary across geography and across types of community to influence participation on the specific question of net zero transition. This would also be of value to understand if the influence of neighbours is consistent across places with so-called 'strong' and 'weak' community strength (connectedness, cohesion and participation), and how varying levels of social infrastructure contribute or constrain the efficacy of this.

Specific policy recommendations for increasing social participation are within the final section of this report, below.

Civil and political participation

Civic and political participation means having the capability to contribute to decision-making on policy choices and design, as well as being able to get involved in the solutions to net zero. Getting involved might be on a personal or individual basis, or through collective acts of citizenship. Civic and political participation affects most areas of life identified in our net zero scenarios, including where we live, where we go, what we eat, what we do for fun, and how we spend are money.

A successful transition to net zero requires public support, belief, trust, and civic engagement. This can be expressed via product choice, voting and protest (Perlaviciute, Steg, and Sovacool 2021) as well as through building group participation to shape environmental policy towards social priorities, such as the formal inclusion of minority groups in governance processes, and citizens' juries (Ross et al., 2021; Thew, Middlemiss, and Paavola 2020).

Transforming everyday life in the shift to net zero means giving people control and choices, both social or political, regardless of their personal and financial circumstances.

The move to net zero will necessitate more localised and community-based policymaking in preference to centralised policies (BEIS, 2021c; Webb et al., 2022). While there are many positive outcomes associated with this, there are also risks of inequity or 'overburdening', especially where communities do not have the required capacity or infrastructure.

Civic participation can be achieved through grassroots activity, including community energy and transport projects, and involves local people coming together to create their own local assets, across housing, food growing, and energy (Anantharaman et al., 2019; Colding et al., 2022; Taylor Aiken et al., 2017; Webb et al., 2022). The example of Lawrence Weston in Bristol, a community energy project funded under the Local Trust's Big Local programme, presents an example of a community-led energy project to switch the entire supply of a housing estate onto renewable, wind-energy. This in turn removed the inequities that existed between different types of energy infrastructure, supply, efficiency and price across homes in the estate, and drove down residents' costs who could otherwise have been left behind on outdated technology and energy systems due to lack of capacity for individual households to make changes.

Many examples of small-scale initiatives can be found across the country (eg, the Transition Network, Repowering London, and Derbyshire Food Growing Network). Although they currently exist in the margins of the system and are not often well-connected, they mark a potential path to community involvement in the transition to net zero.

What evidence already exists about civic and political participation in the transition to net zero?

Table 6 summarises the existing evidence on the risks shaping net zero transition in the short, medium and long-term, and the policy instruments that might be used to mitigate these. There is a tradition of experimentation with democratic and civic structures in the environmental movement (eg, Cain and Moore, 2019; King et al., 2021; Carvalho et al., 2017), delivering some evidence of associated challenges and risks.

Exclusion from political processes and decision-making around net zero is likely to affect people from certain backgrounds. White, middle-class, able-bodied people tend to be more involved with environmental issues, because they have the means to participate, and because the structures often don't exist to engaged people who come from harder to reach backgrounds (Fielding and Hornsey, 2016; Ross et al., 2021; Unsworth and Fielding, 2014; Fenney Salkeld, 2017; Grossmann and Creamer, 2016).

People who take up opportunities to participate in both civic and political action also tend to shape what happens in their locality and access to participate (King et al., 2021). Evidence suggests an unequal distribution of shared community resources geographically (Tauschinski et al., 2019), including social infrastructure (Zia et al., 2023), community assets, and access to a shared public realm.

These variations mediate the opportunity for organising, engagement of community voice, and the building of movements for participation in sustainability practices, which bridge (between two different communities) rather than simply 'bond' (the same community) - or even polarise, communities. Interestingly, urban areas possess significantly fewer community resources than rural areas in the context of net zero, lagging in shared resources such as energy projects or community-owned assets (Tauschinski et al., 2019).

The literature also highlights policy approaches that may enable civic and political participation. Most notably, these are grounded in literature emphasising the significance of devolved decision-making, community capacity-building, community participation, and community engagement.

Table 6: Key risks shaping civic and political participation in net zero in the short, medium, and long-term.

When might key risks emerge?	What key risks might emerge?	What might some of these risks be, according to the literature?
Present day issues that are holding back the transition	Political disenfranchisement	Voter turnout is associated with higher socio-economic status and living in a wealthier area (Bartle et al., 2017), as is climate activism (Doherty et al., 2020).
	People not identifying with environmental agenda	Environmental movement is strongly associated with white, non-disabled, middle-class identities (Fielding and Hornsey, 2016; Unsworth and Fielding, 2014). Misinformation and negative discourse disrupts attempts at collective action (Lamb et al., 2020; Nogaard, 2012).
	Civic unrest due to political polarisation of environmental agenda	Communities at either end of political spectrum or seeing negative climate or environmental impacts (floods, air pollution); Communities with low social cohesion; Communities where politics is polarised – such as hung councils or 'swing seat' towns.
Medium term (within next five years)	Communities with limited social infrastructure, institutional strengths and assets have less agency and fall behind; and are less likely to apply for, or be successful in receiving, funding or grants to meet the challenges of net zero.	Power to engage civically, and local government strengths unequally distributed geographically. Likely to affect community engagement with decentralised energy programmes (Hanke et al., 2021) and other forms of net zero related planning (Banerjee et al., 2017; Hanke et al., 2021; Hearn et al., 2021; Mundaca et al., 2018).
Long-term (within transition window to 2050)	All above risks have risk of recurring and perpetuating over longer term horizon.	Fraying social fabric exacerbates over time and makes civic unrest more regular and likely. Mass migration likely between places due to inability to reconcile fairness outcomes.

Policies to ensure a 'just transition'

- Building household participation and community engagement in policy design (Department for Business Energy and Industrial Strategy, 2021a; Webb et al.,2022; NZIPa, 2023; Devaney et al., 2020; Lancaster University, 2022).
- Devolved decision-making and community management (eg, around energy) (Colding et al., 2022; NZIP, 2022a; Braunholtz-Speight et al., 2019).
- Information and education on exercising civic rights and democracy in transition; and stronger community engagement structures at local government and Ward level (Sovacool and Furszyfer Del Rio,2020; Calver and Simcock 2021; Gadema and Oglethorpe, 2011; BIT, 2023).

What people taking part in the research said about civic and political participation in the transition to net zero

People taking part in our research engaged more confidently – and with more interest – in civic, rather than political participation. It was striking to find a trend towards high civic (local) engagement, with participants sharing many examples of where they believed themselves to be exercising civic responsibilities within the household and, in some cases, in their local community or place.

Nonetheless, many participants shared constraints that they, and others in their communities, faced to civic and political participation in the transition to net zero. This included accounts from people with insecure tenancies and those with limited social interaction. In practice, these exclusionary factors materialised for groups including private renting tenants, migrants and asylum seekers, single-person households, and the unemployed.

Low trust in the value of participating via formal political mechanisms meant that across the research, most participants felt at least disengaged or sceptical of political mechanisms. In communities with historically negative experiences of being 'left behind' or ignored, there was a greater sense of political disengagement. Our research identifies some key concerns in relation to building civic and political participation in net zero.

1 Social relations enabling or preventing the adoption of 'green' household practices

People taking part in the research said they find it difficult to access trusted information to help them to make informed decisions about their civic responsibilities. They cited a knowledge vacuum with a lack of government-led, trusted information in clear, accessible language about net zero, describing what it would involve at household and community level. They shared how they had come into contact with confusing or contradictory information about what to take action on, and in what order.

Instead, information shared through friendships and in the community, as well as self-directed learning undertaken largely online, were seen as more valuable ways of building knowledge and awareness about the changes with which households could engage. Multi-generational households often learned from each other about what transition might mean.

Those with school-aged children accessed information through schools. Young people were often seen to be more socially conscious and have a positive influence on the households' decision-making. For some, workplaces were also seen as valuable for finding out about the adoption of 'green' household practices.

Single-person households described being able to easily make decisions and engage in civic responsibilities, independent of others, that allowed them to participate. However, they also cited experiences of social isolation, and of feeling insecure about having sole burden of decision-making (as well as cost). Social isolation was found to limit civic participation in net zero transition as it limited avenues to build knowledge and awareness through social relations.

> *I get annoyed at a lack of resources to make a decision. For instance, if you wanted to buy a new fire, and you google an AA rated fire, the only people you can get information from is probably the manufacturers, which don't actually have to be right. So, you can think you're doing something that is going to save you money, which actually isn't because they're not governed properly…as we found out [with] the emissions and…So where do you find the truth? If that makes any sense?*
>
> **#146, Neighbourhood 2**

> *But the local primary school my son went... they do a lot of work like with parents and the community get involved and they've got the kids to design like recycled pictures and you know, like put your litter in the bins or notices and things like that. And they do like parenting classes and stuff at the school as well. It's really good.*
>
> **#268, Neighbourhood 2**

> *My superpower is having close friend relationships, who want to talk to you about new changes. My son is actually marketing manager for a company that installs free [solar] panels. I can get information from him.*
>
> **#589, Neighbourhood 7**

2 The reduction of bargaining power among tenants

As well as the challenge of split incentives (discussed in Economic participation), the influence of home ownership or tenancy status emerged as a leading factor in whether or not individuals have the agency and power to participate in net zero and low carbon behaviours. This was cited in all neighbourhoods and by the majority of participants, more often than not as a barrier to participation and home adaptation. The research identified a complex typology of more than seven types of home ownership and legal occupancy that prohibit a households' ability to make changes.

> *We can have solar panels fitted or we can have a heat pump, both of which require us to have long, protracted arguments with the housing association. Our house is [a] freehold house. Therefore, technically everything from the ground up belongs to us but according to the housing association because it's on their land, everything that's loft and above is theirs...the housing association has to step up and fully insulate the building.*
>
> **#724, Neighbourhood 4**

> *And transition to this net zero is so important… But I'm not able to make those changes because I don't own my house. I believe as a private tenant, my contribution is only what I can do ...by changing products, as well as biodegradable products, and probably I can use a cycle.*
>
> **#495, Neighbourhood 5**

3 Mixed messaging around net zero

The scale of change needed and the demands on individuals and households felt overwhelming and disempowering to those taking part in the research. This resulted in people feeling less positive about their participation in the UK's national transition to net zero. Although participants understood and were positive about the role that individuals should play in the transition to net zero, some felt their efforts (or potential efforts) were not worthwhile or impactful.

Participants in the research felt this was particularly true in the context of fractured and contradictory leadership by national government. They also pointed to what they felt to be counteracting measures taken by energy companies, businesses and workplaces, wealthier households with larger carbon footprints, and even public services. An 'us and them' narrative was evident, and those taking part pointed towards a lack of a shared vision, understanding, or collective endeavour.

> *My next-door neighbour is like in [her] 80s. And she's, like, been buying bottles of water and she won't have a shower [to save water]... but in comparison...someone that's got a massive swimming pool and a hot tub and this and that. You're watching football, and only the other night one of the kids said I thought there were a hose pipe ban…when the sprinklers came on.*
>
> **#726, Neighbourhood 4**

> *They keep saying they're going to announce [the new coal mine in Cumbria], and then they keep kicking the can down the road… and that might send some mixed signals to that area. Definitely. But, yeah, that, you know, on a governmental level, those things will happen, but you know, remember to recycle your plastic bottles.*
>
> **#853, Neighbourhood 6**

4 Community strength and collaboration capital

Our research found a strong role for civic participation in building mass engagement with net zero through grassroots and hyperlocal activity. Participants shared how public and social infrastructure mediated community strength and collective participation on other topics and challenges locally, and reflected on the value of social cohesion within transition to net zero.

Public services and social infrastructure – where it existed locally – were seen as assets that played an important role in providing information, resources and facilities to enable people's participation in the transition. However, there was strong consensus that civic and community-led infrastructure was under-resourced. Participants reflected that increased community strength could be valuable for more collective participation.

> *I think one of the good things about Covid is the community that I'm a part of now on our street is much tighter and much more supportive. A lot of recycling between the streets; you know, if someone's getting rid of something now we'll put on the WhatsApp group. So you know, can anyone make use of this before it goes to [the] charity shop, or to the landfill, which has been a good thing. We've been also sharing produce from people's gardens, and things, so any spare plants, vegetables, fruit is put out for the community to help themselves.*
>
> **#302, Neighbourhood 3**

> *But it might be that if you want to get people together in a public space, you've got to pay or hire, you know, it's not like well, I can't think of somewhere where you can gather together in a community space without necessarily paying.*
>
> **#115, Neighbourhood 1**

5 Limited opportunities for being heard and getting involved in net zero policies

Limited access to influence formal decision-making at a local and national level was a common frustration experienced by most people taking part in the research. This includes mechanisms such as voting or engaging with their local councillors. While some participants knew how to participate politically, they found it difficult to get actively involved.

They also felt that they didn't have access to enough information about how to get engaged in alternative local mechanisms. They perceived that local powers and plans came with contradictory political and policy messaging, which made them distrustful that an inclusive transition was possible. While political disengagement was common across a majority of participants, some raised particular challenges given historic, place-based experiences.

