UKERC

Briefing Note

Transforming the UK Energy System: Public Values Attitudes and Acceptability

Interim Findings

May 2012

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Key Messages

- Broad public support for energy system change away from high hydro-carbon dependency and, in line with this, negative attitudes toward unconventional fossil fuels

- Support for future systems of renewable energy supply consistent even in the context of other options and demand-side management

- Carbon Capture and Storage (CCS), bio-fuels and nuclear evoked higher levels of contestation and concern than other aspects of proposed change

- Preference for long term stability in energy pricing and bills over lower but unstable pricing structures

- Targeting collectives provides more opportunities for success than approaches which address individuals and separate households

- Specific contextual factors (e.g. where you live, familiarity, trust) are important mediators of public views and values

- High levels of distrust amongst publics with regard to energy sector companies and their operations

This briefing note summarises initial findings from qualitative research undertaken as part of a major project investigating public values, attitudes and views on whole energy system change. [1]

A key objective of the project is to identify degrees of public acceptability relating to various aspects of whole energy system transformation and the trade-offs inherent in such transitions. This research has relevance as a research evidence base for informing development of future energy systems, as well as for understanding processes of and potential obstacles to delivery of such transitions.

The findings presented in this briefing are preliminary interim results from a series of deliberative workshops undertaken with members of the public across six UK locations (see endnote) during the period June – October 2011 [2]. The early analysis presented here not only provides an indication of key areas of public acceptability and unacceptability relating to whole energy system change but also offers insights into the factors that mediate and underpin views on transitions. Understanding the connections, associations and contextual issues that underlay public perspectives offers an important means for thinking through potential difficulties and opportunities in achieving major system change.

Meta-Issues and Views on Energy Transitions

Previous research has examined the connections between public beliefs about meta-issues (i.e. for example, climate change, energy security, cost) and views about different aspects of energy system change (Pidgeon et al., 2008; Spence et al., 2010; Butler, 2010; Corner et al., 2011; Shuckburgh, Robinson and Pidgeon, 2012). Such prior research has produced mixed results about the relationships between concern regarding these issues and attitudes toward energy infrastructure and transitions. Although we might expect attitudes to climate change, for example, to correlate well with views on various aspects of energy system change (e.g. behavioural change), this has not been borne out in existing quantitative work.

The findings from this present research show how in discourse wider concerns, like climate change, often occupy distinct discursive spaces and are abstracted from views on energy system change even when it is directly related to addressing climate change. That is to say, scepticism about climate change did not prevent engagement with mitigation policies and practices, or to give another example, concern about affordability did not translate straightforwardly in to rejection of more expensive routes to change. We found that the acceptability of different aspects of energy

system transitions were instead mediated by a wide range of other considerations, many of which we discuss in this briefing. These findings thus offer explanatory power in terms of understanding the apparent lack of connections between views on meta-issues and views on energy system development found in prior research. They also point to the importance of recognising that public acceptability is complex and is influenced by multiple factors in combination with one another. This means that views on overarching meta-issues, while still important as meta-narratives underpinning reasons for change, may be less significant than one might expect in determining views on system transformation.

Attitudes toward Energy System Change

Perspectives on energy system change were broadly positive with strong recognition of and support for system transition at a general level. In particular, and as we might expect, renewable forms of energy supply arose as highly favoured options for future energy systems. This finding is supported by previous large scale quantitative research that reveals significant support amongst UK publics for renewable energy development (McGowen and Sauter, 2005; DECC, 2009; Spence et al, 2010; Demski, 2011). More interestingly from this research were findings relating to how attitudes toward renewable energy remained positive even when implications of high renewable energy technology scenarios (e.g. demand management, electrification) were introduced. Though participants in the research did not draw these connections easily themselves, when prompted through tasks designed to inform and generate reflections on interconnected aspects of system change, they largely maintained positive views on renewable energy supply systems.

