Department for
Business, Energy
& Industrial Strategy

Net zero public engagement and participation

A research note

Dr Christina Demski

March 2021

Acknowledgements

This note has been written by Dr Christina Demski (Cardiff University) who has been on secondment to the UK Government acting as an expert advisor on public engagement with net zero.

This content of this note should not be taken to reflect the views of the UK government.

Any enquiries regarding this publication should be sent to us at:
enquiries@beis.gov.uk

Contents

Introduction

This note has been written by Dr Christina Demski who has been on secondment to the UK Government acting as an expert advisor on public engagement with net zero. The note provides a succinct overview of recent evidence and key concepts relating to net zero and public engagement to aid the development of climate policy across government and shape the future direction of research. This work is not intended to be a comprehensive, or systematic, review of evidence nor should it be taken to reflect the views of the UK government.

Background

In June 2019, following advice from the Committee on Climate Change, the UK Government set a legally binding target to achieve net zero greenhouse gas emissions from across the UK by 2050. In doing so, the UK became the first major economy to legislate for a net zero target. The UK has already made important progress - between 1990 and 2018 the UK reduced emissions by more than 40%. This progress has mostly been achieved by decarbonising the power sector[1].

It is well documented that delivering net zero is a social as well as a technical challenge[2]. To date, successful decarbonisation has mainly been achieved in areas where little public engagement was necessary (i.e. the large-scale centralised electricity sector). To reach net zero, however, more far reaching reductions in carbon emissions are required and many of these will have important implications for people's lives. Thus, the potential to deliver policies and changes that go 'unnoticed' by the public is now limited and more people-centred approaches are needed to reach net zero[3].

Societal and behavioural change is a vital part of reaching net zero. The Climate Change Committee (CCC) have indicated that the majority (~62%) of emission reductions will require some form of societal and behaviour change including the adoption of low-carbon technologies and changes to the way we live our lives[4]. The extent to which societal and behavioural change is needed will depend on what pathway to net zero is pursued. In practice, the CCC suggest that millions of people will need to make changes to the way they travel, how they heat their homes and how they consume food and other products. This report sets out why meaningful public engagement, particularly more participatory and deliberative forms, can play an important role.

[1] The Committee on Climate Change (2020), 'Reducing UK emissions: Progress Report to Parliament'.
[2] Chilvers, J and others (2017), 'Public engagement with energy: broadening evidence, policy and practice', UKERC Briefing paper; The Committee on Climate Change (2020), 'Reducing UK emissions: Progress Report to Parliament'.
[3] OECD (2020), 'Innovative citizen participation and new democratic institutions. Catching the deliberative wave'; Willis B (2020), 'Too Hot To Handle? The Democratic Challenge of Climate Change', Bristol University Press.
[4] The Committee on Climate Change (2020), 'Reducing UK emissions: Progress Report to Parliament'.

Public buy-in and cooperation will need to be an important part of technological change, too. Evidence shows that it is important to build public support and understanding for large-scale energy technologies, greenhouse gas removal technologies and carbon capture and storage if these are to be part of a future net zero pathway[5]. Much decarbonisation driven by technological change will also still involve people in some way; for example, if there were a switch to hydrogen heating, householders would likely be required to switch to (or have hydrogen-ready) appliances[6]. Finally, simply focusing on technological changes without further public engagement potentially misses opportunities to harness co-benefits in other areas such as improving health or strengthening democracy[7].

[5] Climate Assembly UK (2020), 'The path to net zero: Climate Assembly UK Full report'; Cox E and others (2020), 'Public perceptions of carbon dioxide removal in the United States and the United Kingdom', Nature Climate Change, Volume 10, pages 744 to 749; Batel S (2020), 'Research on the social acceptance of renewable energy technologies: Past, present and future', Energy Research and Social Science, Volume 68, page 101544; Thomas G and others (2018), 'Ambivalence, naturalness and normality in public perceptions of carbon capture and storage in biomass, fossil energy, and industrial applications in the United Kingdom', Energy Research and Social Science, Volume 46, pages 1 to 9.

[6] BEIS (2018), 'Appraisal of Domestic Hydrogen Appliances'.

[7] Karlson M and others (2020), 'Climate policy co-benefits: a review', Climate Policy, Volume 20, Issue 3, pages 292 to 316; Jennings N and others (2019), 'Co-benefits of climate change mitigation in the UK: What issues are the UK public concerned about and how can action on climate change help to address them?' Grantham Institute Briefing paper No 31, Imperial College London.

Public engagement with net zero

Public engagement is a term that is often used but lacks a clear and commonly agreed definition. In relation to climate change and net zero it is a broad concept that captures engagement of citizens in:

- decision-making (including policy-making) about how to reach net zero, and
- engagement of the public in action necessary to reach net zero.

The former concept focuses on process and information flow and how people's views can be included in decision-making for net zero[8]. This is closely linked to the idea of participatory governance[9], which relates to empowering and involving citizens in decision making. Much of this report will focus on why involving individuals and communities in decision-making can have multiple benefits for the delivery of net zero.

The latter focuses on whether people are cognitively, affectively and behaviourally engaged with action on climate change and is closely linked to the concept of behaviour change[10]. Climate change is likely to involve not only changes to individual behaviours and household practices but also require wider societal level change and engagement. As such, it is also important to consider wider shifts in norms, cultural values, narratives and discourses that underpin how society is shaped and what it values[11]. Finally, it is important to note that public engagement with net zero is only one part of a wider picture that shapes individual action on climate change. Supporting low-carbon lifestyle change is likely to require comprehensive and system-wide approaches[12] that consider the social, political and structural context shaping people's patterns of everyday life[13]. Note that the report refers to behaviour change throughout, but is not intended to cover these approaches in detail.

These two aspects of public engagement with net zero are also interlinked - If people are more engaged in decision-making, this may also provide a stronger basis for behaviour change – for example, it can shape understanding of why changes are happening, and build collective efficacy and trust vital for public willingness to participate in the delivery of net zero through policy acceptance and personal action. Evidence also shows that a key predictor of policy acceptance is perceived fairness, including procedural fairness (i.e. involving people in

[8] Rowe G and Frewer LJ (2005), 'A typology of public engagement mechanisms', Science, Technology and Human Values, Volume 3, Issue 2, pages 251 to 290.
[9] Fisher F (2012), 'Participatory governance: from theory to practice' in Levi-Faur D (ed) The Oxford Handbook of Governance, Oxford University Press; Bua A, Escobar O (2018), 'Participatory-deliberative processes and public policy agendas: lessons for policy and practice', Policy Design and Practice, Volume 1, Issue 2, pages 126 to 140.
[10] Lorenzoni I, Whitmarsh L (2007), 'Barriers perceived to engaging with climate change among the UK public and their policy implications', Global Environmental Change, Volume 17, Issues 3-4, pages 445 to 459.
[11] Webster R., Shaw C (2019), 'Broadening engagement with just transition: opportunities and challenges', Climate Outreach.
[12] CAST (2019), 'CAST Briefing 01: Engaging the public on low-carbon lifestyle change', Centre for Climate Change and Social Transformations.
[13] Hoolohan C, Browne AL (2020). 'Design thinking for practice-based intervention: Co-producing the change points toolkit to unlock (un)sustainable practices', Design Studies, Volume 67, pages 102 to 132.

decisions that affect them). The next section will discuss these rationales for public engagement in more depth.

It is also important to consider who 'the public' is and how different societal actors have a key role to play in public engagement with net zero. Public engagement initiatives are not only those organised by government or other institutions (top-down initiatives) but can also encompass those organised by communities and members of the public themselves (bottom-up initiatives). Evidence shows that these all have an important and different role to play in overcoming key barriers to action on climate change and in empowering different groups of citizens. For example, national level approaches may help to build public understanding and acceptance of future policies while more local initiatives can help to stimulate grass-roots action. Any public engagement strategy should acknowledge and harness this diversity and breadth. Later sections discuss the importance of considering who 'the public' is and what forms public engagement might take.