> *[The city plan] isn't widely known because I think, again, they mention individual projects...introducing the tram system or whatever it might be, which never happened, but they don't talk more generally about the whole, sort of, idea of reducing to net zero. We're not getting anything through the letterbox…How will people know?*
>
> **#98, Neighbourhood 1**

> *The regional mayor who you hear about doesn't seem to do anything. You'd think devolving more power to local areas would work, and it worked for [a nearby area]. You know, it seems to be reinvigorated that area...all these new industries coming there...They got the Treasury to get a big department from London, it's a huge thing really, and we're not getting a sniff of that. I think there's one of the battery factories that have opened up on the coastline and that's it.*
>
> **#772, Neighbourhood 5**

> *Because we can't get into things other than coming here and talking, how do you access a vote is saying yes, that's what you want. But do the politicians listen? They don't…*
>
> **#125, Neighbourhood 2**

Summary

Our findings demonstrate a high potential for civic participation in transforming households' capabilities and contribution towards net zero. We saw a confident but currently under-resourced 'civic space' of hyperlocal neighbourhood groups engaged in information-sharing and building environmental capital, as well as key institutions (such as schools) shaping green family practices. There is significant potential for community strength, ownership and power within a hyperlocal and local net zero agenda, which can act as a catalyst for net zero campaigns. However, civic and political participation is also an area where many people reported feeling excluded and constrained, and in which success was dependent on existing infrastructures.

Evidence suggests community and public engagement will act as a social mandate and a form of legitimacy for action to be taken towards net zero, but that there is a distinct lack of leadership and coherence between national and local policymaking. Transition will be successful when people are engaged on a personal level and given agency over lifestyle choices, and when they have access to the technology and infrastructure needed to make it work (Demski, 2021). As with *economic* and *social* participation (above), at present, there is a highly uneven playing field, especially in terms of access to political and policy decision-making processes. As the transition gathers momentum communities, such the ones in our research, may not see the full benefits of devolved decision-making and community ownership that is promoted within net zero policy. Positive intervention to promote community participation and political inclusion at the local and regional or combined policy level is required (see Table 6).

Importantly, our findings suggest the way in which policymaking around net zero is currently organised at national government level creates policies that are not supportive of household and community participation. Even where policies exist the impact and outcomes are not equitable, and so risk exacerbating existing social and economic exclusions as noted in the existing literature (eg, Local Government Association and Public Health England, 2017). At present, policy areas are siloed into government departments and at different levels (eg, transport policy). This also has important implications for how grants and support for home adaptations should be organised. It is not enough to solely consider the type of adaptation needed or type of finance scheme available. Acknowledging and structuring schemes around the power and ownership dynamics inherent in housing is critical in understanding whether the scheme can be accessed and adopted.

Policies for net zero anticipate a shift from centralised policies and approaches to local decision-making and community-focused policymaking (BEIS, 2021c; Webb et al., 2022). There is a tradition of experimentation with democratic and civic structures in the environmental movement, which provides some evidence of the challenges and risks associated with creating inclusive participatory democracy models for, and within, national and local environmental policy. For instance, numerous forums already attempt to shape environmental policy towards social priorities, such as formal inclusion of minority groups in governance processes, and citizens' juries (Ross et al., 2021; Thew et al., 2020). However, these suffer from short-term time constraints or being positioned as 'extraneous' or 'siloed' from real democracy measures and processes at local and national level. This restricts their influence and potential to unlock communities' ownership of local narratives and processes of transition and, in turn, their ability to sustain agency.

Finally, social infrastructure was highlighted recurrently as a key lever for civic participation by our participants in the context of net zero; with its role in underpinning social resilience *during* transition found to have additional importance to existing research showing it has 'importance... as a "seed-bed" for the creation, enhancement and maintenance of social capital, a vital element of the social fabric of our communities' in evidence (The Young Foundation, 2023). The recognition of social infrastructure in the government's Levelling Up white paper, and its growing importance within policies and funds aimed to regenerate place and strengthen communities, means further research on the role of social infrastructure to enable civic or political participation in decision-making over net zero transition, would be valuable.

Education, employment and skills participation

Employment and education participation refers to work, education and skills development as sectors of the economy make changes associated with the transition to net zero. These will include education and (re-)training to take up jobs in a low-carbon economy, possibly with new jobs in existing and new industries that emerge specifically in response to transition. Conversely, some jobs will disappear in the transition (BEIS, 2021b; Kapetaniou and McIvor, 2020).

Under net zero, we expect a substantial reshaping of the economy, with high-impact products and services giving way to lower-impact alternatives. This will transform industrial processes, requiring different skills from workers. Where people work is also likely to change, with an increased emphasis on working from home for those that can (Griffiths et al., 2022). More energy-efficient work and learning-related appliances will be used, and places of work and learning will encourage participation by changing their operating practices.

Families and households will also need to change employment and education practices, particularly if work becomes more localised, or if employers facilitate more home or remote working as a means of reducing carbon emissions. Children and young people will need to be supported to safely, and affordably, take green transport or active travel to places of learning. There will also be broader skills and knowledge-building to allow people to adopt low-carbon behaviours.

What evidence already exists about education, employment and skills participation in the transition to net zero?

Table 7 summarises the existing evidence on the risks shaping net zero policy in this space in the short, medium and long-term, and the policy instruments that might be used to mitigate these (discussed in more detail at the end of this section). Many of the risks of exclusion from participation in education, employment and skills are associated with proximity to opportunities to work and retrain, and increased barriers to access work (IPPR, 2019, 2018; Silveira and Pritchard, 2016; Sudmant et al., 2021).

People in rural locations, areas dependent on high-carbon industries, and places where unemployment is high are likely to have fewer employment and reskilling opportunities within travelling distance. People in areas dependent on high-carbon industries will have to make a greater investment in change, which suggests a need for national planning around reskilling (IPPR, 2018; Silveira and Pritchard, 2016; UKERC, 2018).

Similarly, disabled people and older people may find it hard to access different opportunities in places where transport is inaccessible. Further, access to lifelong learning opportunities to 'upskill' for the net zero economy is socially patterned, with those from lower income households less likely to take part. In addition, people in low-income households are more likely to be concerned about spending on education and reskilling.

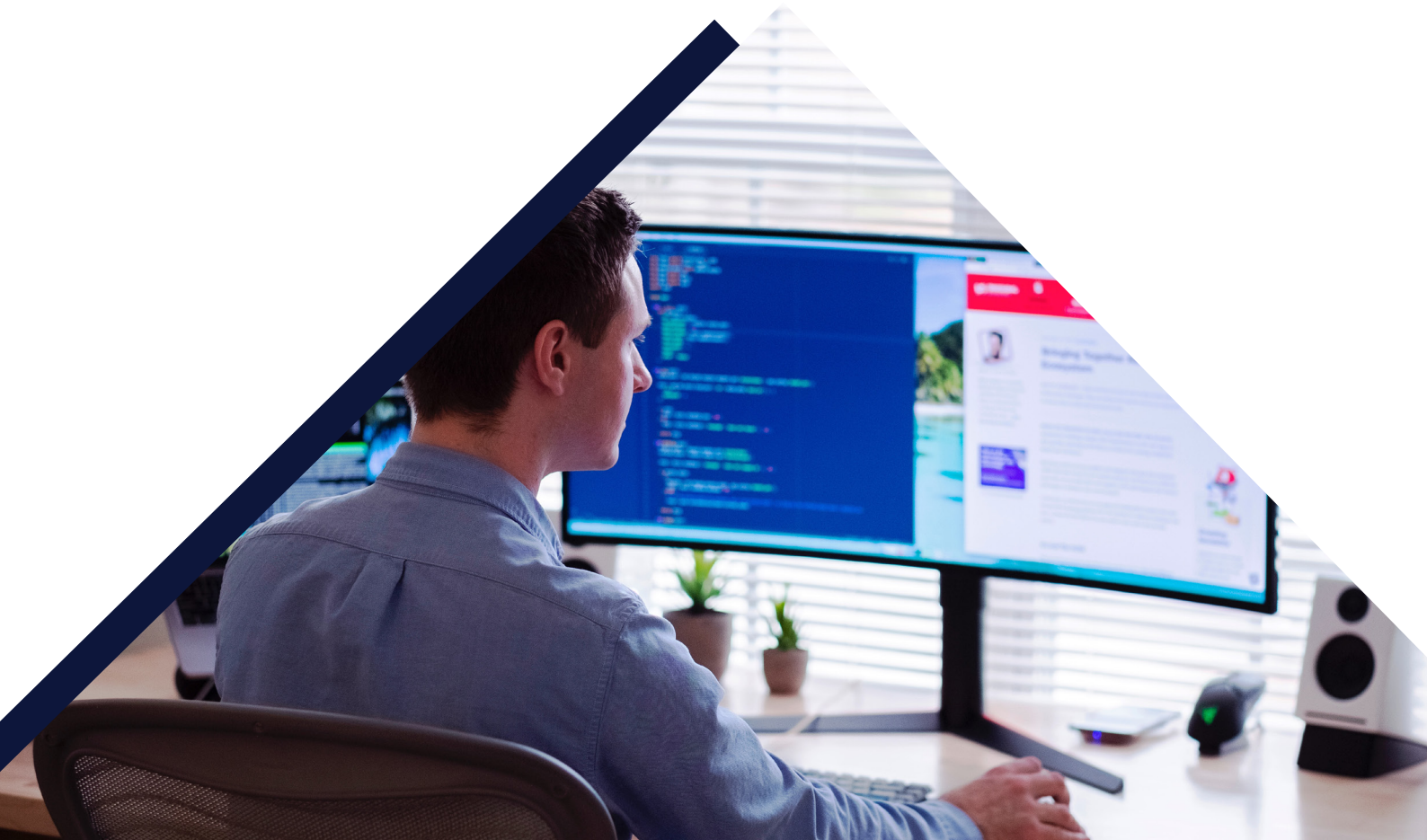
Given the term 'just transition' stemmed from concerns expressed by trades unions, it is unsurprising that there is a clear steer regarding appropriate policy instruments. These are also summarised in Table 7, and largely focus on investment in (re)training and education, and accessible forms of finance to enable this.

Table 7: Key risks shaping economic participation in net zero in the short, medium, and long-term.

When might key risks emerge?	What key risks might emerge?	What might some of these risks be, according to the literature?
Present day issues that are holding back the transition	Limited employment and training opportunities as a result of a lack of local economic conditions	Existing spatial patterns of inequality relating to the labour market, placement of industry, industrial decline or transition (Overman and Xu, 2022; Giupponi and Machin, 2022, Rice and Venables, 2021).
	Poor connectivity to current employment and training opportunities as a result of poor transport systems or rurality	Existing spatial patterns of inequality paired with infrastructure (transport, location of opportunities, etc) set certain people and households 'further back' in their readiness to participate in net zero, due to existing poor infrastructure and uneven job distribution and job loss or sector change in the green transition (Giupponi and Machin, 2022).
Medium term (within next five years)	Cost of education and retraining	People may be excluded from participating in net zero due to not being able to afford to retrain (IPPR, 2019, 2018, Silveira and Pritchard, 2016; UKERC, 2018; Bakhshi and Schneider, 2017; Green Jobs Taskforce, 2021; Sudmant et al., 2021; UNFCCC, 2020).
	Proximity to work and training opportunities	Poorly connected places, and less mobile people, struggle to access to reskilling opportunities (IPPR, 2018; Silveira and Pritchard, 2016;UKERC, 2018; Sudmant et al., 2021; UNFCCC, 2020, Sudmant et al., 2021; European Commission, 2019).
	People struggling to learn new life skills for net zero living	Some people will struggle to adapt to, or indeed resist, new ways of living. For example, new ways of cooking or using home energy (Johnson, 2020; Powells and Fell, 2019; Sovacool and Furszyfer Del Rio, 2020).
	Inability to work from home	Workers in manual and 'key worker' roles continue to commute, creating a divide.
Long-term (within next 10 years and beyond as policies interact and accelerate)	Gaps in availability of employment as 'brown' industries eventually close	Where local employment depends on high-carbon industries, there may be a hiatus in available employment as these are replaced with low-carbon employment opportunities (IPPR, 2018; Bakhshi and Schneider, 2017). Uneven distribution of new green jobs and green economy opportunities, creates risks in certain geographic areas and communities experiencing high, concentrated unemployment.

Policies to ensure a ‘just transition’

- Investing in low-carbon employment opportunities, particularly in areas that are currently dominated by carbon-intense industries (UNFCCC 2020).
- Investment in training and reskilling for the green economy particularly in areas that are currently dominated by carbon-intense industries (Sudmant et al.,2021; European Commission, 2019).
- Provision of information and education to support new ways of living (Sovacool and Furszyfer Del Rio,2020; Calver and Simcock 2021; Gadema and Oglethorpe, 2011; BIT, 2023).
- Provision of progressive funding schemes to support education.
- Tailored policy responses appropriate to the sector, place, and context (Centre for Research into Energy Demand Solutions, 2020).
- Investment in digital infrastructure to reduce the digital divide and improve broadband (Johnson, 2020; Powells and Fell, 2019).