In terms of demand management (DM) these processes of reflection did, however, prompt concerns about not just *what* would be required but *how* this would be achieved. Specifically, forms of 'active' demand management (e.g. where people would be active in managing their own demand using information provided from operators) were much more acceptable than forms of 'passive' management (e.g. forms of

management involving automated regulation of demand such as powering down fridges/freezers). The concern about passive forms of management was not an objection to the forms of DM proposed in this model *per se* (e.g. powering down fridges/freezers) but to the implied control and power this would give to the body, organisation or institutions responsible. In this regard, there were particular concerns about current operations of the energy market with a distinct lack of trust related to this, and about the potential for future abuses of the power embedded in the infrastructure to enable such activities.

A further key finding with regard to change was that certain aspects of proposed system transition received negative reactions, in part, because they were viewed as non-transitions. In particular, bio-energy and carbon capture and storage (CCS) evoked such broadly negative reactions for this reason. Though these elements of system change have been found to evoke negative or, at best, 'lukewarm' public responses in previous research (Palmgren et al. 2004; Shackley, McLachlan and Gough, 2005; Halder et al. 2010; Upham, 2011), the finding specific to this research is that when positioned in relation to the whole energy system and in the context of multiple transitional routes, they are viewed particularly unfavourably. The concerns unpinning these negative responses can be broadly divided into characterisations of bio-energy and CCS as being 'non-transitions' (e.g. bio-energy carried associations to burning fuels for energy and thus to hydrocarbons) or as 'short-term transitions' – that is, they were viewed as approaches that defer rather than solve energy system problems. Conversely, they did not hold associations with the kinds of future imaginaries that invoke notions of cleanliness, 'high tech', and safety. Nor did they invoke a sense of technological optimism characteristic of engagements with some technologies (Jasanoff, 2003). Instead, they prompted reactions that might be described as something closer to technological realism – a sense that technological failure is always possible and that if the 'worst possible event' is not acceptable then the action should be avoided (Adam, 2010). Attitudes toward nuclear energy, though distinct from some of the characteristics that link bio-energy and CCS, were also on the whole negative. There was greater

positivity as might be expected within the Cumbrian groups and amongst male participants. Even amongst those that were more positive, however, support only extended to replacement at existing sites not to wider development of nuclear energy across the UK.

Hydrocarbons (oil, gas and coal) as supply options evoked particularly negative responses in terms of their role in future energy systems. In general they were viewed as polluting, archaic, finite and as sources of global conflict. These negative attitudes toward hydrocarbons fed into the less favourable responses to CCS and bio-energy, as they carried either direct connections (as in the CCS case) or associations (as in the bio-energy case). These views also extended to unconventional fossil fuels. In the research negative attitudes toward hydrocarbons were probed with regard to the potential for unconventional extraction (e.g. shale gas, deep sea oil). This revealed that people remain negative and, in some cases become more negative, with regard to the role of hydrocarbons in future energy systems. This finding does, however, become more complicated at the level of everyday implications as we discuss below.

Energy System Change in Context

Though at one level change away from hydro-carbons was viewed as an important imperative for the future, connections with and sensory experience of these forms of energy in everyday contexts remained important. Cars, cooking and heating are three of the key ways in which we encounter oil, gas and coal in everyday life. In this context, the familiarity of sensory experience (e.g. the smell of petrol, the sound of car engines, the feel of gas heating) and the effectiveness of current systems of provisioning (e.g. gas central heating was widely perceived as the 'best' form of heating) played significant roles in perceptions of and attitudes toward change. This issue was complicated further by some of the existing interpretive frames for things proposed in envisioned energy system changes. For example, there are existing perceptions of electric heating systems as expensive, non-responsive, not controllable and ineffective. In addition the long history of individual household level, highly controllable heating systems in the UK has

created particular sets of expectations regarding home heating that do not, in many cases, align with the characteristics of newer socio-technological approaches. These existing perceptions and experiences could, then, be problematic in achieving energy system transitions, involving for example, electrification of heat systems.