An effective public engagement strategy that aims, in its broadest sense, to encourage active participation of people in decision-making *and* the delivery of net zero will likely require a multitude of joined-up elements including for example communication strategies, stakeholder engagement, participatory mechanisms and behaviour change and policy initiatives. While this report briefly touches on all of these elements, it is primarily focused on exploring the rationales for more active public participation in net zero decision-making.

The role of public engagement

This section provides a more in-depth look at the rationales for, and functions of, public engagement and participation. It discusses reasons to engage people in decision-making and delivery of net zero.

Public concern for climate change is at an all time high[14] with a majority of the public reporting that they have become more worried in recent years – a change attributed to the increased visibility of climate impacts and a growth in media and wider publicity around climate change[15]. While the COVID-19 pandemic may have temporarily reduced the salience of climate change in public discourse, recent evidence shows climate change concern still remains high and most people want an economic recovery that takes into account climate and environmental goals[16].

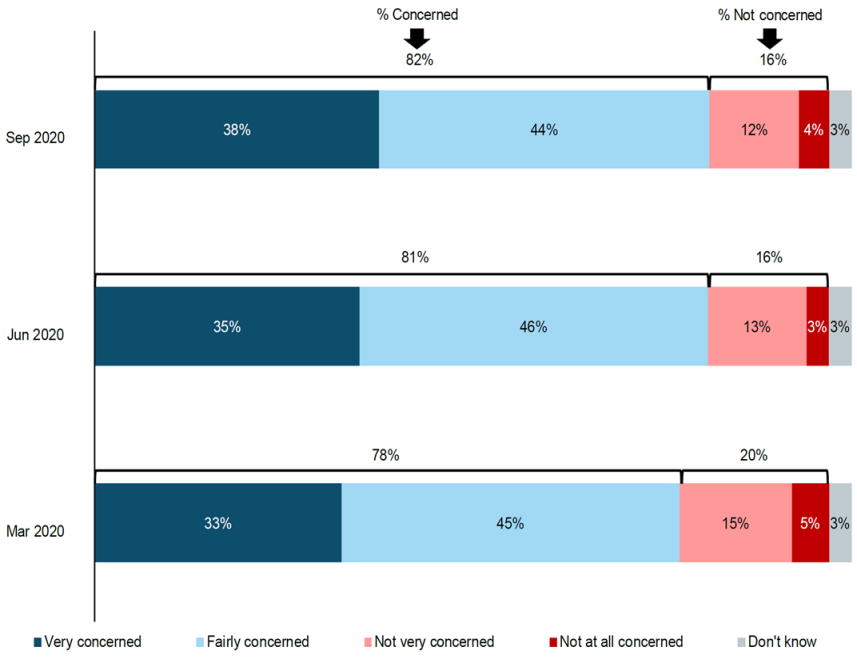

Figure 1: Public Concern About Climate Change[17]

Nonetheless, evidence also shows that public concern about climate change does not necessarily translate into committed public support for the types of changes required to meet net zero. Similarly, sustained and substantive changes in the behaviours of individual citizens

[14] BEIS Public Attitudes Tracker, August 2020; Steentjes K and others (2019), 'British public perceptions of climate risk, adaptation options and resilience', Cardiff University.
[15] CAST (2019), 'CAST Briefing 02: Public opinion at a time of climate emergency', Centre for Climate Change and Social Transformations.
[16] CAST (2020) 'CAST Briefing 04: How has Covid-19 impacted low carbon lifestyles and attitudes towards climate action?'; Climate Assembly UK (2020), 'The path to net zero: Climate Assembly UK Full report', Ipsos MORI (2020) 'Now what? Climate change and coronavirus'; Icaro attitudes to climate change report (not yet published?)
[17] Adapted from BEIS, 2020, Public Attitudes Tracker – Wave 25

are not yet forthcoming[18]. There is also a lack of awareness about many of the changes that may be required such as the low-carbon heating transition[19]. The social science evidence base shows that public engagement and participation can play an important role to raise awareness, promote understanding why changes are happening (e.g. link individual actions to the bigger picture), and build consent for the kinds of societal changes likely to occur in the next 30 years.

As Chilvers and colleagues[20] note, some of the reasons why citizen views and behaviours have become a central concern for those involved in building sustainable, low-carbon futures include averting public resistance and the need to gain social acceptance of policies, the desire to change behaviour and shifting to low-carbon lifestyles, or a wish to understand the actions of citizens themselves to drive solutions in more bottom-up ways through community projects or grassroot innovations. Beyond this, there "*are calls for deeper democratic steering and public accountability over the direction and purposes of our energy transitions and associated questions of equity, justice and control*."

In a similar vein, complex policy areas such as climate change can benefit from public participation in the search for effective, socially acceptable and fair solutions:

> *"The increasing complexity of policy making and the failure to find solutions to some of the most pressing policy problems have prompted politicians, policy makers, civil society organisations, and citizens to reflect on how collective public decisions should be taken in the twenty-first century. There is a need for new ways to find common ground and take action." (OECD, 2020)*[21]

There is also increasing demand from people/citizens themselves to be more involved in decisions that affect them beyond the opportunity to vote in elections. The recent UK Climate Assembly, in which 108 members of the public deliberated on how to reach net zero, was set up in response to such calls. Assembly members also recommended continued public involvement and a citizen steering group to guide government action in the future[22].

Public engagement rationales

The literature on public participation and engagement generally discusses three core rationales[23]:

[18] Capstick, S and others (2015), 'International trends in public perceptions of climate change over the past quarter century', Wiley Interdisciplinary Reviews: Climate Change, Volume 6, Issue 1, pages 35 to 61.
[19] BEIS Public Attitudes Tracker, August 2020; BrightBlue (2020), 'Going greener? Public attitudes to net zero'; Energy Systems Catapult (2020), 'Understanding net zero: A consumer perspective'.
[20] Chilvers, J and others (2017), 'Public engagement with energy: broadening evidence, policy and practice', UKERC Briefing paper.
[21] OECD (2020), 'Innovative citizen participation and new democratic institutions. Catching the deliberative wave'.
[22] Climate Assembly UK (2020), 'The path to net zero: Climate Assembly UK Full report'.
[23] Fiorino D J (1990), 'Citizen participation and environmental risk: a survey of institutional mechanisms', Science Technology and Human Values, Volume 15, Issue 2, pages 226 to 243; Stirling A (2008), 'Opening up and closing down: power, participation, and pluralism in the social appraisal of technology', Science Technology and Human Values, Volume 33, pages 262 to 294.

1) Instrumental Rationale: public engagement as a means to a (legitimate) end

Public engagement can improve the legitimacy of the decision-making process on how to deliver net zero. It may do so by restoring public credibility, diffusing conflicts, justifying decisions, and limiting future challenges to policy implementation[24]. Indeed, multiple studies have demonstrated that whether the public accepts a decision or policy depends on whether or not the decision-making process is perceived as fair. In relation to climate change, examples include the siting of wind farms and other energy infrastructure[25] and the acceptance of costs on energy bills associated with low-carbon policies[26]. Giving people a voice and listening to their concerns, core aspects of procedural justice, are also relevant for decision-making around net zero more broadly. As an example, the UK Climate Assembly was set up, in part, to provide ordinary members of the public with an opportunity to input into the types of policies that may be required for achieving net zero.