What research participants said about education, employment and skills participation in the transition to net zero

Those likely to be disproportionately affected by changes in education, employment and skills are similar to those excluded from today's employment market – households with inflexible needs due to health and disability or caring responsibilities, people closer to retirement who might face age discrimination, and those who lack access to digital skills or resources. However, certain groups felt more disheartened than others by the potential for inclusion. Our research identifies the key concerns in relation to building education, employment and skills participation in net zero:

1 Barriers to retraining and upskilling for participation in a greener economy

Several participants expressed scepticism about employers' willingness to upskill or re-train their existing employees, as opposed to hiring those who already have the necessary skills. There were also concerns about the general availability of apprenticeships, particularly for young people. In this context, it is not surprising that some participants expressed ambivalence or apprehension about the need to retrain for net zero.

Perceived age discrimination was frequently cited as a barrier by older participants, and there was fear that investment in retraining would not be worthwhile if employers were less likely to employ them due to age. In some cases, this resulted in the view that younger people will lead the cultural shift towards net zero in the workplace due to greater access to skills and training, leaving older participants feeling less responsibility towards participation.

> *When I think one of the problems will be training people in the new industries because still…certainly the building colleges are not yet really geared up to training people how to do a heat source pump, for automotive, how do you repair an electric vehicle? Do you need a mechanic, or do you need an electrician you know, these know, I've seen nothing about new jobs if that makes sense and new training session. you know, everything's still clinging on to the olden days.*
>
> **#813, Neighbourhood 2**

> *So if you're over the age of 60, you're not in the job market. That's true. Because if you go to work and have to do two to three years of training, you only have a few years left of working so no one is going to look at you.*
>
> **#841, Neighbourhood 4**

2 Non-inclusive transition of jobs

As well as barriers to retraining, those taking part in the research felt employment markets would fail to support people to transfer their existing skills to a green economy, leaving those with less access to retraining opportunities behind. Similarly, participants raised concerns that existing inequalities in accessing the employment market would be replicated or compounded, unless explicitly addressed by policy around green reskilling and jobs.

Generally, participants found it more difficult to engage in what employment participation would look like for them in a transition to net zero, because of the vast changes to how jobs were done that would exist across different sectors, and the lack of concrete examples they felt confident to draw on. While homeworking was the primary means of participation they could identify, there was a feeling that this would result in an additional energy and cost burden on households that could cause further exclusions.

> *I'm fairly well educated but at the moment having now stopped working, about three years ago, and even if wanted to go back or could go back, as I mentioned earlier, there's not many people going to look at me as regard to a job now.*
>
> **#349, Neighbourhood 3**

> *I work from home. I don't have...a commute but that's probably going to be quite hard in winter and I'm thinking of relocating to the library a lot of times just because I'm in the flat with a hoodie on...when it was quite cold.*
>
> **#7, Neighbourhood 1**

3 Poor leadership, engagement and compliance by employers

Employed participants in the research raised poor leadership, engagement and compliance by employers with regard to making change and taking part in the transition to net zero. This prevented employees feeling motivated about the transition through their work, even if they wanted to. The examples shared included bosses not being flexible on work start times, which prevented people taking public transport getting to work (given irregular service) and employers requiring staff to use their own cars for work-related travel.

This was not true in all cases – some participants shared examples of their employer encouraging change through schemes such as electric vehicle leasing schemes and strict workplace policies around recycling. Some participants spoke positively of the shift to homeworking after the Covid-19 pandemic. However, they still raised that employers were failing to provide energy-efficient, work-from-home equipment, or to support them with the increased costs of working from home.

> *[My employers] are pushing for [recycling] to be honest. It's just when we get busy we just dump everything anywhere. But, if you are caught you are done for. They are really strict on this.*
>
> **#503, Neighbourhood 5**

> *My boss definitely only cares about money... And like, you can't just go at him like, oh, well, we need to do this, this and this, because he'll just think I'll have to pay for more...*
>
> **#528, Neighbourhood 6**

Summary

Our participants' experiences, and existing policy, on education and employment are significantly at odds with existing literature on what a just transition might look like and the policy instruments necessary to achieve it (Table 7). At present, our findings suggest a pessimistic outlook, with existing barriers to accessibility of education, retraining, reskilling opportunities, and suitability and distribution of jobs in the green economy all highlighted as presenting greater barriers, rather than levers, to our participants.

The move to new, green job markets needs to be supported by an infrastructure that includes reskilling, retraining, and mitigations against the effects of long-term unemployment and underemployment on workers, to avoid exacerbating existing barriers to the labour market.

The literature review recognises the spatial patterns of inequality caused in part by previous economic transitions for their impact on job distribution and suggests addressing these is a vital part in ensuring a 'just transition'. More positively, the IPPR highlights a beneficial impact on the economy, suggesting the potential for 46,000 low-carbon power sector jobs in northern England by 2030 (2018:3). However, at present, our findings suggest the majority of low-income households are not benefiting from such policy interventions and face significant barriers to access.

Existing jobcentre support infrastructure was seen as inadequately equipped, in terms of specialist knowledge to communicate the viability of green jobs, and to support participants in green skills development. National incentive schemes were described as not tailored to local economies and markets, nor was the gap in provision of foundational or continuous professional development courses – or even graduate job supply and demand by local education providers' – seen as 'joined up'.

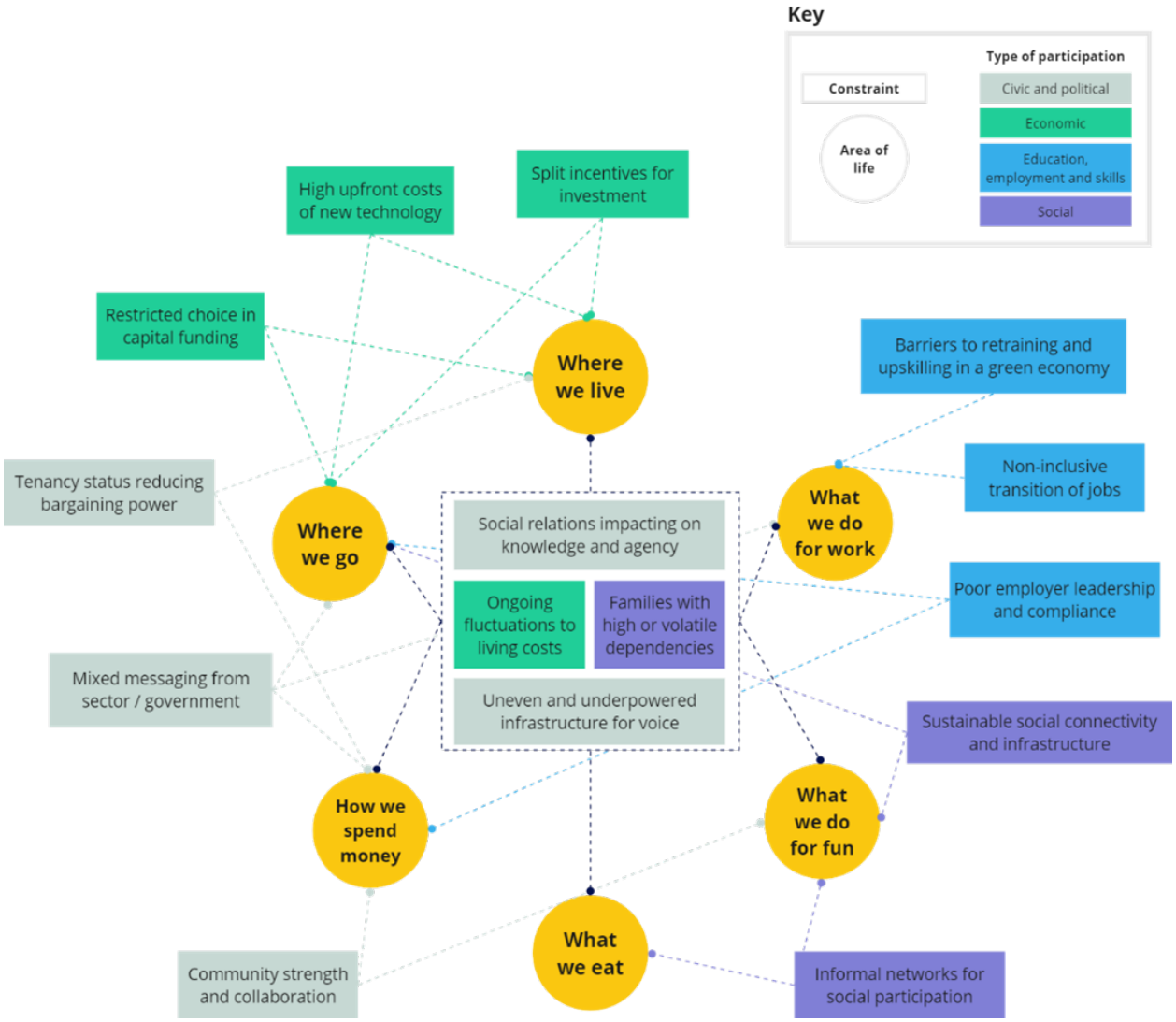
A seemingly intractable area of policy concerns 'levelling up' to enable different regions to participate in the transition, where existing inequalities may otherwise prevent transition being successful but where high carbon outlays are needed to 'level up' (Bray et al 2022; UNFCCC, 2020). Specific policy recommendations concerning this are included in the final section.

Transforming capabilities through participation

The reality of peoples' lives is that the conditions that shape decision-making do not exist in neat categories or within policy vacuums. The findings in this section so far have presented engagement in the transition to net zero differentiated by the four key ways that people participate in society (Levitas et al., 2007). However, our proposed person-centred, place-based approach recognises that these four types of participation interact and overlap with each other when families and communities are making decisions or trying to adopt changes towards a net zero future.

The findings and analysis from our research strongly support this. Figure 5 maps our above-presented findings on the different constraints impacting people's participation, across different areas of life that transition will affect (as discussed in the Section two: Changes we expect to see under net zero).

Figure 5: The different factors mediating participation as identified in each section above, mapped to the different areas of life (in circles) where they were found to have most impact. The centre of the diagram shows conditions that will present constraints to all areas of life. For an explanation of each constraint, see the corresponding participation sub-section (eg 'Community strength and collaboration' is explained in Civic and political participation').



Findings from our research participants on how and why they are able to participate in the transition to net zero made it possible to identify different pathways for participation and non-participation. In some cases, one type of participation made another more possible or effective, often due to a subsequent increase in resources or knowledge that made it easier to participate in changes. In others, one type of participation made another less possible or effective, because it would decrease resources and create trade-offs. In some cases, one type of participation was dependent on another, demanding a sequencing or coupling of actions.

The remainder of this section presents a categorisation of the main trends that emerged from our primary research that demonstrate different pathways for participation and non-participation, and the role that different and interacting types of participation play.

How education, employment and skills help people onto pathways for participation

Participants shared accounts where being involved in education, employment and skills learning helped them to engage with civic and economic participation. For some, this was the only way they could begin to engage. Social, and education, employment and skills participation were found to create opportunities for knowledge and awareness-building through social interaction, creating new relationships and gaining new access to resources and tools. For example, participants shared examples of engaging in social and leisure activities, such as local food-growing, that gave them unexpected exposure to information about or changes in practice, which built their awareness, and individual and collective agency.

> *We're getting a community bike shed...which will, with help from adults, teach the kids, well anybody really, how to actually maintain the bikes and keep them safe...That's not quite got there yet due to Covid mainly. Everything's behind.*
>
> **#276, Neighbourhood 2**

Some participants shared accounts of how places of learning and work were making changes and supporting people to build the skills and knowledge they needed to enable them to take part. In some cases, this learning or access to resources and tools translated to agency outside of places of learning and work, increasing civic or economic participation in other areas of life. Examples included a local NHS trust providing infrastructure and upskilling employees to understand how to reduce waste; a local employer enabling an electric vehicle lease scheme; and schools integrating knowledge-building into the curriculum, leading to changes being practiced by children and their families.

> *...for example... when there's a training about the environment...that made me start doing something that I hadn't done before, like... recycling. I didn't do recycling before they had made me aware...*
>
> **#168, Neighbourhood 2**

The importance of employer-led, green initiatives was found to be a significant lever on households' social participation and in some cases, economic participation in net zero. The positive influence of employer-led green practices was found recurrently; whether small scale around recycling and energy use, or large scale around EV purchasing schemes or decarbonisation of transport stock in sectors such as haulage. Many participants described the 'socialising' effect of seeing employers' commitment to adaptation and insulation, or the endorsement of energy switch and saving measures and green waste management, to name but a few areas of change – supporting their agency to then adopt these practices and measures in the home.

Sectors such as the NHS and schools were found to be particularly forward-thinking and to have particular leverage, but across the board, employers were found to be a significant influence over households' understanding of what they needed to do, and their resources and capacity for, transition to net zero. On a different but related note, the importance of local skills markets in acting as information points and leverage points to support individuals into greener jobs, was a means by which education, employment and skills participation could encourage greater social and economic participation – with a growing green skills market found also to contribute to peoples' sense of pride in their place.

Economic participation forcing trade-offs with other types of involvement

Economic participation can be an opportunity to alleviate financial pressures on households, if low-carbon living reduces spending linked to consumption. Examples of low-investment changes, including batch cooking or swapping old electrical items for more efficient ones, were frequently shared by participants. However, the reality is that most people we engaged through the research could not afford to participate in more substantial changes that require significant financial investment or involve high upfront costs. Indeed, the literature often cites the 'poverty premium' as creating barriers for engagement in the transition to net zero.

