



Public values for energy system change



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ABSTRACT

In this paper we discuss the importance of framing the question of public acceptance of sustainable energy transitions in terms of values and a 'whole-system' lens. This assertion is based on findings arising from a major research project examining public values, attitudes and acceptability with regards to whole energy system change using a mixed-method (six deliberative workshops, $n=68$, and a nationally representative survey, $n=2441$), interdisciplinary approach. Through the research we identify a set of social values associated with desirable energy futures in the UK, where the values represent identifiable cultural resources people draw on to guide their preference formation about particular aspects of energy system change. As such, we characterise public perspectives as being underpinned by six value clusters relating to efficiency and wastefulness, environment and nature, security and stability, social justice and fairness, autonomy and power, and processes and change. We argue that this 'value system' provides a basis for understanding core reasons for public acceptance or rejection of different energy system aspects and processes. We conclude that a focus on values that underpin more specific preferences for energy system change brings insights that could provide a basis for improved dialogue, more robust decision-making, and for anticipating likely points of conflict in energy transitions.

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1. Introduction

It is widely accepted that transformations in energy systems will be essential in realising low carbon energy transitions (DECC, 2011; IEA, 2013; Bulkeley et al., 2013). Publics are deeply implicated in energy transitions, for example as consumers and producers of energy, as citizens with voting powers, or as active protesters and proponents of energy infrastructures. As such, public acceptability is recognised to be of critical importance in processes of energy system transformation, with the potential to present both opportunities and challenges for the delivery of energy policy. Public perspectives are, however, often not included in future energy scenarios. Where public views are depicted they tend to emerge as 'imagined publics' with little grounding in empirical analysis (Walker et al., 2010; Spence and Pidgeon, 2009). In this paper, we present the results of an in-depth empirical study of public attitudes and acceptability with regards to energy transitions, delineating a set of public values for energy system change.

The research and analysis undertaken for this paper is based on two assertions regarding the conceptualisation of public acceptability. First, we argue the need to go beyond examining public attitudes toward individual system elements (e.g. nuclear energy), and look instead at how they manifest in relation to interconnected processes of *whole energy system change*. This enables us to establish a more complex picture of public views by identifying contingency and the relevance of trade-offs (e.g. between higher costs and renewable energy) for public acceptability.

To elaborate, previous research on public attitudes, acceptability and engagement with issues relevant to energy system change has largely focused on single elements of change, e.g. carbon capture and storage (CCS) or electric vehicles (see Whitmarsh et al., 2011). There is a surprising paucity of research examining public perspectives on the combined set of transformations that are envisaged in policy, academic, third sector and industry scenarios (e.g. DECC, 2010; WWF, 2011; Ekins et al., 2013; National Grid, 2014). Energy systems involve a complex array of supply and demand technologies, resources, infrastructures, behaviours and practices, as well as other elements associated with regulation, policies, actors and institutions. Public acceptability will likely be dependent upon the way transformations occur as a whole because

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people's judgements of particular elements (e.g. a technology) have been shown to depend on other aspects being realised (e.g. the associated governance arrangements; see Wynne, 1996).

Recent research has begun to explore public perceptions beyond individual aspects of change, for example by eliciting views about portfolios of energy supply technologies (De Best-Waldhober et al., 2009; Fleishman et al., 2010; Einseidel et al., 2013). This work has, for example, shown strong preferences for some energy technologies (e.g. renewables) over others (e.g. CCS; Scheer et al., 2013). However, we further argue that research in this field must be attuned to the inherent complexities and issues of scale that publics have to contend with when taking a broader view of the energy system and its inherent interdependencies (Pidgeon et al., 2014). To do this we take a 'whole-system view' considering public perspectives on the combined set of supply and demand transformations envisioned in UK national energy policy scenarios.

Second, we assert the need to consider public perspectives not only in terms of attitudes and acceptability but also in terms of the *values* and the more general concerns that underlie positive or negative views of any particular technology or process. Much research focuses on basic preferences – positive or negative evaluations of something – with only limited research going beyond these basic conceptualisations of public acceptability (e.g. Curran, 2012). This approach does not account for the often highly conditional nature of public views, such as the reluctant acceptance of nuclear power when placed in the context of climate change (Bickerstaff et al., 2008). As such, conditionality (e.g. on particular policy, geographic, or social contexts) is an important consideration when examining public perspectives.