Public engagement may provide the basis for a social mandate for action on net zero. Howarth and colleagues[27] define social mandate as "*a situation where society offers support to another actor (e.g. government) to take action to protect our collective well-being, with the processes and the outcomes of this action being broadly accepted as being legitimate. Such a mandate is also sometimes referred to as a social contract or a social license for actions*". If a strong social mandate for action on climate change exists then this will likely lead to less confrontation, resistance, and public distrust in climate policies[28]. Given the complexity in climate policy and decision-making, involving the public at multiple scales and timepoints is likely to be important for developing and maintaining a broad mandate on climate action. This may include co-producing a broad vision on what net zero means (e.g. broadly what pathway to take) as well as involving people and communities in deciding on specific policies to be implemented for the delivery of that vision. Conversely, public engagement initiatives may also provide political confidence that the public wants government and businesses to act and implement policies aligned with climate change targets. Indeed, research has shown that politicians and government officials highly value interactions with citizens through participatory processes[29].

---

[24] Wesserlink A and others (2011), 'Rationales for public participation in environmental policy and governance: practitioners' perspectives', Environment and Planning A: Economy and Space, Volume 43, Issue 11, pages 2688 to 2704.

[25]Wolsink M (2007), 'Wind power implementation: The nature of public attitudes: Equity and fairness instead of 'backyard motives', Sustainable and Renewable Energy Reviews, Volume 11, Issue 6, pages 1188 to 1207. Aitken M (2010), 'Why we still don't understand the social aspects of wind power: A critique of key assumptions within the literature', Energy Policy, Volume 38, Issues 4, pages 1834 to 1841. Devine-Wright P (2011), Renewable Energy and the Public: from Nimby to Participation. London, UK, Earthscan.

[26]Demski C and others (2019), 'Paying for energy transitions: public perspectives and acceptability', UKERC Briefing paper.

[27]Howarth C and others (2020), 'Building a social mandate for climate action: lessons from covid-19', Environmental and Resource Economics, Volume 76, pages 1107 to 1115.

[28]Rowe G and others (2005), 'Difficulties in evaluating public engagement initiatives: reflections on an evaluation of the UK GM Nation? public debate about transgenic crops', Public Understanding of Science, Volume 14, pages 331 to 352; Chilvers J, Kearnes M (2016), 'Remaking Participation: Science, Environment and Emergent Publics', Abingdon, UK: Routledge.

[29]Willis, R (2018), 'Building the political mandate for climate action', Green Alliance; Hendrisk CM, Lees-Marshment J (2019), 'Political leaders and public engagement: the hidden world of informal elite–citizen interaction', Political Studies, Volume 67, Issue 3, pages 597 to 617.

Public engagement may engender trust critical for achieving net zero. It will be important to build public belief that that the UK will meet its net zero target and that this will be done fairly with shared responsibility across society. Initial research shows that the net zero target is supported by the general public, but there is also uncertainty and scepticism as to whether it is achievable[30]; this may be in part due to the unfamiliarity of the net zero concept and the actions required to meet this target[31]. Responsibility for delivering emission reductions is perceived to primarily lie with government, particularly for providing an overall strategy and leadership. Nonetheless significant responsibility is also placed on business, industry and individuals[32]. Public trust in a range of different actors (e.g. energy companies, industry) to deliver changes is, however, currently low[33] - and that this is primarily related to scepticism about their motivation and commitment to take significant action on climate change. This matters because low trust and perceptions of unfairness can undermine citizens' own action, compliance with policies and regulation, acceptance of costs, and may even lead to protests (e.g. as was the case with the Gilet Jaunes[34] movement in France). Engaging in significant dialogue with the public on net zero (through various public engagement mechanisms) is one vehicle through which different actors may signal their commitment to, and taking significant action on, net zero in line with their ascribed societal roles and responsibilities[35].

Improving the legitimacy and perceived fairness of net zero decisions, building trust and a social mandate for action are all important components for addressing the so-called 'governance trap' – where both individuals and other actors defer responsibility for action to the other actor[36]. Legitimacy, trust and perceived fairness thus form the basis of an effective relationship between citizens and state/non-state actors and can foster a mutual understanding of the roles and responsibilities for delivery of net zero. Evidence shows that people are willing to act on climate change but want assurance that others, including businesses and government, are also doing their part[37]. As such, public engagement may enhance feelings of collective efficacy, whereby people can be assured that their actions are not isolated and can create effective change by multiple actors in society working together.

---

[30] BrightBlue (2020), 'Going greener? Public attitudes to net zero'; Ofgem (2020), 'Consumer attitudes towards decarbonisation and net zero. Findings from the Consumer First panel'.
[31] BEIS Public Attitudes Tracker, August 2020; Energy Systems Catapult (2020), 'Understanding net zero: A consumer perspective'
[32] Demski C and others (2015), 'Public values for energy system change', Global Environmental Change, Volume 34, pages 59 to 69; Buck G (2019), 'Power to the people: shaping UK climate policy through deliberative democracy', Green Alliance; Ofgem (2020), 'Consumer attitudes towards decarbonisation and net zero. Findings from the Consumer First panel'.
[33] Demski C and others (2019), 'Paying for energy transitions: public perspectives and acceptability', UKERC Briefing paper; Ofgem (2020), 'Consumer attitudes towards decarbonisation and net zero. Findings from the Consumer First panel'.
[34] https://www.bbc.co.uk/news/resources/idt-sh/yellow_vests
[35] Although of course simply stating commitments to act are unlikely to be sufficient and people are likely to want to see evidence of action.
[36] Newell P and others (2015), 'Governance traps in climate change politics: re-framing the debate in terms of responsibilities and rights', WIREs – Climate Change, Volume 6, Issue 6, pages 535 to 540; Willis B (2020), 'Too Hot To Handle? The Democratic Challenge of Climate Change', Bristol University Press; Pidgeon NF (2012), 'Public understanding of, and attitudes to, climate change', Climate Policy, Volume 12, pages s85 to 106.
[37] Demski C and others (2019), 'Paying for energy transitions: public perspectives and acceptability', UKERC Briefing paper; Ofgem (2020), 'Consumer attitudes towards decarbonisation and net zero. Findings from the Consumer First panel'; Carmichael R (2019), 'Behaviour Change, Public Engagement and Net Zero', A Report for the Committee on Climate Change, Imperial College London.

Indeed, lack of collective efficacy (e.g. drop in the ocean effect) is a key barrier for public engagement with climate change[38] and addressing it is important for public acceptance of climate policies and encouraging sustainable choices.

2) Substantive rationale: public engagement as a means to a better and fairer end

Public engagement can increase the breadth and depth of information available for decision making and thereby improve the quality of decisions and net zero policies. Here the rationale is that public involvement can provide new types of knowledge and values relevant for policy and thus open-up new types of solutions and pathways not previously considered[39]. This is particularly important for policy contexts that are complex, uncertain and involve multiple different value perspectives[40] such is the case with climate change. Citizens have a range of ethical and social concerns when it comes to making decisions about future energy and climate pathways. Research on the acceptance of low-carbon energy systems has shown that while people care about costs associated with different options, values associated with less waste, environmental protection, security, social justice and fairness as well as maintaining autonomy and choice were also highly important[41]. Similar values were recently endorsed by the UK Climate Assembly as important principles for future net zero policies[42].

Public engagement can provide a wealth of contextual and practical knowledge relevant for the delivery of net zero. Public participation can improve the quality of decision-making by providing decision-makers with additional information on local conditions[43]. This is important for the translation of broad targets to reflect real-world and local conditions (e.g. what net zero means for a specific place and groups of people). This is particularly relevant in the context of climate change because social acceptability will be a key condition for enabling smooth and timely roll out of new technologies and policies[44]. Understanding the context in which people will likely experience changes in their houses, communities, and cities, is an important aspect of engendering public trust and buy-in.