People who took part in our research discussed how participating economically would require a trade off with other types of involvement in the transition to net zero, or with their wider engagement in society. For low-income families, economic participation was described as potentially preventing them from meeting basic needs, resulting in non-participation in the transition. This was compounded for low-income families with high costs due to inflexible needs. For those with slightly more financial flexibility (but still relatively low income), economic participation was seen as trade-off, where families would redirect financial resources into one net zero-related change, which prevented their involvement in another change.

Participants frequently shared concerns that opportunities for upskilling or retraining typically depend on self-financing (including with repayable loans). At present, this is a high-cost endeavour, due to high fees, absence of living cost support, and low-wage apprenticeships. This is more acutely felt by those with lower disposable incomes, people with dependents, and people who have no financial safety net to support a break from work. Economic participation was also seen to prevent social participation, whereby earners within a household might need to engage in longer hours of work to finance changes, or where families would have to forgo social and leisure activities that provide value to their wellbeing and health.

> *I don't have any money. So the money I do have, I have to spend on the cheapest foods, obviously, not always the best food, I literally have to count every penny. I will go through my online bank account every few days and work out how many pounds I have left per day for the rest of them.*
>
> **#555, Neighbourhood 5**

> *We want to do Disneyland in about three or four years with the girls and I know that's [expensive], it's worth the commitment. And from a really selfish point of view, I'd rather spend on like, making memories with my family than switch into an electric car or a, you know, a new sort of boiler.*
>
> **#593, Neighbourhood 7**

Constraints to civic and political participation

The lack of current opportunities for meaningful civic and political participation was often a frustration for participants, and a block to accessing pathways for engagement. In many cases, people's willingness to be involved in civic participation around net zero was affected by their past experiences of voting, or engaging in local politics, and how motivating or demoralising this had been. This is a significant finding, that makes the case for the importance of meaningful and effective civic participation in policy and strategies for net zero transition, as trust was found to be a strong factor in whether or not a household would engage with local government action around net zero, in particular. This was at a small scale (complying with recycling) and at a larger scale (endorsing and using a new public transport system).

In some cases, participants described building their knowledge and willingness to make changes, only to discover they had limited bargaining power, which could be demotivating. This emerged most strongly when participants discussed trying to participate economically by making adaptations in the home or changing consumption habits. It also revealed the extent to which family finances restricted the capacity for change. Social housing tenants revealed that government schemes such as the Social Housing Decarbonisation Fund created the financial resources in theory, but continued to limit a household's agency to make change. For example, the ability for change was dependent on whether or not their local authority accessed centrally-distributed funding in the first place. Beyond the split incentive, private tenants discussed not having the permission to make changes. This was true across different aspects of their everyday life, from replacing technology to making home adaptations. Those who owned their home under a leasehold described how they had limited agency to make home improvements, even if they had the financial resources to do so.

> *We would have to get permission to do it. Yeah, even on the interior, we probably wouldn't do it get permission. Yes, because technically drilling a hole in any of our rooms has to get permission. Even though we own the houses.*
>
> **#563, Neighbourhood 6**

> *And you've also got that [road building] going on at the moment…it's basically supposed to reduce congestion and it's supposed to make like an easier freeway with…roundabouts and access to motorways and things like that. Meanwhile, it was being built, it's taken an awful lot of beautiful green stuff that's been around here.*
>
> **#472, Neighbourhood 4**

Participants reflected on how a lack of influence or decision-making power within the communities and places they lived also impeded the participation of families and communities in the transition. When considering how they might rethink their consumption of food and other iterms, some participants said they did not have local options for affordable shopping, so this was not something they could easily influence. Participants noted that, in trying to socially participate, they became increasingly aware of the lack of influence communities had over what assets and infrastructure were available to them locally – be it green spaces, public transport or social infrastructure.

Areas of policy related to public transport infrastructure and personal transport use were found to be confusing to households by appearing contradictory in the context of reaching net zero, and therefore to be offsetting participation. Participants frequently referenced that building of new roads and bypasses in local areas appeared to contradict messaging about active travel, or low traffic zones; whilst investment in schemes to improve routes, accessibility and affordability of public transport were lacking as an explicit enabler for families and workers to give up cars and personal transport. Personal transport policy, including the lack of innovation in EV schemes, was identified as needing much greater thought and experimentation at local level.

Summary

While our primary research suggests there are multiple constraints affecting people's participation in the transition, what has also emerged is the different ways those constraints interact and compound each other to form different pathways for (non-)participation. This suggests that different levers and actions, and different combinations and sequences of these, will work for different households and communities.

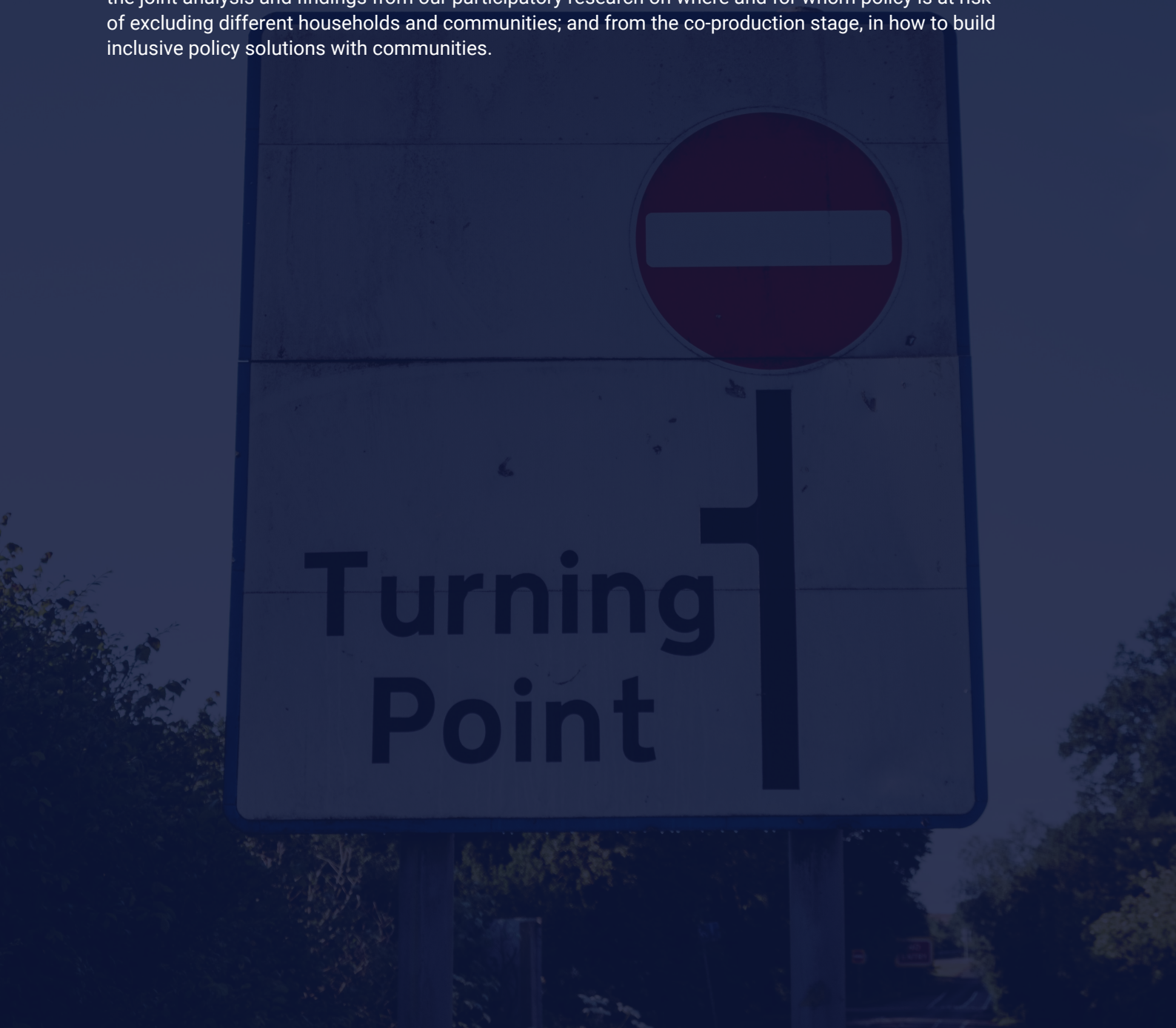
The 'pathways for participation' section draws out three key leverage points for participation: social relations, economic resilience, and civic agency. The role of employer-led initiatives and the importance of green skill initiatives in building engagement and trust in low-carbon choices and changes were also key leverage points. Alongside this, tools including powerful local narratives of green transition, community assets and social infrastructure are needed to equip communities to use these levers within transition.'

Providing fair and just opportunities in the transition to net zero for all households and communities requires differentiated policy and practice, rather than a 'one size fits all' approach to participation (explored further in the next section, Policy implications). This re-emphasises the need for a person-centred, place-based approach and is a strong departure from the way policy and practice is currently organised around delivering or incentivising one dimension of change in the areas of decarbonisation of life needed for net zero.

SECTION FOUR

Policy implications and recommendations

This section of the report discusses the implications of our findings for the efficacy of existing net zero policies, and identify policy recommendations and opportunities based on the research. It presents the joint analysis and findings from our participatory research on where and for whom policy is at risk of excluding different households and communities; and from the co-production stage, in how to build inclusive policy solutions with communities.



What our findings reveal about existing policy interventions

Net zero policy is currently a significant responsibility for three government departments. We engaged with them all during this research. They are the Department for Energy, Security and Net Zero; the Department for Science, Innovation and Technology; and the Department for Levelling Up, Housing and Communities. In addition, the education and employment briefs are held within the Department for Education and Department for Work and Pensions.

In HM Treasury's Net Zero Review, it was assessed that the most effective way to deliver the transition and support market growth is to target funding at 'early adopters, and the most vulnerable'. Over time, it was estimated, this will lower costs and support the development of products to enable the creation of a subsidy-free market.

There is little emergent evidence on whether the schemes intended to engage 'early adopters' and the 'most vulnerable' work at all, but government data does indicate that the greatest uptake has been in places with higher than national average house prices and wages. It also shows that 'early adopters' tend to be households on higher incomes, for example, in the take up of the boiler upgrade scheme. This suggests limited take up of these schemes by the 'most vulnerable' who are the focus of this research (BEIS, 2013).

Moreover, the government's Mission Zero report, which seeks to prioritise market growth and productivity alongside decarbonisation, is limited if the unequal starting points between local places are not accounted for in terms of strength of their economies; extent of social inequalities and opportunities; and presence and condition of both hard and social infrastructure. The government's Levelling Up white paper and current policies for net zero do not sufficiently account for the inequities of place as mediating factors in achieving decarbonisation, green market growth, or managing fairness of participation in transition.

The final part of our research process examined existing policies and incentives schemes for net zero for their efficacy, inclusivity and place-sensitivity, working with stakeholders and community representatives in four different locations. The policy co-production stage sought to demonstrate how to use the framework for a person-centred, place-based approach in local places, to guide local government-led policy development for net zero transition. It entailed a policy co-production process with the stakeholders and users in each location to identify a key vulnerability or opportunity distinctive to that local area's readiness to transition to net zero. Once a policy issue had been selected, a policy design focused on building inclusive participation in net zero was co-produced with stakeholders and community groups.

Policymaking to mitigate risks of exclusion

Our research has explored how to achieve the decarbonisation necessary to reach net zero while seeking to ensure fairness. Our aim is that net zero transition does not become a discriminatory process; that everyone is included, and no one is excluded and left behind.

Findings from our participatory research explain the low rates of participation by vulnerable households in current net zero schemes and policies. They demonstrate that many of these schemes are inaccessible or unadoptable due to structural and agency-related barriers. Where provision within a policy has been made for groups more at risk of being 'left behind' our findings suggest that such provisions do not account for the multiple and competing barriers to accessibility and adoption that any one household or community has to navigate.

Furthermore, our research shows how policy and practice should respond to the challenge of balancing fairness with decarbonisation. Our research found that current schemes at a household level; and some decarbonisation policies and approaches at a place and community level, may exacerbate economic and social exclusions, and social and spatial inequalities. Our empirical findings identified a number of existing risks of exclusion and constrained opportunities in how people are able to respond to policies and incentives. Equally, they show how the characteristics and conditions of a place in which people live often underpins the choices they are able to make.

Our findings identify risk factors that affect households' inclusion or exclusion in policies aiming to build participation in transition; and identify that it is not solely income, but other economic, social, civic and educational factors that affect inclusion or exclusion. Vulnerability as a spectrum and concept is becoming more complex, and moving up the income scale, and this research identifies a broader range of categories of vulnerability within net zero transition that need to be accounted for. What is more, we need to understand the relationships between these excluding factors from a households' perspective to understand how to shape incentives and schemes in a person-centred way.

Households with one or more of the following characteristics are at high risk of exclusion.
These characteristics are exacerbated by, but not exclusive to, low-income status:

- Households with no or low savings and high levels of debt; no or little flexibility in living costs and spending power; high economic and social dependencies (caring; parenting; time-poor due to work demands) have significant barriers to transition and risks of exclusion due to constraints in being able to afford upfront, or ongoing costs of home adaptations or other adjustments such as changes to travel.

