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Informing decision making on climate change and low carbon futures: Framing narratives around the United Kingdom's fifth carbon budget

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ABSTRACT

Narratives can help increase experiential engagement with climate change and build support for transitions to a low carbon future. The UK's 2050 climate targets provide indicatives frames through which emissions reductions could be translated to different contexts. The scenarios outlined in the UK's fifth carbon budget will require lifestyle changes which may need to counter low levels of acceptance of the need to change through technological, political and behavioural initiatives. This paper explores the role of narratives of the UK's fifth carbon budget in increasing engagement to climate change. Data are presented from thirty semi-structured interviews with UK academic, policy and practitioner communities. Six narratives are identified that could enable positive engagement with a low carbon future and better engagement on climate change: (i) showcasing investment opportunities; (ii) maintaining independence and freedom of choice; (iii) guiding audiences to visualise a low carbon future; (iv) demonstrating broader appeal, salience and impact of not doing anything; (v) supporting transitions and change; (vi) highlighting benefits to quality of life. Implications of these findings to public engagement on climate change and perceptions of how life may need to be reconfigured in a low carbon future are discussed.

1. The context of engagement on climate change in the United Kingdom

The scientific imperative to act on climate change is mirrored by increasing political ambition to limit global greenhouse gas emissions and ensure global temperatures do not rise beyond 2 °C [1], whilst "pursuing efforts to limit the temperature increase to 1.5 °C" [2]. The UK passed its Climate Change Act in 2008 providing the world's first legally binding framework which imposes UK-wide Greenhouse Gas (GHG) emission targets of 80% reduction by 2050 over 1990 levels. The Act required that the UK government set legally binding carbon budgets, establish a Committee on Climate Change (CCC) as well as a National Adaptation Programme (NAP) outlining the risks to the UK from climate change [3]. These carbon budgets (Table 1) ensure the implementation of the Act's 2050 emissions targets [4] and in 2011, the UK government released its Carbon Plan [5] outlining policies and proposals to meet the fourth carbon budget; the overarching purpose being to serve as a plan for a transition to a low carbon economy in the future. In 2016, the UK government approved the CCC's proposals for the fifth Carbon Budget to reduce GHG emissions in 2030 by 57% [6]. This forms a rich national government narrative on the need to act on climate change although a lack of substantial drop in GHG emissions questions the extent to which this narrative is effective. There is arguably a limited narrative which ties *together* this national imperative with cross-government departmental focus on food, energy, transport, water, health.

The UK's 2050 targets provide indicatives frames through which emissions reductions could be translated to different societal contexts. However, it is important to caveat that these are *targets* and hence it is impossible to *predict* exactly what a 2030 UK would look like due to the changes in economic, demographic, behavioural and other external factors which could influence the way in which emission reductions occur and change. Importantly, many of these changes may be an extension of the current 'status quo' with a number absorbed into social and infrastructure 'fabrics' hence reducing their visibility. Consequently, individuals may not be aware that the changes they are making are a consequence of the need for emissions reductions nor is it possible to predict with certainty that changes that occur, resulting in GHG reductions, will be directly attributable to low-carbon initiatives. This may be problematic considering the impact of perceived barriers on development of sustainable technologies such as smart homes which can facilitate societal shifts to low carbon solutions [7]. Indeed, technology such as smart meters generates both positive responses, in that it can enable energy savings and accurate billing, and negative responses

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Table 1
The UK's carbon budgets.

Budget	Period	Level ($MtCO_2e$)	% ↘ below base year
1st	2008–2012	3018	23%
2nd	2013–2017	2782	29%
3rd	2018–2022	2544	35% by 2020
4th	2023–2027	1950	50% by 2025
5th	2028–2032	1765	61% by 2030

around privacy and mistrust of suppliers. Positive responses to environmental concerns and engagement around the concept of sustainable changes [8] are facilitated by utilising these types of technologies that are more salient and enable consumers to engage with the concept of low carbon initiatives.

Tools are being developed to increase engagement with the concept of reducing personal carbon emissions and changes needed to reach emissions targets. The 2050 Calculator, for example is such a tool developed by the UK's Department of Energy and Climate Change (DECC) enabling experts and non-experts to 'play' with and negotiate different energy mixes and behavioural changes to assess ways of achieving an 80% reduction in GHG emissions [9]. In order for the UK and other countries to take advantage of the opportunities associated with a low carbon future, a level of engagement at the individual level is required, and reliance on policy regulation alone is insufficient. A core requirement to ensure this engagement and achieve the fifth carbon budget will be buy-in from consumers, specifically around energy efficiency in buildings, driving a shift to low carbon forms of heating, continuing efficiency improvement in vehicles, rolling out low-cost, low-carbon power and supporting the development of emerging options such as carbon capture and storage. A larger dependence on public engagement and behavioural approaches is therefore needed through a process of active participation (whether physical or in thought), where mediation and co-production are actively constructed through this engagement process, resulting from interactions between those involved in the process: "*The who (publics), what (issues), and how (procedural formats) of participation do not externally exist in a natural state but are actively constructed through the performance of collective participatory practices.*" [10,586]).