The inclusion of diverse public perspectives and value positions can enhance responsiveness to citizens' concerns. In turn, policies may be accepted because they better account for people's contexts and experiences. For this to be effective, however, it is vitally important to include and empower otherwise marginalised groups, whose viewpoints and

[38] Lorenzoni I, Whitmarsh L (2007), 'Barriers perceived to engaging with climate change among the UK public and their policy implications', Global Environmental Change, Volume 17, Issues 3-4, pages 445 to 459.
[39] Wesserlink A and others (2011), 'Rationales for public participation in environmental policy and governance: practitioners' perspectives', Environment and Planning A: Economy and Space, Volume 43, Issue 11, pages 2688 to 2704.
[40] OECD (2020), 'Innovative citizen participation and new democratic institutions. Catching the deliberative wave'.
[41] Demski C and others (2015), 'Public values for energy system change', Global Environmental Change, Volume 34, pages 59 to 69.
[42] Climate Assembly UK (2020), 'The path to net zero: Climate Assembly UK Full report'
[43] Berry LH and others (2019), 'Making space: how public participation shapes environmental decision-making'. Stockholm Environment Institute discussion brief; Perlaviciute, G, Squintani L (2019), 'Public participation in climate policy making: toward reconciling public preferences and legal frameworks', One Earth, Volume 2, Issue 4, pages 341 to 348.
[44] For example on heat see Moore NJ and others (2015), 'Improving the installation of renewable heating technology in UK social housing properties through user centred design', Indoor and Built Environment, Volume 24, Issue 7, pages 970 to 985.

knowledge may otherwise not be accounted for in decision making. Including only those voices that are already represented is unlikely to provide new insights (also see next section on inclusivity and public engagement).

3) Normative rationale: public engagement as the right thing to do

Democratic ideals suggest those that are affected by a decision should have the opportunity to influence it[45], thereby strengthening accountability, openness and transparency. Indeed, it could be argued that there is a moral obligation to include all affected stakeholders and communities in decision-making because societal changes in line with reaching net zero will affect everyone. While there are often mechanisms within policy and decision-making to enable stakeholders to be consulted, means to incorporate public perspectives are much less developed and may require additional and novel mechanisms to enable meaningful input.

These normative rationales could be said to underpin legal frameworks including the UK government's public value framework[46] or the United Nations-based Aarhus Convention which mandates access to information and possibility for citizens to participate in decision making on environmental matters. The need for fuller and more inclusive democratic participation is also embedded in the Sustainable Development Goals (SDGs), with Goal 16 calling for "*responsive, inclusive, and participatory and representative decision-making at all levels*". Note, however, that public engagement for the purpose of satisfying international or other legal frameworks would not be in the spirit of the normative rationale for public engagement, but rather come under the instrumental rationale depending on how openly and earnestly public engagement is carried out.

Summary of potential public engagement benefits

The previous sections have outlined the various rationales that may underpin public engagement with net zero decision-making and policy. There are a number of benefits that sustained and meaningful public engagement on net zero could provide:

Summary of potential benefits of public engagement and participation on net zero

- Raising awareness and promoting public learning around changes required for net zero, including how individual actions link to broader societal shifts.
- Enhancing the legitimacy of decisions and the decision-making process on how to reach net zero.

[45] Wesserlink A and others (2011), 'Rationales for public participation in environmental policy and governance: practitioners' perspectives', Environment and Planning A: Economy and Space, Volume 43, Issue 11, pages 2688 to 2704; Berry LH and others (2019), 'Making space: how public participation shapes environmental decision-making'. Stockholm Environment Institute discussion brief.
[46] see pillar 3 of the UK government's public value framework: https://www.gov.uk/government/publications/public-value-framework-and-supplementary-guidance

- Enhancing trust in government and other organisations, which in turn may lead to great perceptions of fairness, shared responsibility and collective efficacy for climate action.
- Creating a social mandate for action and improve political confidence that government-led climate action is supported, expected and accepted by the public.
- Better understanding of the 'conditions' of policy acceptance and behaviour change required for reaching net zero.
- Fairer and better policies that are responsive to people's values, goals and aspirations.
- Strengthening democracy and citizens as active participants in the delivery of net zero.

As a result of the above, public engagement may have the potential to impact the pace of delivery, cost and success of net zero delivery. More research is needed to investigate this claim in more detail, for example what savings could be made and how societal engagement with net zero may influence rates of technology adoption or behavioural changes required[47] (as well as how it could affect the costs and types of policies used to support net zero).

A cautionary note

The previous sections discuss a range of positive outcomes that might arise from public participation around climate change and net zero, but these are by no means guaranteed. Wesserlink and colleagues[48] note that there are *"signs that the participatory agenda has started to lose its momentum because of disappointments about actual achievements."* There may be multiple reasons why public engagement objectives are not achieved; research on public engagement with climate change highlights three aspects as particularly important:

Using appropriate methods and methodological rigor is important to ensure engagement is seen as legitimate and/or insights into public perspectives are meaningful. There are now a host of guidelines and reports on how to design and facilitate participatory and/or deliberative processes[49], which help create processes that maximise

[47] Sovacool B. (2016), 'How long will it take? Conceptualizing the temporal dynamics of energy transitions.' Energy Research and Social Science, Volume 13, pages 202 to 215.
[48] Wesserlink A and others (2011), 'Rationales for public participation in environmental policy and governance: practitioners' perspectives', Environment and Planning A: Economy and Space, Volume 43, Issue 11, pages 2688 to 2704
[49] E.g., see OECD (2020), 'Innovative citizen participation and new democratic institutions. Catching the deliberative wave', Farrell D and others (2019), Deliberative Mini-Publics: Core Design Features, Centre for Deliberative Democracy and Global Governance working paper 2019/5. Canberra, Australia: Centre for Deliberative Democracy and Global Governance.

inclusivity, access, and ensure appropriate information provision, amongst other things. It is also important to consider that some activities will suit some individuals and groups more than others – for example an engagement format based on factual information provision and group discussion may favour those who are used to engaging with complex materials. More creative and arts-based forms of engagement[50] may favour yet other groups. Providing and paying attention to a range of different ways of engaging with pathways to net zero is therefore likely to result in more diverse perspectives to emerge (also see next section on Inclusivity and Forms of Public Engagement).

Guidelines on participatory processes are generally topic-neutral; it is thus important to also consider specific literature on public engagement with climate change[51]. The way that climate change and related decarbonisation options are framed can affect the way people respond to and engage with them. For example, the well-developed literature on climate change communication[52] has shown that it is important to think about the language and visuals that are used[53], what kind of values and co-benefits are emphasised[54], how uncertainty is communicated[55], how issues are framed[56], system-thinking is supported[57], and what kinds of narratives resonate with different audiences (including those less concerned about climate change)[58].