- Households with tenancy status; or part, social or shared ownership; that constrains decision-making power over home adaptation and retrofit, and energy use.

- Households heavily reliant on vehicles for work or personal use.

- Households with experience of low, no or under-employment in job markets.

- Households with long-term under-development of skills and limited access to training and development opportunities for 'green' jobs.

- Households located within isolated or remote communities with limited services and amenities, limited or expensive public transport, or limited civic and social infrastructure (such as libraries and parks) which provides less visible routes to support their understanding of what to do in transition, and their engagement as a result.

- Households located within communities with low voting and civic engagement levels and/or limited democratic or community participation structures, have less ability to voice the inequities they are experiencing in transition, and may feel disenfranchised from policy choices, meaning they are less likely to participate.

Communities with one or more of the following characteristics are at high risk of exclusion:

- Communities with high density of high-rise housing, which have few public spaces (affecting EVs and low-carbon infrastructure supply) or little green space (affecting leisure, health and biodiversity engagement).

- Communities with limited access to amenities or public services locally.

- Communities with poor public transport, connectivity to centres of work or essential public services, or expensive public transport infrastructure.

- Communities in 'pockets' of deprivation, or in severance conditions where the neighbourhood is cut off by poor transport infrastructure, natural conditions, or infrastructural design.

- Communities with a lack of community assets and social infrastructure, such as parks and libraries.

Our research suggests that UK communities are at a tipping point where anxiety about the climate crisis, necessity and scarcity from the cost-of-living crisis and, for some, the moral imperative, mean the majority of people want and seek to engage with net zero transition. This is despite political u-turning on certain environmental policies. Amongst those taking part in our research, we found that when the majority of households and communities find opportunities to make small changes for a greener lifestyle, they are eager to take action. Shifting from language and policies that focus on nudging behaviour change, to policies that openly encourage and empower participation in transition for all households, is a more effective approach to policy design for enabling household transition.

Policy recommendations and opportunities to achieve a just transition

The principal recommendation of this research is that policy needs to shift towards adopting a **person-centred, place-based approach** for a just transition to build inclusive strategies for participation.

Central to applying the person-centred, place-based approach, we make the following recommendations from this research, in order of prioritisation for policymakers at local and national level to take action on:

1 **Apply the framework of a person-centred, place-based approach to policy development at local and national government level.**

Fit-for-purpose 'just transition' policies must be underpinned by a deep understanding of the barriers, capabilities and opportunities of those who are already – or highly likely to be – adversely affected by the transition to net zero. Policies must recognise the household as a whole unit, not dissected and addressed through traditional policy silos. In response to our findings, we recommend revisiting existing policies – particularly those with limited or unfair uptake – to identify how these are being constrained by, or could be enabled better by, the person-centred approach; and consideration of the levers or barriers of local environments. Doing this effectively requires national and local government to build participation in policymaking itself, as strengthening 'whole household' participation in policy co-production at city, town and neighbourhood levels is critical to equitable net zero policy making.

2 **Remove the most significant barriers for the poorest households through national policy that takes a person-centred approach to design economic incentives.**

This should include providing economic support to cover the largest upfront costs of retrofit or changing transport, and support to cushion changes to day-to-day costs of food, fuel and pricing. Such costs are unavoidable if the poorest households are to reach net zero, so a national policy for economic support in transition could remove this barrier. This would need to account for households' whole spending power and budget constraints, and should be two-dimensional, supporting households to be resilient against price fluctuations and rises, while empowering them to make choices about investments that enable participation. An economic grant resourced from national government and allocated by local government; implemented over a transition timeline, could unlock capabilities through removing the barriers of affordability and economic vulnerability.

3 **Explore alternative levels of governance for net zero policy with distributed powers.**

Further exploration by research and policy actors is needed to understand whether the current system is best organised by local authority or combined authority (regional) governance, to affect the economic and infrastructural changes necessary. Section five proposes an integrated system for a fair transition to identify what works in each context, and then create a specific vision and plan for each geographic area, built around decarbonisation and fairness aims, and with devolved powers, alongside clear strategies for integrated working across local authorities, anchor institutions, and local communities; and there is therefore a need to review whether government needs to go further on devolution of powers and funding to regional bodies to empower a fair transition system.

4 **Engage households and communities in the design of fairness outcomes.**

Local government and key civil society and community organisations need to engage communities in place-focused, inclusive debates on what fairness outcomes look like during, and as a result of, net zero transition. This must recognise the inequalities and injustices faced by specific groups; types of household; and places, but also engage the public behind a holistic vision of a fair transition to net zero. This includes placing fairness at the heart of participatory policy design and innovation (see Insert 3).

5 **Build collective action and policy for net zero transition with and around places.**

Our research strongly indicates that motivation to participate in net zero is stronger when connected to 'place'. Local government need to lead in coordinating a closely joined-up ecosystem of innovation and action is needed across local government, public-private partnerships, innovators, the voluntary and community sector, and communities themselves to enable a fair transition to happen for all households within the UK.

6 **Engage local leaders, civic actors and investors to adopt a data-driven, 'place readiness' approach.**

This will support those leading strategies towards net zero to make considered choices and broker initiatives and partnerships, maximising action on high-potential places to accelerate decarbonisation. It will also help mitigate risks. We propose our 'Index of Readiness for Net Zero' as a valuable tool to create faster, fairer progress on areas of high potential for action within local communities.

7 **Recognise, within government, the need to engage other trusted actors.**

Employers are found to be key influencers and enablers of participation in low-carbon practices related to the household (such as EV schemes; recycling; transport choices; energy use practices). To boost participation, more local job transition support and person-centred schemes are needed to provide opportunities to reskill for the green economy. Meanwhile, this research recognises a powerful role for a more targeted approach by investors and the private sector, applying a data-led approach such as the Index of Readiness to create stronger, place-led investment strategies for public-private partnership which could leverage the assets and capabilities of individual places to accelerate a just transition.

8 **Update the existing Climate Change Committee (CCC) Risk Assessment to provide a broad and true picture of community and household vulnerabilities in transition across the UK.**

To provide a broad and true picture of community and household vulnerabilities in transition across the UK. This means extending the existing CCC Assessment to fully account for place, expanding its current scope beyond hard infrastructure, and accounting for a much greater set of social, asset-based, social infrastructure measures. The findings of this new assessment should drive a national strategy for public participation in a just transition.

Taking a person-centred approach to net zero transition means approaching participation from a holistic, not siloed, perspective. This is vital because acceptance, decision-making and adoption of net zero changes in the home and in communities are not independent processes.

It is clear that building participation inclusively, and at the magnitude of collective effort required to reach net zero goals, requires a different system of policymaking. In our policy co-production groups and liaison with local and national stakeholders, we have examined how the person-centred, place-based approach could be better delivered in policymaking.

The policy recommendations above propose how to improve the inclusivity of household and community participation in a just transition through the existing policy system. Through the insights gained in the policy co-production stage and in response to the sum of our findings; the final section of this report explores one of the key policy opportunities in depth: the chance to develop an integrated policy system that is fit for purpose in delivering on a just transition.

Policy co-production for a just transition to net zero

Concern about the potential for negative consequences of pursuing environmental agendas without considering social needs is becoming a central feature of global climate policy (UNFCCC, 2020). At the same time, our secondary and primary research highlights that existing visions of a net zero future are not well-known to the communities they will affect; often fail to account for diversity of experience; and lack a grounding in the dimensions of social inclusion. Meanwhile, those thought to be most vulnerable in society are often denied participation in research and policy development (Aldrige, 2016).

Participatory policy development (PPD) processes can include community and stakeholder voices in policymaking, supporting a more just, place-sensitive transition to net zero. PPD seeks to include the people affected by a policy issue in crafting solutions, positioning them as active participants in the design process (Blomkamp, 2018). PPD can be a vehicle to make audible the voices of communities often marginalised in existing processes and bring a wider recognition of who holds 'expertise' when solving problems (Booth, 2019, De Smedt and Borch, 2021). When done well, PPD can identify problems and solutions that speak to the needs and interests of various actors, and can lead to improved policy design and enhanced decision-making processes (Rodriguez and Komendantova, 2022).

This project undertook a PPD process across three case study locations in the UK – Luton, Hartlepool and Newcastle – testing several methodologies and group typologies. The overarching aim was to develop and test a PPD methodology, applied to policies related to the just transition. Our approach sought to enable policymakers, and local and national stakeholders, to understand how they could plan for and manage transition in a way that is person-centred; which mitigates and reduces inequalities; monitors and manages household vulnerabilities; maximises opportunities for fair participation; and places equitable household and community outcomes at the heart of the transition to net zero.

Case study: Policy co-production in Hartlepool, Co Durham

Hartlepool, a seaside town in northeast England, was selected as a location for policy co-production because it is at a very early stage in its journey towards net zero. The council has not yet announced a climate emergency or set a carbon emissions reduction plan, though a plan for decarbonising council operations is in development. Hartlepool grapples with challenges related to deprivation, after the decline of local industry. This has prevented a focus on net zero, which is perceived as relatively less urgent. During our workshops, the council's limited progress on net zero was mirrored in limited discussion of the transition at place level, let alone fair outcomes. A key outcome of these workshops was building relational capacity between the council and local community groups, as well as a shared commitment to deliver just transition initiatives locally.

The workshop created a rich understanding of some of the key challenges faced by local communities that might be especially relevant in the transition. Participants brainstormed and prioritised challenges that they observed through their professional and personal lives. Thinking of the transition to net zero, participants mostly identified scenarios where current challenges would be aggravated, reflecting on the trade-offs that households and communities might face. They struggled to think of scenarios where an emissions reduction policy could lead to positive outcomes, highlighting instead the negative outcomes related to difficult trade-offs. For instance, participants reflected on poor connectivity in Hartlepool, imagining that changes to mobility (such as limiting car usage) might hinder their ability to participate in jobs, education, and other activities such as extracurricular activities for adults.

Participants prioritised two key challenges to explore in depth and came up with policy asks in response. The first challenge was widespread deprivation, compounded by poor education attainment. Participants proposed a communication campaign supported by local community organisations to promote food autonomy. Participants identified green spaces, including people's gardens, as well as the strength of the local voluntary sector, as assets that could be leveraged to achieve this. The second challenge identified was distrust in government and political disengagement due to a lack of transparency in government spending. Participants proposed a programme of community engagement, carried out in collaboration with the voluntary and community sectors, to understand the priorities and challenges of different communities in the town. This ask reflects an appreciation of the differential conditions that people in different communities throughout Hartlepool might face in the transition to net zero.

SECTION FIVE

Towards an integrated system to deliver net zero

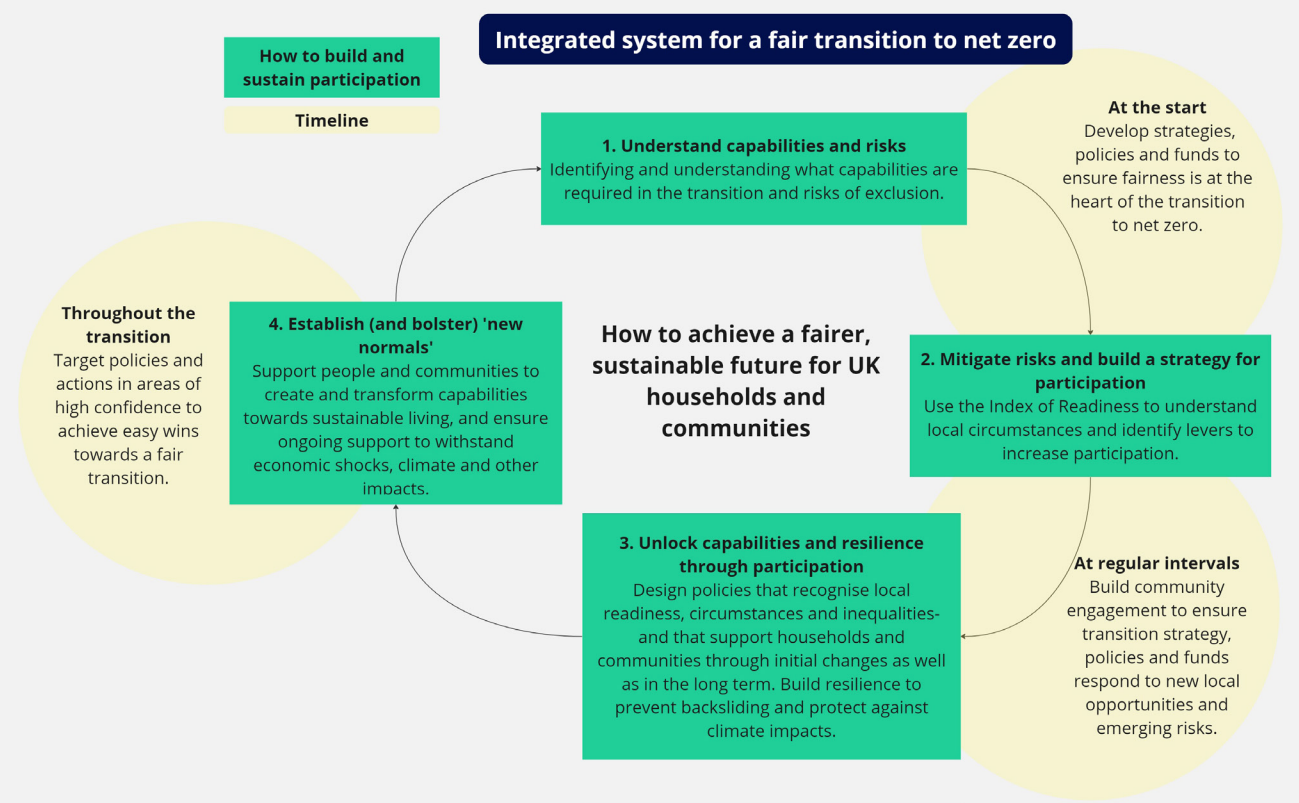
A key recommendation of this research is for government to explore the feasibility of a more joined-up, holistic system to deliver net zero, focused on person-centred and place-based policies that can reconcile decarbonisation with fairer social, economic, health and employment outcomes. Our findings offer a route to examine whether the household, community and place-based impacts of net zero – positive and negative – are sufficiently supported within the policies and government strategies currently in place to reach net zero. In presenting the human side of the challenge of switching to a low-carbon society, we seek to improve the support for it: to provide means by which local government and national policymakers can better approach leading an inclusive and just transition for all households and local communities.

