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

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

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

Note on the authors: see end of article.

Introduction

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

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

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

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[1] Moore, B. *et al*. 2021)
[2] Whitmarsh, L. *et al.* (2021)
[3] Demski, C. *et al.* (2022a)
[4] House of Lords: Environment and Climate Change Committee (October, 2022)
[5] United Nations Environment Programme (December, 2020)
[6] IPCC (2023)
[7] Howarth, C. *et al.* (2020), Capstick *et al.* (2020a)
[8] Whitmarsh, L. *et al.* (2021)
[9] House of Lords: Environment and Climate Change Committee (October, 2022)
[10] Skidmore, C., Rt. Hon. (January, 2023)

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

Policy context

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

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

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

[11] BEIS (October, 2021a)
[12] CCC (December, 2020)
[13] Welsh Parliament (March, 2021)
[14] Northern Ireland Assembly (2022)
[15] Scottish Parliament (2010)
[16] Climate Emergency Declaration (April 2023)
[17] Labour Party (September 2018)
[18] Labour Party (2019)
[19] Labour Party Campaign (no date)
[20] Liberal Democrats (2019)
[21] Scottish National Party (no date)
[22] Plaid Cymru Party of Wales (August 2021)

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

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

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

[23] UK Government (2008)
[24] Client Earth (July 2022)
[25] Skidmore, C., Rt. Hon. (January 2023)
[26] CCC (2022)
[27] IPCC (2022)
[28] House of Lords: Environment and Climate Change Committee (October, 2022)
[29] HM Government (March 2023)
[30] Welsh Parliament (2022)

came into effect in 2022;[31] and the Scottish government is in the process of integrating the 'Local living and 20 minute neighbourhoods' concept into its National Planning Framework.

Discussion of research insights

Why and where is a people-centred approach needed?

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

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

[31] Northern Ireland Assembly (2022)

[32] Whitmarsh, L. *et al.* (2021)

[33] IPCC (2022)

[34] Carmichael, R. (2019)

[35] Cobiac, L.J. & Scarborough, P. (2019); Springmann, M., *et al.* (2016)

[36] Steentjes, K. *et al.* (2021)

[37] Verfuerth, C. *et al.* (2019)

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

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

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

[38] IPCC (2018: 559)
[39] Howarth, C. *et al.* (2020)
[40] Whitmarsh, L. *et al.* (2021)
[41] Capstick *et al.* (2020a), Westlake, S. (2017)
[42] Capstick, S. *et al.* (2020b), Ivanova, D. & Wood, R. (2020)
[43] Nightingale, A.J. *et al.* (2020); Puaschunder, J. (2020)

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

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

[44] CCC (2022)

[45] Creutzig, F. *et al.* (2016)

[46] Creutzig, F. *et al.* (2022)

[47] House of Lords: Environment and Climate Change Committee (October, 2022)

[48] Jordan, A. *et al.* (2022)

[49] Barrett, J. *et al.* (2022)

[50] Verplanken, B. & Whitmarsh, L. (2021), Mitev, K. *et al.* (forthcoming, 2023)

[51] Carmichael, R. (2019)

[52] Cherry, C.E. *et al.* (2021)

How do climate-friendly social transformations happen?

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

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

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

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

[53] Stewart, C. *et al.* (2021)

[54] Alae-Carew, C. *et al.* (2022)

[55] Saari, U.A. *et al.* (2021)

[56] Alae-Carew, C. *et al.* (2022)

[57] Riverola, C. *et al.* (2022)

[58] Thomas, C.& Sharp, V. (2013)

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

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

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

[59] Newell, P. *et al.* (2021)
[60] Nielsen, K.S. *et al.* (2021)
[61] Cooke, E. *et al.* (2022), Capstick, S. *et al.* (2022a)
[62] Becken, S. *et al.* (2021): Gössling, S. *et al.* (2020)
[63] McDonald, S. *et al.* (2015)

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

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

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

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

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

How can behavioural change for net zero be supported?