Aligning the design of an engagement process with its aims is important to avoid unrealistic expectations about outcomes. Research has shown that many processes aim to gain insight into public perspectives (as per the substantive rationale), but are not able to because they are relatively closed to new ideas and instead represent incumbent interests[59], with little opportunity for participants to reframe or reshape the basis of questions or issues being discussed. Similarly, effective public participation rests on the key concepts of early

[50] E.g., Burke M and others (2018), 'Participatory arts and affective engagement with climate change: the missing link in achieving climate compatible behaviour change?', Global Environmental Change, Volume 49, pages 95 to 105.
[51] CAST (2020), 'CAST briefing paper 03: Climate change citizens' assemblies', Centre for Climate Change and Social Transformations.
[52] Moser SC (2016) 'Reflections on climate change communication research and practice in the second decade of the 21st century: What more is there to say?' WIREs – Climate Change, Volume 7, Issue 3, pages 345 to 369.
[53] O'Neill S, Nicholson-Cole S (2009),'"Fear won't do it": promoting positive engagement with climate change through visual and iconic representations', Science Communication, Volume 30, Issue 2, pages 355 to 379; O'Neill SJ, Smith N (2013), 'Climate change and visual imagery', WIREs – Climate Change, Volume 5, Issue 1, pages 73 to 87; Whitmarsh L, Corner A (2017), 'Tools for a new climate conversation: A mixed-methods study of language for public engagement across the political spectrum', Global Environmental Change, Volume 42, pages 122 to 135.
[54] E.g., Bain PG and others (2015), 'Co-benefits of addressing climate change can motivate action around the world', Nature Climate Change, Volume 6, pages 154 to 157.
[55] Pidgeon NF, Fischhoff B (2011), 'The role of social and decision sciences in communicating uncertain climate risks', Nature Climate Change, Volume 1, pages 35 to 41.
[56] E.g., Spence A, Pidgeon N (2010), 'Framing and communicating climate change: The effects of distance and outcome frame manipulations', Global Environmental Change, Volume, 20, Issue 4, pages 656 to 667; Rabinovich A, Morton TA (2012), 'Unquestioned answers or unanswered questions: Beliefs about science guide responses to uncertainty in climate change risk communication', Risk Analysis, Volume 32, Issue 6, pages 992 to 1002.
[57] Pidgeon NF and others (2014), 'Creating a national citizen engagement process for energy policy', Proceedings of the National Academy of Sciences of the United States of America, Volume 111 (Suppl), pages 13606 to 13613.
[58] Shaw C and others (2019), 'Are the public ready for net zero? Recommendations for building a positive discourse', Climate Outreach.
[59] E.g., Bickerstaff K, Walker G (2001), 'Participatory local governance and transport planning', Environment and Planning A, Volume 33, pages 431 to 451.

engagement, namely involving people in decision making when all options are still open and people are able to shape the final outcome. Nonetheless, international evidence suggests that many public engagement processes are not adequately integrated into the decision-making process, for example because public engagement occurs too late or there is no prior commitment by decision-makers to do so[60].

[60] Perlaviciute, G, Squintani L (2019), 'Public participation in climate policy making: toward reconciling public preferences and legal frameworks', One Earth, Volume 2, Issue 4, pages 341 to 348.

Inclusivity and public engagement

Achieving net zero is likely to result in changes (e.g. in travel and homes) that are experienced across all sections of UK society. It is therefore important that any public engagement strategy is as wide reaching and inclusive as possible, both to ensure legitimacy and to capture diverse perspectives. To do so, it is important to recognise that 'the public' is not one homogenous group and that decarbonisation may affect diverse groups in different ways. This is important to ensure the transition to net zero is fair and does not place unjust burdens on some groups over others. Evidence suggests those involved in public engagement should consider the following points:

Ensuring diverse groups can participate and have their voices heard. One of the key challenges for public engagement with net zero is to avoid listening to the loudest voices only and ensuring more marginalised or vulnerable groups have a chance to be heard. While many organised forms of public engagement may attempt to sample in a way that is broadly representative, this may not adequately capture perspectives from marginalised or typically underrepresented groups[61]. As such, it may be important to engage specific groups which are particularly affected by different pathways to net zero[62]. While not comprehensive, literature suggests that social and distributional impacts in relation to decarbonisation that need particular recognition are those of affordability, inclusion and access, spatial distribution and intergenerational impacts[63]. Perspectives from groups that are implicated in these factors may be particularly important to engage with such as those with low or unstable incomes, ethnic minorities, young people, those living with a disability, rural residents, and those disproportionally impacted by climate impacts and policies (e.g. coastal communities, workers in high-carbon industries). Research has also shown the importance of investigating how different individual and social characteristics intersect (e.g. characteristics of age, gender, ethnicity, and economic status, household tenure, household composition) to gain a more nuanced understanding of people's experiences in relation to energy and climate change[64]. Finally, it is important to understand perspectives from those groups that are most implicated in carbon intensive activities and this may need to experience changes more than other groups.

People have multiple roles and different forms of engagement are likely to make particular identities salient[65]. One public engagement initiative may engage people more as consumers (e.g. asking people how much they would be willing to pay for a product or service)

[61] Wakeford T and others (2008), 'The jury is out: How far can participatory projects go towards reclaiming democracy?' in Reason P, Bradbury H, The SAGE Handbook of Action Research: Participatory Inquiry and Practice 2nd Edition, Sage Publications.
[62] Abram S (2020), 'Just transition: Pathways to socially inclusive decarbonisation', COP26 Universities Network Briefing; Shirani F (2020), ''I'm the smart meter': Perceptions of smart technology amongst vulnerable consumers', Energy Policy, Volume 114, page 111637.
[63] Edmondson DL (2020), 'Social and distributional impacts of decarbonisation and climate adaptation in the UK', Sustainability First.
[64] Kaijser A, Kronsell A (2014), 'Climate change through the lens of intersectionality', Environmental Politics, Volume 23, Issue 3, pages 417 to 433; Pearse R (2017), 'Gender and climate change', Wiley Interdisciplinary Reviews: Climate Change, Volume 8, Issue 2, pages e451.
[65] Wickson F and others (2010), 'Who or what is 'the public'?', Nature Nanotechnology, Volume 5, Issue 11, pages 757 to 758.

whereas another may treat public participants more as stakeholders or citizens (e.g. to co-construct visions, plans, policies or programmes that affect them). For example, the Oxford citizen assembly on climate change included discussions on what people would like a future climate friendly Oxford to look like[66]. This type of engagement activity where people are engaged as citizens is likely to bring social and ethical concerns to the fore (e.g. on roles and responsibilities for bringing about change), whereas engagement activities focused on consumer identities are likely to make values such as personal affordability and choice salient.

Delivering net zero will also require change at multiple scales, with changes not only required at individual and household level but also in businesses, organisations, communities, schools and so on. To effect and support change at these different levels, it is important to consider that any given individual may have multiple roles and identities that intersect with these different sites of change. For example, the same individual may identify as a parent, businesswoman, as a community leader and so on. Similarly, individuals have multiple roles to play in the path to net zero - as voters, taxpayers, hosts to new technology and infrastructure, active participants in energy networks, or members of civil society groups to name a few. As such, public engagement and participation processes may need to consider how people can act as agents of change in a variety of settings. This also highlights the need for local actors to be involved in public participatory activities[67].

[66] Ipsos MORI (2019), 'Oxford Citizens' Assembly on Climate Change A summary report prepared for Oxford City Council'.
[67] Haf S, Robison R (2020), 'How Local Authorities can encourage citizen participation in energy transitions', UK Energy Research Centre.

Forms of public engagement

Public engagement with net zero can take many forms[68] and occurs at many different scales, from engagement with national level policies to community level activities[69]. This section briefly discusses some of the main types of engagement processes that are particularly relevant in the context of net zero. While it will not provide detailed descriptions of each form of engagement activity and their various benefits and limitations, it will discuss some broad categories and the different roles they can play.

There are many typologies and categorisation of public engagement and participation in the literature, which describe ways organisations or governments may interact with citizens. Perhaps one of the most famous is Arnstein's ladder of participation[70], which starts at the bottom with forms of non-participation (such as manipulation) and tokenism (e.g. information-provision and consultation) and climbs to forms of engagement that enable true participation by giving citizens some power and control in the process (e.g. partnership). Similarly, Rowe and Frewer[71] identify three types of public engagement based on the flow of information from institutional organisers to the public and/or their representatives: Traditional communication (flow of info from sponsor to public), consultation (flow from public to sponsor) and participation (two-way flow of information).