A joined-up, holistic transition policy system could achieve rapid participation in response to short term challenges; and work towards a set of agreed long-term outcomes – both for decarbonisation, and fairness. Moving to an integrated system means moving from 'top down' and 'macro-led' approaches involving a limited number of actors, to a collective movement with distributed levers for participation across different parts of society: one that transforms all household and communities' capabilities to live sustainably and to access, afford and adopt low-carbon measures.

Figure 6 (below) proposes an integrated system approach to deliver a just transition. It shows the process by which taking a person-centred, collaborative policymaking approach and a data-led, place-based approach through an index of readiness, can be applied to prioritise action: to help those leading policy, investing in, or strategically taking action to make targeted decisions and balance trade-offs. The integrated system would need to be mandated and resourced through national government spending policy, and led from and coordinated by an appropriate layer of sub-national or local government, to support households' to participate in net zero transition.

Principles of how an integrated system could work

Figure 6: Key components for a proposed integrated system for a fair transition to net zero.



Achieving a fair transition that balances fairness with decarbonisation outcomes requires a different approach to policy and funding, one that can work to a holistic set of short and longer term outcomes and be place-sensitive and specific. The new integrated care board system (ICBs/ICSs) was introduced to address health inequalities, manage the impacts of the inequities and conditions of places on health, and maximise preventative health measures, as well as affect a more integrated system of health care and better health outcomes within a place. This provides a possible model for an integrated policy system for place-based net zero transition.

The integrated system for net zero is designed to unlock the possibility for more households to make sustainable choices at home and in local communities. We know what those choices and capabilities need to be, it is a question of what – in each place – will best enable people to choose and access them. (Stage 1 of Fig 6, above). There is a need first for government and local government to identify what key factors and opportunities in each place will unlock households' and communities' capabilities and build agency to participate. Putting resource behind assets and levers that make a place 'more ready' for transition – whether a readily developing green economy, thriving college system for reskilling, or active local business sector with conscious, progressive employers – unlocks capabilities in the local community. Understanding and mitigating factors that exclude people from participating even if they want to - as the data in this report shows – is essential, so that prohibiting factors can be removed, where possible.

There is a need for a coherent, government-led strategy for public participation in net zero transition (Stage 2 of Fig 6, below). Achieving a fair transition that balances fairness with decarbonisation outcomes requires a different way of prioritising policy and funding, and a system that foregrounds participation via different participatory levers (pathways). These pathways should recognise different starting points, characteristics, barriers, resources, and dependencies that households across different places face. An enabling policy system for a fair transition must respond by organising incentives towards participation routes, not try to funnel households' participation and incentives through 'one size fits all' approaches, campaigns or schemes which have been majority organised on the basis of income levels – or not been directed or disaggregated according to household status at all.

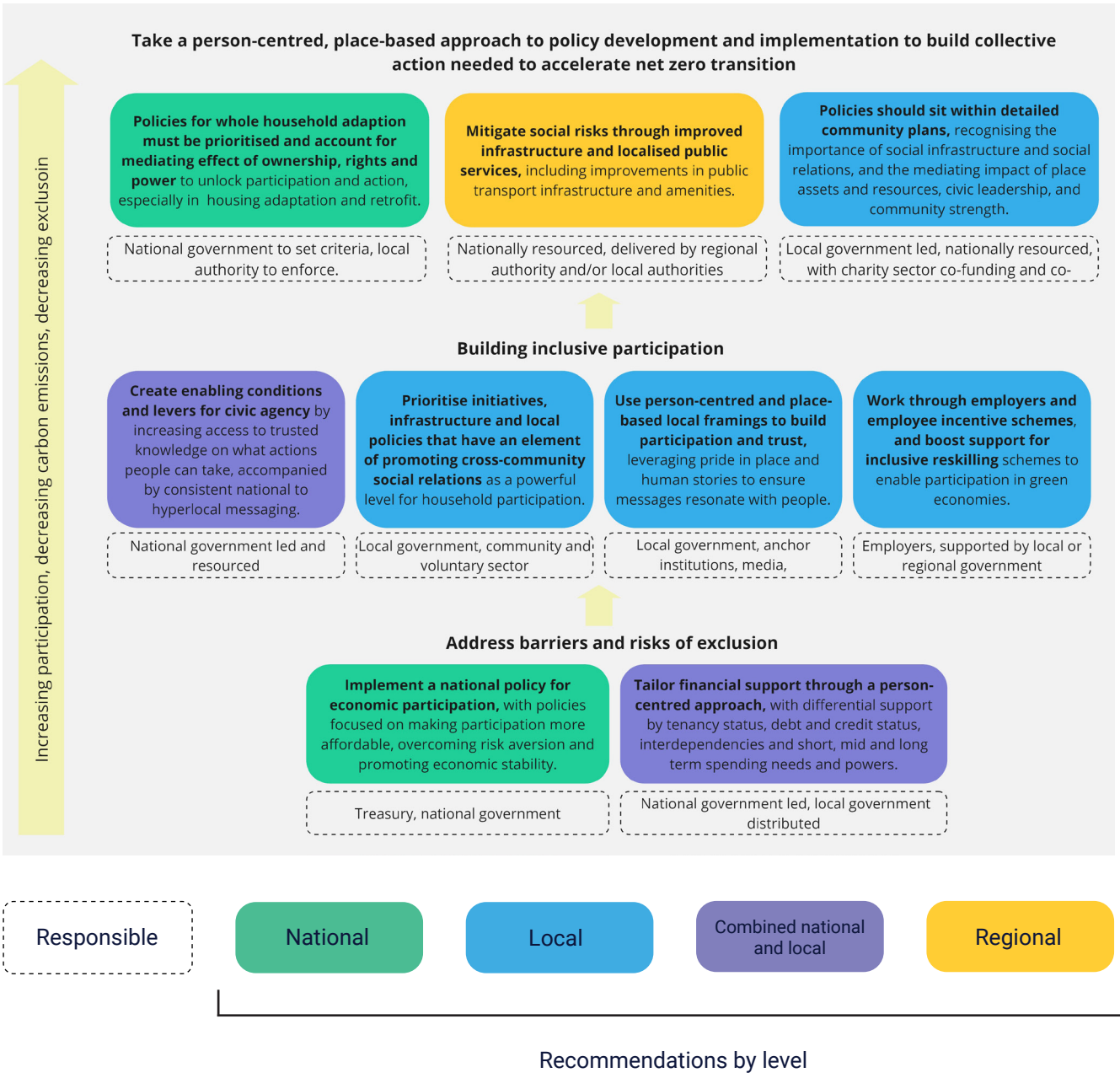
Equally, households exist within communities of place, that mediate pathways for participation and make development of capabilities easier or harder. Individual neighbourhoods and local authority areas have distinctive risks and challenges of climate impacts, natural resources, reliance on different legacy or existing economies; housing stock, and industries; and opportunities in terms of green energy, food and fuel production, storage and access; localisation and adaptation of services and amenities; adoption of technologies and innovation; job creation; and more. Understanding what different local authorities and neighbourhoods need to do through transition, and their unique leverage points that maximise participation and increase fairness outcomes, can be achieved with the concept of place readiness in transition to net zero.

As exclusions are removed, participation can build (Stage 4 of Fig 6) as incentives, demonstration and the influence of local social relations as neighbouring households, communities and streets adopt net zero measures. As participation builds, people see examples of how to take part in transition adopted by a wider set of profiles of household, reducing the polarisation of who 'can' and 'can't' take part in net zero which is one barrier our research found to adoption and trust in the journey. This encourages further participation, creating a distributed effort towards transition, thus making decarbonisation more viable, making transition outcomes more inclusive, and accelerating progress.

It is important to remember that climate related weather – and related social and economic impacts - will not be static during this period (also Stage 4). To prevent the kind of backsliding of deprivation and inequalities currently seen in energy, food and fuel poverty, health and wellbeing crises due to the cost of living and the lack of secure energy systems, requires resilience plans and policy measures built into the system. Resilience is best defined as 'meanwhile' measures that support quality of life to be maintained for a community - even when there is a crisis due to weather, or where costs, supplies or community cohesion fluctuates. These measures can range from 'hardware' community generators or shared batteries; to community response planning. Seeing the integrated system as one that may have to respond 'fast' or 'slow' is critical in the context of net zero.

We suggest that a fair, integrated transition system would require a specific vision and plan for each geographic area, built around a set of joint decarbonisation and fairness aims and devolved powers and governance to regional level, alongside clear strategies for integrated working across local authorities and anchor institutions.

Figure 7: Key components and actors responsible in an integrated system for a just transition.



The design of an integrated fair transition system is a subject for further research and most importantly, for co-productive engagement with policymakers at national, regional and local levels. Figure 7 above presents policy recommendations for how to realise specific, key parts of such a fair integrated transition system. These recommendations were identified by bringing together analysis and findings from the evidence, the primary research and policy co-production in a selection of local places, and point to how specific components of the integrated system could work.

Further work is needed to scope and redesign a new governance structure at the sub-national level to respond to the person-centred, place-based approach. This work would need to understand if a system is best organised at the regional level to effect macro-economic and infrastructural changes necessary – but where certain responsibilities and powers over parts of the challenge could be 'double' devolved (such as community involvement in decision-making; personal transport schemes and housing adaptation programmes) to the local authority. Some responsibilities could be 'triple' devolved' to hyperlocal, counsellor level, with our data suggesting initiatives to build civic agency; improve household carbon literacy and climate education; and social infrastructure for sustaining green participation in public realm, local food systems, and active travel are effectively led from the neighbourhood level.

Across the recommendations, it focuses on a virtuous cycle of how to address barriers and risks of exclusion; how to build more inclusive participation; and how different authorities and actors – from government to communities – can take collective action through a person-centred, place-based approach to policy design. This is to account for the vulnerabilities and opportunities of place and achieve the outcomes of building fairer participation within a just transition.

Conclusion

Understanding the routes to support households and communities as they transition to a net zero future, offers an opportunity to drive a collective, cultural response to the challenges we face. This research calls for policy that will build participation and respond to the needs of different people, with different starting points, in different places. It moves us beyond concepts of behavioural change at the individual level or voting preferences at the citizen level – to recognise what makes people decide to accept, adopt, and sustain different ways of living, working, travelling and consuming does not happen as individual decisions, taken in a vacuum. It takes into account the reality of people's dynamic, lived experiences, and their family and community relationships, and recognises that these impact on people's motivations and decision-making in the context of participating in net zero transition.

Reaching the decarbonisation goals that could protect our environment, livelihoods and, indeed, lives from further climate impacts, requires the participation of every household to shift to low-carbon living. Our findings from this research show this can be done more effectively and inclusively, and in ways that lead to fairer outcomes, by accounting for peoples' different starting points; by shaping a participation strategy with several different pathways, that ensure the involvement of households and communities in person-centred ways; and by maximising the potential of place, and place-leadership.

The current political discourse around net zero risks downplaying how far this agenda has entered the minds and priorities of the UK public. In 2022, 77% of UK households reported that they were already trying to make some changes towards low carbon living and decarbonisation. However, 79% were unable to afford to make the changes that would have the most significant difference to decarbonisation or fairness outcomes (ONS Opinions and Lifestyle Survey, 2022). Our research with participants found that – where they find agency to make changes that will contribute to a greener future, where they feel they can trust information enough to make confident choices based on it, and if they can reduce acute financial risks – the majority of people want to participate in net zero.

The public interest is not the only dynamic making this a timely agenda. The transition to net zero does not sit within a static environmental context. The UK has just had its second average warmest year on record and risks from climate impacts are increasing, including from extreme weather and shocks to supply chains. A shift to safeguard households and communities during transition, by uniting consideration of climate mitigation measures with adaptation measures to cope with climate impacts - is needed. This should also account for supply chain fluctuations; technological and policy shifts; and developing risks over the transition timeline – at the same time as households, communities, sectors and services undergo change to low-carbon models.