The UK public supports climate change mitigation [11] and demonstrates concern for energy security [12] with preference for demand-side as opposed to supply-side options [13]. There is public appetite for action on climate change and reduction in carbon emissions as evidenced by research on public engagement on the fourth carbon budget [14], which demonstrated a general sense of pride in the UK's leading role in this space, and acknowledgement of the need for behaviour change at the individual and household levels. The most apprehension, however, appears to be around the perceived cost of measures to address climate change and perceived trust towards new, less-tested technologies, and narratives could be most effective in addressing this. The scenarios outlined in the fifth carbon budget will require behavioural and lifestyle changes which may need to counter low levels of acceptance [15,16] and indeed framing this in a positive and inclusive manner may further increase engagement to the issue making it a social reality.

2. Using narratives to engage with society on low carbon futures

Individuals filter information (on climate change) based on their cultural and political viewpoints, weighing the risks of climate change with solutions available [17]. An over-reliance on a linear flow of information [18] where a 'problem' and 'solution' approach is adopted [19] and where it is assumed that providing information about the issue (e.g. climate change) will therefore be sufficient to lead to a solution to alleviate its impacts (e.g. reduce greenhouse gas emissions through behavioural changes). This model fails to fully consider the complexities and intricacies of social and cultural elements that affect information acquisition, the evidence-decision making 'interface', and that knowing more about the science of an issue will not necessarily increase understanding or lead to action [20]. It has been suggested that rather than fixating on gaps in knowledge or indeed polarised arguments, that a focus on overlaps in perceptions and motivations to engage with the issue would enable constructive dialogue and deeper understanding of its intricacies and opportunities for societal shifts [21]. Work by Shove addresses some of the complexities of informing sustainability-related decision-making processes, the importance of going beyond information and the need to consider the impact of attitudes and values that drive behavioural traits and how these are impacted by the context within which they are constructed and applied [22]. Furthermore the complexities of the multiple disciplines that can help inform this process and shed light as to how better communication of climate change may increase its efficiency, are vast and should not be neglected. The context within which communication on climate change occurs is important as the nature of and the way methods are used to engage audiences will go beyond the impact of content and affect how communication is received, perceived and acted upon (or not).

This linear approach, whilst recognised as being limited in engaging the public on the issue, is to some extent the process by which scientific evidence informs policy making, and hence an assumption that a similar process would work with the public is not surprising. However this has important implications to decision-making and support for or against particular policies because 'if an individual's level of scientific knowledge predicts one's risk perceptions, and risk perceptions predict policy preferences, which can then influence the behaviour of policy actors, then the public's understanding of these complex issues becomes a lynchpin to the policy process' [23]. Deeper engagement is therefore needed, above information dissemination, with the individual, to reframe attitudes or behaviours and enable efficient transitions to low carbon lifestyles. However, as discussed above, people's values, the degree of trust in the messenger and the context within which decisions are made influence people's preference for certain policies. The perceptions of climate change and associated risks are therefore much more complex in nature [12] and call for insights from across disciplines. Behavioural decision research, for example, emphasises the importance of context by measuring values and preferences of people when they are dealing with something unfamiliar [24]; Lichtenstein and Slovic, 2006, cited in [12].

Cox [25] makes a good case for scholars working on environmental communication to consider the distinction between mobilizing on climate change and encouraging mobilization that provides a means to an end. An understanding of the policy context is thus required to ensure an alignment with environmental communication approaches to better engage and mobilise publics. However 'much of the scholarship in this area has focused on the discursive representations, framing, and perceptions of climate change itself and its seriousness, rather than the relationships among specific communicative efforts (e.g. framing) and their strategic or consequential potential within the economic, political, and ideological systems in which energy policy is embedded' [25,123]). Whereas, Daniels and Endfield [26], in their summation of narratives of climate change, suggest that the method in which people receive, interpret and understand information on climate change, particularly of its 'dangerous' nature, affects resulting actions. People often produce their own stories of climate change such as how they feel about it, how it may have affected them, how they personally respond to it, providing a window into personal experiences and self-reflection [27]. Such an approach where storytelling enables 'individuals [to] re-work and order experience, evaluate events and construct meaning and knowledge' [28,p. 1086]) enables scientific data to be considered in the context of the individual's own story as opposed to considered in isolation with little context. Narratives enable the construction of a coherent message on climate change, and are better constructed from dialogues, where