This section discusses public engagement in terms of 'invited' (top-down) forms of participation, where the engagement process is organised and led by decision-making authorities and other organisations, as well as 'created' (bottom-up) forms of participation, where citizens themselves create spaces for engagement rooted in shared identities and common interests. Behavioural approaches as a form of public engagement are then briefly covered because they play an important role in encouraging and enabling public engagement with the delivery of net zero. Finally, the importance of integrating different forms of public engagement and participation approaches is discussed.

'Invited' forms of engagement

The key element of 'invited' approaches to public engagement is that all are organised (and often controlled) by an authoritative actor with decision-making powers (e.g. national or local government) or other non-state actors which seek to influence decision-making. Different models have emerged to satisfy diverse goals and levels of

[68] E.g., Berry LH and others (2019), 'Making space: how public participation shapes environmental decision-making'. Stockholm Environment Institute discussion brief; Chilvers, J and others (2017), 'Public engagement with energy: broadening evidence, policy and practice', UKERC Briefing paper.
[69] Perlaviciute, G, Squintani L (2019), 'Public participation in climate policy making: toward reconciling public preferences and legal frameworks', One Earth, Volume 2, Issue 4, pages 341 to 348.
[70] Arnstein S (1969), 'A ladder of citizen participation', Journal of American Institute of Planners, Volume 35, Issue 4, pages 216 to 224.
[71] Rowe G and Frewer LJ (2005), 'A typology of public engagement mechanisms', Science, Technology and Human Values, Volume 3, Issue 2, pages 251 to 290.

resource. According the Stockholm Environment Institute[72], there are broadly two different approaches:

Public engagement approaches based on principles of "participatory democracy" aim to solicit public views and other relevant stakeholders throughout the decision-making process. Environmental impact assessments, consultations, calls for evidence, strategic environmental assessments, and public inquiry mechanisms exemplify this approach. Generally, these activities are open to anyone who would like to take part and therefore tend to attract those who self-select into the public engagement process. This can be a good way to gather information on what affected communities and groups may be concerned about but may miss other viewpoints. Nonetheless they tend to only engage a small subsection of society.

Approaches based on principles of "deliberative democracy" focus on facilitating collaborative exchange between stakeholders and the public regarding a set of policies or actions. Here the focus is on public views being shaped through learning and interaction with information and other perspectives before reaching a recommendation, consensus or conclusion. One example of this is when a government agency or other body constructs a representative group of citizens[73] through random or near-random sampling, and this group then deliberates on a set of specific issues. Members of the public are invited to engage in processes of learning, sense-making, problem-solving and careful consideration[74]. There are many different types of deliberative events that fall into this category. A recent OECD report[75] describes 12 different forms of representative deliberative processes and how to choose between them given different levels of resource, with examples from across the world. These include, for example, citizens' assemblies, citizens' juries/panels or 'mini-publics', consensus conferencing, planning cells, citizens' councils, citizens' dialogue, deliberative polling, citizens' initiative reviews and the City Observatory. In the UK, a variety of these methods have been used especially at local levels.[76] In relation to climate change and net zero, citizens' juries and assemblies have become particularly popular[77]; the most prominent example in the UK is the UK Climate Assembly held in 2020 with many local juries and assemblies also occurring at city and regional levels[78].

[72] Berry LH and others (2019), 'Making space: how public participation shapes environmental decision-making'. Stockholm Environment Institute discussion brief.
[73] Note: not all deliberative participation is necessarily representative; deliberation can also occur in groups that are selected based on different criteria.
[74] Escobar O (2017), 'Pluralism and democratic participation: what kind of citizen are citizens invited to be?' Contemporary Pragmatism, Volume 14, Issue 4, pages 416 to 38.
[75] OECD (2020), 'Innovative citizen participation and new democratic institutions. Catching the deliberative wave'.
[76] See Davidson S, Elstub S. (2014), 'Deliberative and Participatory Democracy in the UK', British Journal of Politics and International Relations, Volume 16, Issue 3, pages 367 to 385.
[77] E.g., one of the first assemblies on climate change was held in Ireland in 2016: Devaney L and others (2020), 'Ireland's citizens' assembly on climate change: lessons for deliberative public engagement and communication', Environmental Communication, Volume 14, Issue 2, pages 141 to 146.
[78] Bryant P, Stone L (2020), 'Climate Assemblies and Juries: A people powered response to the climate emergency', Shared Future.

Social science research and public engagement

Social science research into public engagement with climate change covers a large variety of topics relevant to net zero delivery. There are two strands of research that are of particular note:

1. Social science research into public engagement with climate change can provide additional insights into public perceptions, preferences, response to and acceptance of future pathways, options, policies and interventions. Those seeking to gain deeper insights into public perspectives (i.e. as per the substantive rationale described earlier) are likely to find this literature an important additional resource for understanding and including public views in decision-making. This form of research also often develops and uses rigorous and innovative methods (e.g. deliberative designs), which can then be used in public engagement.

There are differing opinions on whether this type of social science research constitutes public engagement, but a key difference is clearly their purpose. In research, the primary aim is to understand more about what is going on - what people think, what they want and why they may act in one way or another – through which social scientists develop theoretical frameworks and analytic insights that can be helpful to designing effective (e.g.) net zero policies and interventions. While public engagement may also have the aim to understand public perspectives, it is often more focused on a specific context and may have a different purpose – for example to inform, to gather opinions on specific decisions or policies, to effect specific behaviour change or to gain legitimacy and create accountability. Additionally, social science research is more 'hidden' from public view (e.g. published and disseminated on government websites or academic journals) and therefore less clear to public participants on how their views may be feeding into decision-making.

2. A second strand of research analyses and critically reflects on the role of public engagement within decision-making. Those seeking to enable effective and meaningful public engagement are likely to find this literature important for reflecting on issues such as purpose, inclusivity, communication, access, control and power.

This type of research is important for the evaluation of public engagement mechanisms and should be consulted to evaluate how well different forms of public engagement may be able to achieve particular aims such as enabling people to effect the decision-making process, whether different groups of people are able to effectively contribute, and who controls the process.

‘Created’/emergent forms of engagement

Public involvement in decision-making is not limited to formal processes but can also take a more bottom-up approach. This form of engagement has traditionally received little attention[79], but is starting to emerge as important particularly in the context of energy and climate change.

Citizen-led forms of engagement are extremely diverse. They may include grassroots or social innovations such as energy community groups, energy co-ops, ecovillages or community currency initiatives, digital or arts-based engagement enabling people to express their visions for a sustainable future, or more active forms of social movements organised to influence a decision-making process (e.g., Friday for Futures movement, neighbourhood coalitions, petitions, protests, etc)[80].

Institutions traditionally engaged in ‘invited’ forms of engagement should listen to and support more emergent forms of engagement. Citizen-led forms of public engagement present opportunities to harness the motivations and resources of citizens and provide useful insight into what people value and how they see their own role in delivering net zero.