This requires long-term crisis planning by government with local government and community leaders, and can learn from local authority working during the Covid-19 pandemic, as well as from existing government-held community resilience frameworks. No place-sensitive framework for ensuring community resilience in net zero transition currently exists, and we recommend its development is critical to safeguarding communities in transition.

The findings identify many barriers to participation that need to be removed by policies and support schemes. Equally, they show many opportunities for how participation in low-carbon living can be built across different areas of household and community life – and the potential positive benefits people see transition having for their lives at home, their local communities, and their experience of fairness in key areas of life. Central to the recommendations that flow from the research findings is the need to create a distributed, local effort towards transition. This will make achieving decarbonisation targets more viable; make transition outcomes more inclusive; and accelerate the UK's progress towards net zero.

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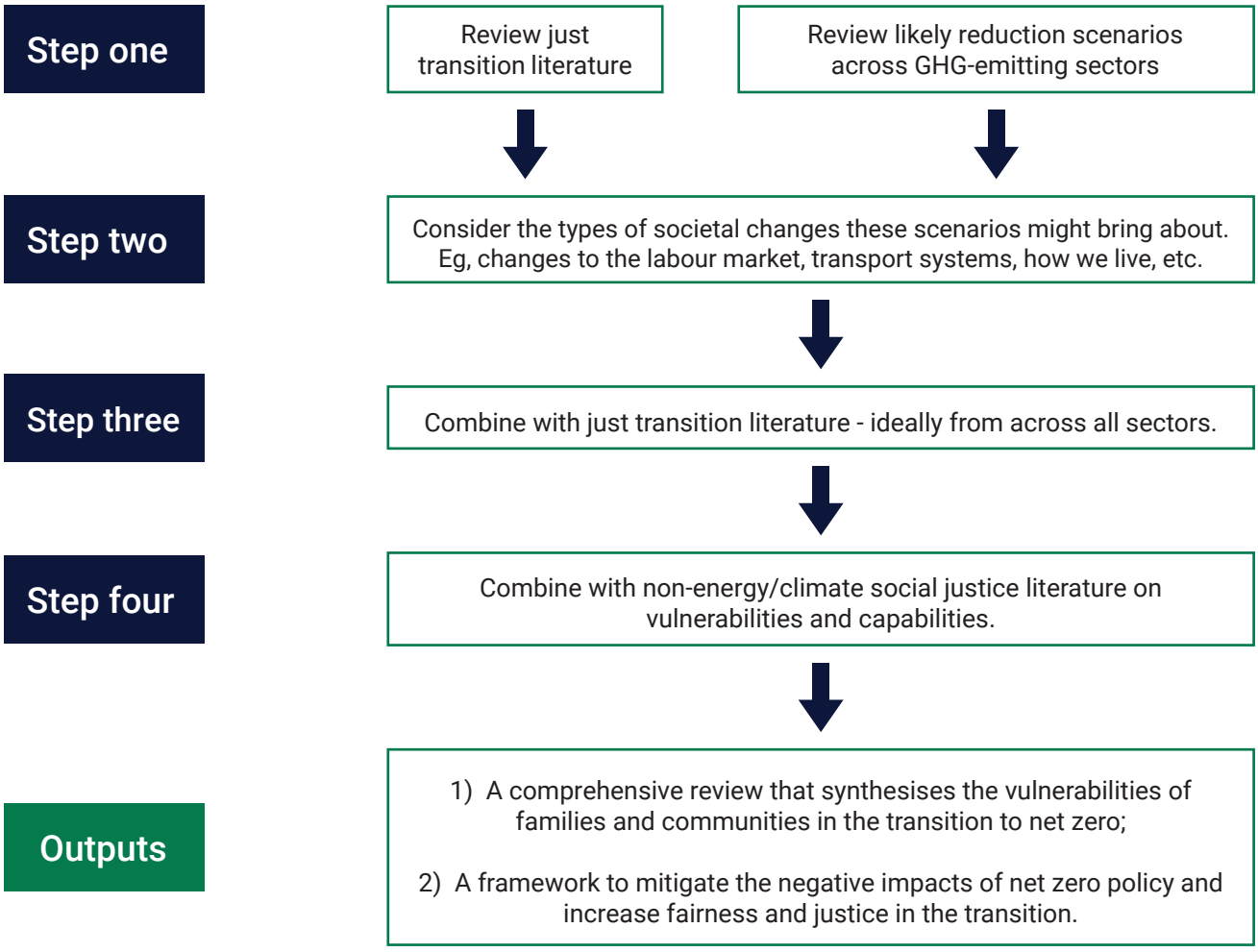
Annex A: Methodology

This research has brought together in-depth participatory primary research, a systematic review of the poverty and social justice literature, and literature and data on scenarios of change towards the UK's net zero future, together in the round, for the first time. Findings were then taken through a process of policy co-production in place-based sites, looking at what incentives, levers and policies might unlock greater, inclusive participation in transition.

Literature review methodology

A narrative review of existing literature, case studies and other forms of evidence including grey literature and secondary analysis of existing quantitative datasets was undertaken to identify family factors that will change as a result of the transition to net zero, and how community and place factors will moderate this. In particular, the review sought to understand the possible impact scenarios of transition on families and the specific social vulnerabilities within each scenario; and on secondary survey data to establish what we already know about individual, family and community capability to engage in the transition to net zero.

Figure 1: Approach to literature review.



The following works acted as a starting point for the direction of the work. The works were not viewed as defining for the study, but rather as helpful tools in informing the direction of the literature review and related domains.

- The CREDS October 2021 report, 'The role of energy demand reduction in achieving net-zero in the UK' greatly influenced the direction of the literature review (Barrett et al., 2021). The scenarios discussed within different sectors, such as agriculture, industry, buildings and mobility, further informed the domains that would later arise in the Team A contribution to the literature review.

- The work by the Climate Change Committee (2020b, 2020a, 2021), Department for Business, Energy and Industrial Strategy (2021), Climate Assembly UK (2020), Mander et al. (2019), and National Grid ESO (2022) also informed the initial review process.

As part of formulating the approach to the review, term lists were developed as a starting place for how to proceed. For example, transition terms for consideration and review included 'low carbon economy', 'zero-carbon economy', 'climate justice', 'energy justice' and 'just transition'. Social dimensions were also identified, including but not limited to: equity, access, deprivation, social action, social/relationships/networks, place/place-based, participation/engagement, health/wellbeing, identity and behaviour. Other dimensions discussed at this stage included but were not limited to: vulnerability, inequality, social change, disability, poverty, household structure, intersections and attitudes. At this stage, policy sectors identified for exploration included transport, employment, health, social policy, and housing among others.

Building from these sources, eight domains were established (eg, where we live, where we go, work life) in response to both the key questions, the resources identified above and the literature review process. Under each of the eight domains, the team looked at what will happen to families and communities in a range of expected scenarios related to policy instruments, identifying the likely problems and barriers associated with inequalities and social justice issues. Findings were organised as follows:

Domain – key aspects of CCC recommendations	Policy instruments being deployed	How will this domain by affected by CCC recommendations	Examples and case studies

Development of a conceptual framework

Seeking to fill the gap between integrating social policy insights about inequalities today, and policy to bring about net zero futures, findings were distilled into a conceptual framework orientated around participation. The framework pulled together insights from the review of the literature, to explain how these outcomes could come about, articulating:

- The domains of life that will be affected by net zero policy;

- The risks of injustice that accompany the predicted changes in each domain;

- The four ways in which people will need to participate in net zero, building on the B-SEM indicators of adult participation (Levitas et al., 2007);

- The leverage points and prohibitive effects that shape people's ability to participate in net zero, associated with particular types of people as identified in the social justice literature;

- The groups of people and places at risk in the transition using the concept of 'readiness for net zero'; people are not 'ready' if they are currently prevented from participating.

Testing and refining the framework through participatory research

Primary research was undertaken to test and adapt the conceptual framework, grounding it in lived experience. Findings from the literature review emphasised that the transition to net zero is not explicitly grounded in principles of inclusion and social justice: those who are already economically and socially excluded are at risk of being further excluded in the transition to net zero. The primary research sought to respond to the reality that those who might be defined as 'vulnerable' are often denied full participation in research (Aldrige, 2016) This risks research and policy leaving out their experiential knowledge, which could otherwise offer contextual and needs-orientated insights about their experiences within the transition to net zero (Goedhart et al., 2021)

As such, the primary research explicitly adopted qualitative participatory research approaches, that are designed specifically with the needs of such people in mind, designing the research in ways to actively make space for those who are least likely to be able or willing to take part in research, to do so. Participatory research approaches are also a place of shared decision-making and mutual learning (Vaughn and Jacquez, 2020), which can help to build understanding and autonomy – in line with a person-centred, social inclusion approach to transition to net zero.

Sampling

To identify people to engage for the research, the project drew on the United Nations Framework Convention on Climate Change's considerations for engaging vulnerable groups, communities and ecosystems in climate change adaptation plans.[1] In designing the project, it was recognised that the impact of the transition will vary regionally, with particular concern for Yorkshire and the North of England. As such, Leeds and Newcastle were selected as case study locations to conduct the primary research. Quantitative multicriteria analysis using seven datasets was undertaken to identify neighbourhoods with unique intersections of factors relating to vulnerability and capability in the transition to net zero.

An initial sift of locations at the output area (OA) level of geography was conducted to exclude places that: are not in a flood zone; belong to the lowest IMD income decile; have fewer than 10% of Energy Performance Certificates (EPC) which were generated because the house applied for an energy efficiency grant (Energy Company Obligation (ECO), Green Deal, Renewable Heat Incentive (RHI) or Feed in Tariffs (FiT)); and have more than 10% of homes rated E, F and G from the EPC database. The following themes were then employed to help identify neighbourhoods of interest:

- Pockets of deprivation (ie, income deprived neighbourhoods surrounded by wealthier neighbourhoods) – as measured by mean income deprivation decile at the MSOA and OA level
- Employment deprivation – as measured by the employment rank of the indices of multiple deprivation (IMD) at OA level
- Health deprivation and disability – as measured by health deprivation and disability rank of the IMD at OA level
- Areas with poor access to services due to geographic barriers – as measured by geographic barriers sub domain rank of the IMD at OA level

1 Barrett, J., Pye, S., Betts-Davies, S., Eyre, N., Broad, O., Price, J., Norman, J., Anable, J., Bennett, G., Brand, C., Carr-Whitworth, R., Marsden, G., Oreszczyn, T., Giesekam, J., Garvey, A., Ruyssevelt, P. and Scott, K. 2021. The role of energy demand reduction in achieving net-zero in the UK. Centre for Research into Energy Demand Solutions. Oxford, UK.

Targeted recruitment drawing on participatory practices was used to engage a range of people living within each neighbourhood. Information about the research was provided through several channels, including a randomised letter campaign, social media, information shared through local organisations, a dedicated webpage and a freephone number putting participants in touch with a member of the research team. Recruitment materials were professionalised and focused on the different benefits that participants might gain from taking part, including learning more about the transition to net zero and payment for participation.

Figure 2: Example recruitment materials.

Participants were able to register their interest to take part via an online form or via the freephone number. Recruitment 'boosts' were conducted in neighbourhoods or amongst groups that were underrepresented. The final sample was selected based on diversity within a group, determined by responses provided in the sign-up survey regarding household type, financial security and demographics. Participants were invited to take part by email or phone, and were provided a welcome pack with further information and sent a reminder ahead of each workshop.

Enabling participation

Participants were paid £100 per three-hour workshop – roughly triple the Living Wage at the time. This was to recognise the considerable knowledge shared and effort that people undertook in taking part in the workshops. This also helped to compensate any lost income as a result of participating. Multiple engagement routes during the recruitment phase successfully reached people across a range of ages, demographics and digital inclusion levels. When recruiting participants, checks were made to understand what they would need to help them to take part. The project was able to offer support such as on-site childcare provision while they attended the workshop and help to cover reasonable travel expenses to get to the workshop.

Data collection

Each group of participants were engaged repeatedly in order to build trust and group empathy and empowerment in order to enable effective knowledge sharing. Participants attended three, three-hour in-person workshops, hosted locally and adapted to meet any specific needs of participants.[2] Engaging in equitable knowledge sharing practices, every workshop comprised of a balance of information sharing, group or individual reflection and data collection through various participatory research methods as detailed in Table 1. Several formats of data were collected, including audio transcripts, photographs, written and visual products created by participants in response to particular activities.

2 United Nations Climate Change Secretariat, 2018, Framework Convention on Climate Change: Protection of Vulnerable Groups, December 2018. Accessed at Considerations regarding vulnerable.pdf (unfccc.int)

Table 1: Overview of the series of participatory workshops undertaken.

Workshop	Objective	Knowledge exchange	Research tools
One	Trust building; establishing common knowledge about net zero and household transition; developing common baseline knowledge about participants and local place.	Introduction to net zero; household transition	Reflection; participatory mapping of local assets
Two	Establishing common knowledge about local transition; understanding vulnerabilities and capabilities for household and local transition.	Local transition	Reflection, participatory visual methods
Three	Establishing common knowledge about industry transition; understanding vulnerabilities and capabilities given family circumstance; priority setting for a just transition to net zero.	Industry transition	Reflection, pen portraits, deliberative priority setting.