The argument to consider values and more general concerns that underlie specific responses or attitudes is further premised on established research on public engagement with complex socio-technical and risk issues (e.g. see Pidgeon et al., 1992; Wynne, 1992; Jasanoff and Wynne, 1998; Macnaghten, 2010). Building from this body of work, we argue that because energy system change encompasses highly complex sets of transformations, framed at varied geographical and temporal scales, they contain multiple elements that will be both unfamiliar to people, and inherently uncertain. Under such circumstances people are unlikely to have fully formed views, and a need therefore arises to engage with the processes through which beliefs become constituted (Macnaghten, 2010).

Although people might not come to engagement processes with fully formed views, neither are responses constructed in a vacuum (Lichtenstein and Slovic, 2006). Public perspectives regarding complex socio-technical issues are formed through a process of interpreting new information with existing values, experiences, worldviews and socio-cultural understandings about the world (e.g. see Moscovici, 1984; Jasanoff and Wynne, 1998; Miller, 2000; Miller, 2000). Therefore we argue it is important to examine what underpins expressed attitudes and preferences, and that this kind of analysis might bring more meaningful theoretical and empirical insights into public perspectives. Such insights can, in turn, form a basis for improved dialogue, more robust decision-making, and for anticipating likely points of conflict in transition processes (Butler and Demski, 2013).

We explicate this argument through the remainder of the paper beginning with a brief discussion of the conceptual literature on values. We then present a detailed discussion of our methods and analytic approach before outlining a set of values that broadly underlie public attitudes toward energy system change. Here, illustrative examples from the data are provided to complement a narrative account of the values. We conclude by reflecting on the significance of the insights derived from the research for understanding public acceptability with regards to energy system change.

2. Conceptual background

While the term 'values' is used in a multitude of domains (politics, media, economics), it is important to note that the way it is used within the social sciences is often more focused. In basic terms, values refer to beliefs about how the world should be, and capture personal and cultural principles about states of existence and modes of conduct; they are ideals about what ought to happen regardless of situational context (e.g. Fischhoff, 1993; Chan et al., 2012). Varied disciplines within the social sciences differ, however, in their precise definitions and meanings of values; e.g. from cognitively held beliefs to cultural principles embedded in social structures (e.g. Reser and Bentrupperbäumer, 2005; Douglas, 1992; Hards, 2011). Nonetheless, most stress the importance of understanding values in the context of addressing wider societal issues. For example, from a human geography perspective, Adger et al. (2013) emphasise the importance of understanding cultural values in climate change responses to ensure policies effectively connect with what matters to communities. In psychological literatures, the importance of incorporating values in science communication to facilitate public deliberation and explore points of contestation has been highlighted (Dietz, 2013). Others have argued for the need to focus on shared social psychological and environmental values, rather than individualistic preferences in order to engage people with sustainability (Crompton, 2011; Corner et al., 2014).

Much of the psychological literature has focused on defining universal human values, theorised to reside as cognitive representations within individuals (e.g. Hitlin and Piliavin, 2004; Maio, 2010). By contrast socio-cultural approaches move the emphasis away from individual cognition to denote values as salient cultural resources (Douglas and Wildavsky, 1982; Wynne, 1996; Jasanoff and Kim, 2013). From this perspective values do not reside within individuals but have a public character; they are socially constituted and derived from interactions in the world. Further, values are not theorised as drivers or causal determinates of social action, but as ideals that require people to engage pragmatically with material and social arrangements that are not consistent with them. Central to this is the significance of scale and the ways that people constantly need to change the scope of their engagement, shifting between modes that are engaged in local or individual circumstances and those oriented towards the general or the 'public' (Thevenot, 2001; Butler et al., 2013).

We align here with this latter conceptualisation of values, by adopting the societal level as our principal unit of analysis (Hechter, 1993). Accordingly, we present a *shared set of social values* that pertain specifically to energy system change and invoke a mode of engagement that is oriented toward the general or the 'public', rather than the specific or personal. This is, in part, because the analysis in this paper aims to provide insight into what shapes acceptability of energy pathways *at a societal level*, building understanding of the culturally embedded ideals and general concerns that underlie specific preferences. The idea of a shared set of values, or a value *system* has precedence in other research and conceptual work (e.g. Brown, 1984).

In this research we draw on conceptions where the value set represents *prevalent identifiable cultural resources* or *collectively imagined forms of the social good* through which people anchor their understandings and formulate their preferences (Douglas and Wildavsky, 1982; Jasanoff and Kim, 2013). As such, the kinds of values we draw out of our own work with publics might be better conceptualised as expressions of ideals circulating within society as cultural discourses (Hards, 2011). In line with this, we do not assume that the identified value clusters are ordered in a specific way (unlike for example Schwarz, 1992), but do acknowledge that individuals have to engage pragmatically with values in a given

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