Citizen-led engagement can raise public concerns and viewpoints that may otherwise be missed. They provide a way in which people can be empowered to have their views heard outside formal engagement processes, in their own words and within specific contexts. For example, community energy projects may showcase the lived experience of fuel poverty and how this affects people’s ability and desire to engage with broader climate policies[81]. This is particularly important because these types of experiences and insights may not be fully represented in invited forms of engagement. Indeed, research shows that invited public participation processes can risk “*deepening existing inequalities in unintended ways. For example, open assemblies or public hearings may seem like the most equitable format because they are open to everyone. However, without active attempts to recruit more disenfranchised portions of the public, such formats are likely to see higher turnout from those that are already politically active.”*[82] Even in processes that attempt to include representative samples or marginalised groups, people may struggle to have their voices heard. This may be because their numbers are typical small (unless significantly oversampled) and forms of

[79] Berry LH and others (2019), ‘Making space: how public participation shapes environmental decision-making’. Stockholm Environment Institute discussion brief; Wesserlink A and others (2011), ‘Rationales for public participation in environmental policy and governance: practitioners’ perspectives’, Environment and Planning A: Economy and Space, Volume 43, Issue 11, pages 2688 to 2704.
[80] Cuppen E and others (2020), ‘When controversies cascade: Analysing the dynamics of public engagement and conflict in the Netherlands and Switzerland through “controversy spillover”’, Energy Research and Social Science, Volume 68, page 101593; Chilvers, J and others (2017), ‘Public engagement with energy: broadening evidence, policy and practice’, UKERC Briefing paper; Haf S, Robison R (2020), ‘How Local Authorities can encourage citizen participation in energy transitions’, UK Energy Research Centre; Seyfang G. (2015), ‘Unleashing Grassroots Innovations’. Grassroots Innovations Research Briefing 25 (Norwich: University of East Anglia); Parkhill K and others (2015) “We are a community [but] that takes a certain amount of energy’: Exploring shared visions, social action and resilience in place-based community-led energy initiatives”, Environmental Science and Policy, Volume 53 Part A, pages 60 to 69.
[81] Martiskainen M and others (2018), “Community energy initiatives to alleviate fuel poverty: the material politics of Energy Cafés”, Local Environment, Volume 23, pages 20 to 35.
[82] Berry LH and others (2019), ‘Making space: how public participation shapes environmental decision-making’. Stockholm Environment Institute discussion brief

engagement are not suited to their needs (e.g. low confidence to engage with scientifically framed information). Research also shows that people who are already on the margins of society are also more likely to self-censor in formal engagement processes[83].

Behavioural approaches

Behavioural approaches, unlike participatory engagement mechanism, focus directly on enabling and encouraging sustainable behaviours in line with net zero. Traditionally, much focus has been on changing consumer behaviour and technology adoption, but net zero is likely to require much broader changes to how we travel and work, enjoy leisure activities, what technologies and products we use and so on. In addition, people may engage in actions that indicate acceptance or opposition to large-scale and novel infrastructure such as low-carbon electricity supply and greenhouse gas removal technologies. Other relevant forms of behaviour may include community and voluntary action to promote low-carbon choices (hosting or owning low/no-carbon developments, organising community climate action, etc.) or participating in the creation and dissemination of climate change discourses that normalise, model and promote low-carbon lifestyles. As such, engaging the UK public in the delivery of net zero is only likely to be successful if it considers the collection of changes as a whole rather than as discrete behaviours.

Low-carbon lifestyles are only likely to emerge if change occurs at both individual and societal level. This is because individuals are not only driven by their motivations and attitudes to act in low-carbon ways, but instead people operate within broader contexts that can enable or constrain action. What people do is also dependent on the physical environment (e.g. infrastructure), cultural conventions (e.g. around diet), wider societal norms (e.g. what is expected of people by others), as well as personal ability (e.g. knowledge and capacity to act), accessibility (e.g. to electric vehicles) and affordability (e.g. personal incomes).

Engaging people with the delivery of net zero will therefore require interventions at multiple levels, time points and using tailored methods[84]. There is a vast literature on how to support low carbon behaviours, and much can be learnt from historical and international examples of transformation[85] (e.g., tobacco control, urban sustainable transport). Key findings from this evidence base include: (a) change is required across multiple levels (individual, social, structural) using various policy levers including information provision and incentives but also broader social, infrastructural, technical, and regulatory interventions, (b) engaging with people's deeply held values and identities is critical for achieving change (c) co-benefits (e.g. around wellbeing/health, equity, cost saving, protecting the environment) are important motivators for action in addition to concerns about climate change (d) many behaviours are

[83] Cornwall A (2002). 'Making Spaces, Changing Places: Situating Participation in Development'. Institute of Development Studies, Brighton, UK.
[84] For summaries of key evidence in this area see: CAST (2019), 'CAST Briefing 01: Engaging the public on low-carbon lifestyle change', Centre for Climate Change and Social Transformations; McLoughlin N and others (2019), 'Mainstreaming low-carbon lifestyles', Oxford, Climate Outreach; Dietz T and others (2009), 'Household actions can provide a behavioral wedge to rapidly reduce US carbon emissions', PNAS, Volume 166, Issue 44, pages 18452 to 18456.
[85] Simms A (2018), Climate and Rapid Behaviour Change – What do we know so far? Rapid Transition Alliance.

deeply woven into people's everyday lives and getting the timing right is critical for disrupting unsustainable habits, and (e) the importance of changing social norms and building collective efficacy through leadership and exemplifying/disseminating good practice.

Integrating different forms of public engagement

Diverse public engagement approaches can serve different purposes as outlined in previous sections, but they may also provide a number of additional benefits if integrated into an overarching, systematic and long-term strategy for engaging the public on net zero[86]. A coordinated public engagement strategy should ideally combine public participation and deliberative approaches (as covered in this report) with targeted initiatives supporting sustainable behaviours and broader communication approaches.

Diverse forms of integrated engagement efforts provide multiple points of access for people and can enhance inclusivity as well as provide a basis for continuous engagement with net zero. Enabling multiple forms and spaces (e.g. digital, deliberative, community-level) for engagement would provide people with ongoing opportunities to participate in the decision-making and delivery of net zero. This is particularly important as changes will occur over time and across different aspects of people's lives (e.g. move to electric cars and low-carbon heating, changes to travel infrastructure and consumption models etc.). Such continuous engagement may also provide the basis for wider cultural and norm changes that may in turn provide a stronger basis for climate policies and behavioural changes.

Positive interactions may occur between different forms of engagement. For example, citizens involved in deliberative processes may go on to engage in behaviour change or organise their own community engagement projects. More research is required to what extent and how different forms of engagement may interact and shape each other[87]. Similarly, if participation approaches are well integrated with other approaches (e.g. behavioural interventions, communication) this may enhance the effectiveness of individual policies or interventions[88]. How different forms of engagement can enhance their effectiveness to foster long-term engagement with the delivery of net zero is another key area for further research.

Integrated engagement efforts can help build an overarching, coordinated and joined-up vision or narrative for achieving net zero[89]. This would build understanding of how different actions and policies (e.g. on transport, energy, food) contribute to an overarching goal, make connections between local and national policies, and provide a way for people to see how

[86] CAST (2019), 'CAST Briefing 01: Engaging the public on low-carbon lifestyle change', Centre for Climate Change and Social Transformations; Carmichael R (2019), 'Behaviour Change, Public Engagement and Net Zero', A Report for the Committee on Climate Change, Imperial College London; Whitmarsh L, Capstick S (2020), 'The 2020s are the Climate Change Decade: How can we mobilise society to reach net zero?, Tyndall Centre for Climate Change Research.
[87] Chilvers, J and others (2017), 'Public engagement with energy: broadening evidence, policy and practice', UKERC Briefing paper.
[88] Dietz T and others (2009), 'Household actions can provide a behavioral wedge to rapidly reduce US carbon emissions', PNAS, Volume 166, Issue 44, pages 18452 to 18456.
[89] Energy Research Partnership (2014), 'Engaging the public in the transformation of the energy system'.

personal actions are contributing to collective national level activities. Evidence shows that having such an overarching strategy and positive vision for how to achieve net zero is important for harnessing public support[90]. Indeed, recent research has highlighted that people look to the government to show leadership in addressing climate change and provide an overarching strategy that represents long-term planning for a low-carbon future[91]. People appear willing to support policies and take personal action but need to know that there is a clear strategy in place to collectively achieve the net zero goal. There is international precedent demonstrating the effectiveness of having a coordinated, overarching and well-communicated climate change strategy to harness public buy-in and support. For example, in Germany the *Energiewende* has been credited in maintaining public support even while energy bills have increased by 50% to pay for the switch to renewable energy. As a broad-reaching concept, the German government has been able over time to marshal a wide range of policy announcements, and frame the public debate on potential policy steps, under a single unifying 'brand' for which there is consistently high overall public support (even as public opinion has varied over the government's management of the transition)[92].