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

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[64] Chapman, A. & Postle, M. (2021)
[65] Bell, L. (2021)
[66] Otto, I.M. *et al.* (2020)
[67] Graziano, M. & Gillingham, K. (2015)
[68] BEIS (2021b)
[69] Watson, J. (2019)

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

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

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

[70] Nicholas, K. (2019)

[71] Stern, P.C. (2000)

[72] Nisa, C. *et al.* (2019)

[73] Verplanken, B. & Wood, W. (2006)

[74] Nisa, C. *et al.* (2019)

[75] Kelly, M.P. & Barker, M. (2016), House of Lords: Environment and Climate Change Committee (October, 2022)

[76] Mueller, N. *et al.* (2018)

[77] Song, W. *et al.* (2017)

[78] Rogers, N.T. *et al.* (2023)

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

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

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

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[79] Taufik, D. *et al.* (2019)

[80] For a more nuanced debate, see also Chater, N. & Loewenstein, G. (in press).

[81] Galvin, R. (2013), Verplanken, B. & Whitmarsh, L. (2021)

[82] Bamberg, S. (2006)

[83] Poortinga, W. & Whitaker, L. (2018)

[84] Indig, D. *et al.* (2018), Balvanera, P. *et al.* (2017)

[85] Nielsen, K.S. *et al.* (2021)

[86] Whitmarsh, L. *et al.* (2021)

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

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

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

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

[87] Fisher, D.R. & Nasrin, S. (2021)
[88] Swim, J.K. *et al.* (2019)
[89] Goldberg M.H. *et al.* (2019), Beery, T. *et al.* (2021)
[90] Ipsos and the Centre for Climate Change and Social Transformations (2022)
[91] Cherry, C. *et al.* (2018), Demski, C. *et al.* (2015)
[92] Howarth, C. *et al.* (2020)
[93] Cherry, C.E. *et al.* (2021)
[94] Rowe, G. & Frewer, L.J. (2005)
[95] Demski, C. (2021)
[96] Butler, C. *et al.* (2015)

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

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

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

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[97] Fiorino, D.J. (1990)
[98] OECD (2020)
[99] Cherry, C.E. *et al.* (2021)
[100] Berry, L.H. *et al.* (2019)
[101] Cornwall, A. (2002)
[102] Chilvers, J. *et al.* (2017), Burke, M. *et al.* (2018)
[103] Wesselink, A. *et al.* (2011)

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

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

How does climate change intersect with other societal challenges?

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

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[104] Verfuerth, C. *et al.* (2023)
[105] Demski, C. (2021), Sippel, M. *et al.* (2022)
[106] Weber, E.U. (2006)
[107] Capstick, S. *et al.* (2015)

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

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

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

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[108] Evensen, D. *et al.* (2021)
[109] Whitmarsh, L. *et al.* (2022)
[110] Whitmarsh, L. (2020)
[111] Demski, C. *et al.* (2022b)
[112] Whitmarsh, L. *et al.* (2020)
[113] Demski, C. *et al.* (2022a)
[114] Karlson, M. *et al.* (2020)
[115] Creutzig, F. *et al.* (2022)
[116] Capstick, S. *et al.* (2022b)
[117] Isham, A. *et al.* (2022)

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

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

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

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[118] Furness, E. *et al.* (2022)
[119] Demski et al. (2022a), Demski, C. *et al.* (2015), McLoughlin, N. *et al.* (2019)
[120] Bain, P.G. *et al.* (2016)
[121] Maibach, E.W. *et al.* (2010), Myers, T. *et al.* (2012), Badullovich, N. *et al.* (2020)
[122] Bernauer, T. & McGrath, L.F. (2016), Wolstenholme E. *et al.* (2020)
[123] Kotcher, J. *et al.* (2021), Herrmann A. *et al.* (2020)
[124] Shaw, C. *et al.* (2019), Shaw, C. & Corner, A. (2017)
[125] Whitmarsh, L. & Corner, A. (2017)

positive behavioural spillover from one action to another) because people's environmental values are not activated.[126]

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

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

Conclusions and policy recommendations

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

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

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[126] Evans, L. *et al.* (2013), McLoughlin, N. *et al.* (2019)
[127] Demski, C, *et al.* (2015), Sippel, M. *et al.* (2022), Climate Assembly UK (2020)
[128] Steentjes, K. *et al.* (2021)
[129] Demski, C. *et al.* (2015)

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

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

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

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

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

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