In keeping with participatory approaches, activities were designed in consideration of 'what works for whom in which context?', to ensure that the methods used created opportunities for people to express themselves in ways that work for them (Goedhart et al., 2021). With emphasis on participatory research as a joint process of reconstructing people's knowledge and experiences through a process of understanding and empowerment (Bergold and Thomas, 2012), activities were designed to enable a mutual learning space that was meaningful to participants, which were also adaptable to incorporate the different types of learning and experiences that people want to gain from taking part.

Stimulus materials were developed through secondary analysis of existent known case studies, evidence and quantitative data sets that indicate how family circumstances will change or be at risk in response to the transition to net zero. To ensure local relevance and sensitivity, semi-structured interviews with local stakeholders were conducted to enquire about particular vulnerabilities and capabilities for families in the community and about the past experience of social, economic and environmental transitions for the case study community, identifying where there are past and current vulnerabilities, capabilities and risks.

Data analysis

Given the large amount of complex data collected via facilitated discussions in the primary research, adapted framework analysis was adopted (see Table 2) to allow researchers to move between multiple layers of abstraction with sight of the raw data, to be able to easily demonstrate from what data a finding of conclusion came from (Kiernan and Hill, 2018). Recordings and transcripts of all facilitated discussions undertaken for primary research, and any materials produced by participants during discussions, were considered for data analysis. However, some transcripts or materials were deprioritised, particularly where an activity was intended as a skills building exercise, or a precursor to another activity that subsequently incorporated and built on initial responses.

Some 858 data points were extracted onto a single, highly structured online spreadsheet to enable collaborative analysis amongst researchers. The spreadsheet enabled filtering of data by multiple data characteristics including by code, by neighbourhood and by research activity. Other data, such a data from visualised responses produced by participants (eg, home collages), were considered external to the spreadsheet. Collaborative analysis was largely conducted remotely, with the support of online tools such as Miro. Researchers engaged with both a top-down and bottom-up approach to analysis, sorting and categorising data based on the participation framework that emerged from the literature review, but iteratively developing codes from the data.

Table 2: Overview of the series of participatory workshops undertaken.

Stage	Description	Analysis activities undertaken
Familiarisation	This early stage is for the researchers to get familiarised with the data and sensitised to early themes. It encourages the research to see the individual differences inherent in transcripts that can sometimes get lost when coding begins. The process of sensitisation to these individual differences also enables the researcher to better identify within- and between-participant differences.	Overview of findings at early stage; emerging findings; development of first set codes from one neighbourhood group.
Identifying thematic framework	This stage of framework analysis is commonly referred to as 'coding' in other qualitative methodologies. This principally involves identifying key themes, issues or discussion points embedded in the transcript. These are delineated and assigned a 'code' or a name that best captures the essence of the theme or issue identified.	Coding of all datapoints (coding by participation type, domain and opportunity/barrier); review of suitability of codes and recoding.
Indexing	Indexing refers to the process of numerically annotating transcripts in order to identify consistencies, which then go on to develop the coding framework. Alternatively word codes (as opposed to numerical) that have been generated during stage 2 are listed on a separate sheet of paper, and grouped into clusters where there are shared commonalities or consistencies.	Data sub-divided into forms of participation for high level analysis. As part of that process, codes were clustered for qualitative analysis and considered under several questions to aid analysis.
Charting	Framework analysis describes this stage as a process of rearranging the data and thematic framework to create order, not dissimilar to the iterative principle of grounded theory.	
Mapping and interpretation	Mapping and interpreting essentially are ways of representing pictorially or graphically all of the themes and investigating how each of the themes relates to each other. This detailed exploration of the iteratively developed and revised thematic framework enabled us to gain a clearer understanding and explanation of the 'bigger picture'.	Themes were graphically mapped using the online tool Miro to explore how domains of life, forms of participation, opportunities and risks interacted, to build a person-centred view of participation.

Beyond extractive data collection

In adopting participatory research practices, participants were offered several different ways in benefitting or gaining from taking part in the research, to acknowledge the significant contribution they would be making towards it. This included opportunities to learn more about net zero, to share their knowledge and lived experiences, to be paid fairly for their time, to be fed, or to have a break from childcare responsibilities. The research team were grateful for the time and knowledge that all participants gave to the workshops, regardless of their primary reason for joining. While participants were not at any point asked to articulate their reason for joining, they often shared ways in which taking part felt valuable to them.

Providing reliable and accessible information

During the workshops, it quickly became apparent that participants had no reliable sources of information on the transition to net zero. A general distrust of government and the media abounded, and misinformation and fake news often arose in conversations. This is in line with the national trend of falling trust in politicians and the media (Ipsos, 2022). We identified the opportunity to act as a trusted source of information, providing resources and answering participant questions in a way that is both accessible and robust.

During the workshops, we collected questions from participants, which were collated in a 'question bank'. Afterwards, we put together a 'feedback pack' for participants, which included a summary of the information provided during the sessions, as well as answers to participants' questions. A feedback session will take place in March, where participants will hear a summary of research findings and have the chance to feedback and input on how we present them.

Figure 3: Excerpts from our post-workshop information pack.

Commented on by a number of those taking part, the workshops were an important space for knowledge exchange, education and building awareness around net zero. Despite some participants joining the workshops with no knowledge of net zero, or having negative sentiments towards net zero, information and question and answer sessions held in friendly, discursive environments enabled participants to critically engage in the ways they wanted to. Several participants highlighted that it was challenging to find all the information shared in the workshops in one place, and requested for information to be made available after the workshops, in a shareable format, so they could share with friends and family.

Emerging from discussions about people's community and civic engagement, participants identified the workshops themselves as an important opportunity to be civically engaged. Participants shared that they saw the workshops as a means of taking part in their place, with the workshops being accessible and a way of participating that was meaningful to them. In learning more about the research process, some participants saw this as a mechanism for interacting with policy and decision-making processes despite not directly interacting with such stakeholders. There was also significant knowledge exchange between participants about opportunities assets within their own neighbourhoods for greater community and civic engagement.

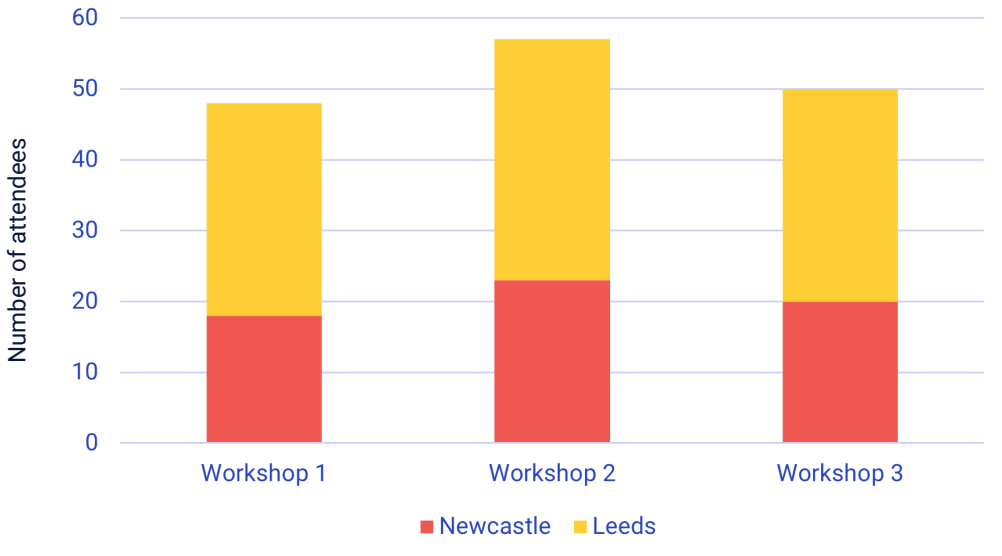
> *This group is the first time anyone has asked my opinion.*
>
> **Participant, Leeds neighbourhood.**

Working in groups of participants that resided in the same neighbourhood, and had common experiences of their place despite varying backgrounds and circumstances, presented an opportunity to build on existing social connections or create new ones. For example, we saw participants who did not know each other prior to workshops offering each other car sharing to and from the workshops, even though travel expenses were reimbursable. In another example, participants identified and bonded over mutual contacts. In a few cases, participants flagged to researchers that this was an opportunity to reduce their experience of social isolation and loneliness.

Demand for opportunities to participate

Within a five-week recruitment window (including a one-week recruitment boost), 150 people expressed their interest in taking part in the workshops. Following a screening of their appropriateness for the workshops, 87 participants were invited and agreed to take part in the workshops. Over the course of three workshops, ultimately, a total of 62 participants took part. Where primary research typically experiences an attrition, the workshops experienced a slight increase in number of overall participants, with 48 attending workshop 1, 58 attending workshop 2 and 50 attending workshop 3.

Figure 4: Workshop attendance rate.



While the variance in attendance rate could in some cases attributed to changing availability and changing interest in the subject or taking part, just three participants attended only one workshop. Several participants joined from workshop 2 after hearing about it from other participants.

Limitations

Given the large volume of knowledge exchange, and the need to build trust both between researchers and participants, and amongst participants, a series of workshops was necessary. These workshops were spread out to reduce the burden on participants and support them to participate. This allowed participants time to process information on their own terms, as well as allow for the research team to do any additional research to support participants. However, this introduced increased risk of poor attendance. That said, as noted above, this research did not experience attrition. Nonetheless, some participants were not able to attend all of the workshops they wished to due to availability, also resulting in some insights and experiences being missed in the research.

Principles and practices within a participatory research approach, particularly when working with those considered 'vulnerable' within society, asks for greater collaboration and equality in research relationships (Aldrige, 2016). Wherever possible, the research team looked to balance the objectives of the research, with guidance from participants about what they wanted to get out of participating. Sometimes, this meant spending longer on an activity than anticipated, or re-planning workshops to incorporate reasonable asks from participants, such as information sessions on particular subjects. Occasionally, this was at the expense of the research as planned, but almost always resulted in interesting insights and experiences being shared nonetheless.

Quantitative methods were employed to identify neighbourhoods and recruit participants, making use of datasets including 2011 census data and 2019 indices of multiple deprivation. While the approach and methods used were robust, and the datasets established, there were possible limitations with using data collected before significant social and economic changes that might have arisen given the Covid-19 pandemic, as well as from using older census data. In some neighbourhoods engaged, it was evident that there had been some population changes not captured by using older data. However, the screening process during recruitment meant this was managed within the research.

Participants were invited to take part in the workshops in June 2022, and the workshops themselves took place between July 2022 and September 2022. In that time, the UK experienced several significant political, economic and social changes. This included three changes in prime minister and a time of particular political turmoil, the passing of the head of state and a period of national mourning, a significant rise in the energy price cap impacting significantly on the cost of people's energy bills, and growing narrative of an incoming recession and 'cost-of-living crisis'.

For ethical reasons and so to minimise impact on the research, the decision was made to ensure workshops finished before a second significant rise in the energy price cap, that took place in October 2022. Regardless, such conditions had an impact on knowledge exchange and data collection. People were seeking and sharing information about the transition to net zero under more distressing circumstances, which the research team had to carefully manage. Significant events also resulted in participants discussing insights and experiences that wouldn't have otherwise arisen, in some cases benefitting the research and in others proving somewhat of a distraction.

In thinking about people's readiness and capability for a transition to net zero, the research asked participants to consider a range of personal and household circumstances that sometimes surfaced sensitive or difficult details. Working in a group setting, it was likely that some participants chose to not share insights and experiences that might have benefitted the research. The research team tried to pre-empt where this might be the case, and designed activities in ways that enabled sharing through channels other than just verbal sharing in the group setting. Otherwise, participants were free to choose to respond to the degree they were comfortable and researchers avoid unnecessary probing.

When doing participatory research, foregrounding people's knowledge and agency must be matched with a consistent and rigorous adherence to ethical frameworks and procedures (Aldrige, 2016). At times, sharing was causing visible distress, at which point researchers prioritised the participant's wellbeing, even if that meant sensitively pausing the activity. There were several occasions in which participants shared personal, sensitive or challenging experiences directly with researchers, outside of the activities and often in confidence. These have been purposefully excluded from the data, given the conditions in which such experiences were shared.

Identifying financial precarity during a cost-of-living crisis

The so-called cost-of-living crisis has put additional financial strain on several households that would have previously not considered themselves as financial precarious. Acknowledging both this, and that asking about personal information on income can be invasive, during the screening process participants were asked to self-asses their financial situation by answer the following question:

What best describes your financial situation right now?

1. I'm struggling to afford to pay for essential things and it has been like this since before the cost-of-living crisis
2. I used to just about afford to pay for essential things but since the cost-of-living crisis I'm struggling
3. I used to comfortably afford to pay for essential things but since cost-of-living crisis I can only just afford to
4. I can comfortably afford to pay for essential things

Only participants who identified as being in the first three categories were invited to take part in the workshops. Nonetheless, some participants less readily associated themselves with their financial precarity, impacting on the group dynamic, particularly where others comfortably recognised and reflected on their own financial precarity. While this sometimes caused tensions or conflicts, participants were seen to build empathy and understanding of different experiences and circumstances. Interestingly, researchers reflected that given the more widely shared and accepted experience of the cost-of-living crisis, some cultural norms that would otherwise discourage people from discussing their financial situation, were in this case broken down, enabling people to more openly discuss their economic participation in a transition to net zero.

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