Communicating about what government and others are doing on net zero is easier if there is an overarching long-term vision on how to reach net zero supported by an integrated public engagement programme. Research has also shown that people are willing to participate in the delivery of net zero but only if they have assurances others are doing the same[93]. They want to see evidence that government, businesses and industry are also taking action. This is an important consideration for people to ensure the burden of achieving net zero is fairly distributed across society with appropriate roles and responsibilities for different societal actors.

[90] Parkhill, K and others (2013), 'Transforming the UK Energy System: Public Values, Attitudes and Acceptability - Synthesis Report,' UK Energy Research Centre; Carmichael R (2019), 'Behaviour Change, Public Engagement and Net Zero', A Report for the Committee on Climate Change, Imperial College London; Howarth C and others (2020), 'Building a social mandate for climate action: lessons from covid-19', Environmental and Resource Economics, Volume 76, pages 1107 to 1115; McPhearson T and others (2016), "Positive visions for guiding urban transformations toward sustainable futures", Current Opinion in Environmental Sustainability, Volume 22, pages 33 to 40.

[91]Climate Assembly UK (2020), 'The path to net zero: Climate Assembly UK Full report'; Demski C and others (2015), 'Public values for energy system change', Global Environmental Change, Volume 34, pages 59 to 69.

[92]Kuittinen H, Velte D (2018), 'Case study report: Energiewende', Mission-oriented R&I policies: In-depth case studies; European Commission.

[93] Demski C and others (2019), 'Paying for energy transitions: public perspectives and acceptability', UKERC Briefing paper; Ofgem (2020), 'Consumer attitudes towards decarbonisation and net zero. Findings from the Consumer First panel'; Carmichael R (2019), 'Behaviour Change, Public Engagement and Net Zero', A Report for the Committee on Climate Change, Imperial College London.

Conclusions

Delivering net zero is both a technical and social challenge and the potential to deliver policies and changes that go 'unnoticed' by the public is now limited. This means that public engagement around net zero is likely to become increasingly important.

This report sets out why effective, and meaningful, public engagement can play an important role, defining public engagement with net zero as involving people in both the decision-making and delivery of net zero. The majority of the report focuses on public participation with net zero.

Public concern for climate change is at an all time high and this has not changed substantially in the context of the COVID-19 pandemic. Nonetheless, this public concern does not necessarily and automatically translate into committed public support for the types of changes that may be required to meet net zero.

There is also a lack of awareness about many of the changes that are required to deliver net zero. More sustained public engagement and participation efforts could play an important role to raise awareness, promote understanding why changes are happening, and build consent for the types of changes likely to occur in the next 30 years.

The literature provides three core rationales for public engagement and participation:

1. **The instrumental rationale** considers public engagement as important for improving the legitimacy and perceived fairness of net zero decision-making, developing a social mandate for action, and engendering trust. Legitimacy, trust, and perceived fairness form the basis of an effective relationship between citizens and state (and non-state actors) and can foster a mutual understanding of the roles and responsibilities for delivery of net zero. As such, public engagement may enhance feelings of collective efficacy, whereby people are assured that their actions are not isolated and can create effective change by multiple actors in society working together.

2. **The substantive rationale** says that public engagement can increase the breadth and depth of information available for decision making by providing a wealth of contextual and practical knowledge relevant for the delivery of net zero. The inclusion of diverse public perspectives and value positions can then enhance responsiveness to citizens' concerns. In turn, policies may be accepted because they better account for people's contexts and experiences.

3. **The normative rationale** sees public engagement as necessary for strengthening accountability, openness and transparency. It states that there is a moral obligation to include all affected stakeholders and communities in decision-making that affects them. These normative rationales underpin legal frameworks such as the United Nations-based Aarhus Convention, which mandates access to information and possibility for citizens to participate in decision making on environmental matters.

Overall public engagement and participation may have the potential to impact the pace of delivery, cost and success of net zero delivery. More research is needed to investigate this claim in more detail, for example what savings could be made and how societal engagement with net zero may increase rates of technology adoption or sustainable behaviours.

Nonetheless, public participation initiatives may not achieve their desired outcomes if they are not carefully thought through. It is particularly important to ensure appropriate methods are used to ensure a process is considered legitimate and insights into public perspectives are meaningful. For public engagement with net zero, this should include recommendations from the well-established literature on public communication with climate change including the role of language and visuals, how uncertainty is communicated, issues are framed, and system-thinking is supported. Finally, it is important to align the design of a participation process with its aims to ensure realistic expectations about outcomes.

Inclusivity is vitally important to public engagement with net zero. It is important to ensure diverse groups can participate including groups that may be vulnerable, marginalised and/or disproportionally affected by climate impacts and policies. In addition, public engagement processes should consider the different roles and identities people may have (e.g. as consumers, citizens, parents etc). Similarly, delivering net zero will require change at multiple scales and public engagement processes may need to consider how people can act as agents of change in a variety of settings, including at national and local levels.

Public participation with net zero can take many forms depending on its purpose, resources or context. This report has briefly covered:

- **'Invited' (top-down) forms of participation**, where the engagement process is organised and led by decision-making authorities and other organisations. This includes approaches based on principles of "participatory democracy", which aim to solicit public views and other relevant stakeholders throughout the decision-making process (e.g. consultations) as well as approaches based on principles of "deliberative democracy", which focus on facilitating collaborative exchange between stakeholders and the public (e.g. citizen assemblies).

- **'Created' (bottom-up) forms of participation**, where citizens themselves create spaces for engagement rooted in shared identities and common interests (e.g. grassroots and social innovations, community energy, social movements). Citizen-led forms of public engagement present opportunities to harness the motivations and resources of citizens and provide useful insight into what people value and how they see their own role in delivering net zero.

- **Behavioural approaches**, which play an important role in encouraging and enabling public engagement with the delivery of net zero.

Integrating different forms of engagement into an overarching, systematic and long-term strategy for engaging the public on net zero is likely to be beneficial for multiple reasons. Diverse forms of integrated engagement efforts provide multiple points of access for

people and can enhance inclusivity as well as provide a basis for continuous engagement with net zero. In addition, positive interactions may occur between different forms of engagement thus enhancing the effectiveness of individual policies or initiatives.

Integrated engagement efforts can help build an overarching, coordinated and joined-up vision or narrative for achieving net zero. This would build understanding of how different actions and policies (e.g. on transport, energy) contribute to an overarching goal, make connections between local and national policies, and provide a way for people to see how personal actions are contributing to collective national level activities. Evidence shows that having such an overarching strategy and vision for net zero is important for harnessing public support.

Communicating about what government and others are doing on net zero is easier if there is an overarching long-term vision supported by an integrated public engagement and participation programme. People want to see evidence that government, businesses and industry are taking action. This is an important consideration for people to ensure the burden of achieving net zero is fairly distributed across society with appropriate roles and responsibilities ascribed to different societal actors.

This publication is available from: www.gov.uk/government/publications/net-zero-public-engagement-and-participation

If you need a version of this document in a more accessible format, please email enquiries@beis.gov.uk. Please tell us what format you need. It will help us if you say what assistive technology you use.