Additionally there was a sense of risk and insecurity arising from the thought of doing things differently. With regard to this, it was highly important for many to see that others in their local areas were undertaking things involved in energy system transition (e.g. installing insulation or micro-generation technologies). The visibility and awareness of others undertaking such activities offered a sense of security in enacting change and was also crucial in raising awareness of what can be done – e.g. through social networks, by word of mouth, discussions with neighbours and so forth (on social networks see Mitchell, 1974). The wider implication of this is that targeting schemes at neighbourhood or community level, rather than individual level, is likely to be more successful than approaches which can leave people feeling isolated in the changes they are adopting.

Social Contracts, Values and Intangibles

The research revealed a number of areas of high unacceptability in relation to system change (e.g. flying less for recreation, eating less meat). To better understand these areas of high unacceptability, we suggest that they relate to the threats that transitions are perceived to pose to other aspects of life. For example, reducing or giving up meat or flying for leisure are tied to more intangible and highly valued aspects of life, such as recreation, extending experiential horizons, social interaction, pleasure and so forth. Understanding this makes the kinds of extremely strong reactions to these types of change – in contrast to the ambivalence characteristic of views on other aspects of change (see Wynne, 2003; Kerr et al. 2007) – more explicable.

The way these types of things are resisted needs to be understood, then, in terms of perceived attacks on things that people value strongly and energy system change more broadly might need

to be approached in ways that do not confront, or at least pay attention to, these kinds of highly valued aspects of life. This may be particularly relevant for thinking about the creation of new social contracts – i.e. whereby the agreement of mutual consent between civil society and the state would be renegotiated as a precursor to the development of low carbon transitions (on social contracts and climate change see O'Brien et al, 2009).

Politics of Place

Recent commentary has been critical of theory on sustainable transitions (e.g. see Rip and Kemp 1998; Geels, 2002) for its treatment of space and place (Lawhon and Murphy, 2011; Truffer and Cohen, 2012). These criticisms relate to the way that 'space is only indirectly and implicitly addressed' and that when it is addressed it enters with an implicit assumption that sustainability transitions unfold primarily at the national level (Truffer and Cohen, 2012 p.6). This is salient for the present research findings. In terms of public engagement with energy system transitions, context and place were of particular importance in the formation of views. This manifested in a number of specific ways. First, there were distinct differences between the views of those living in rural or urban areas (e.g. on issues such as transport). For rural participants, some saw the proposals associated with certain aspects of transitions as being thought with cities in mind and without consideration for how rural areas could transition. This for some meant that certain aspects of transitions represented a threat to rural living provoking concern and resistance.

As might be expected from previous research, infrastructure and facility siting was also of greater significance for those in more rural areas (Woods, 2003). This, however, was not simply a straight forward case of not wanting, for example, wind farms in the countryside. Instead it depended on the particular features of different areas and on the sense of infrastructure being 'in place' (Cresswell, 1996; Parkhill, 2007). In this respect, Whitelee wind farm (one of our workshop locations), despite being one of the largest on shore wind farms in Europe, was deemed acceptable as it was viewed as being sited in an appropriate place, even by those that considered themselves to be opposed to wind farms.

Second, politics and histories of particular places played important roles in mediating views on development of different energy systems. For example, in the context of Scotland negative reactions to CCS were related not only to issues fore-grounded earlier in this briefing (e.g. regarding CCS being viewed as a "non-transition") but also to concerns particular to the Scottish context. Specifically, notions of Scotland being treated as a "dustbin of the world" (Olivia, Glasgow[3]) were relevant in Scottish discourses about CCS and related to a sense of injustice that Scotland had historically been treated this way.

Conceptualising transitions with space in mind and therefore thinking through what system-wide (e.g. at UK level) transitions in energy systems might mean for different places and living contexts will thus be a highly important part of achieving transitions that are acceptable to diverse sets of public(s).

Trust, Control and Systems of Inequality

The significance of trust for public engagement with elements of socio-technological change is well documented (Poortinga and Pidgeon, 2003). From this research we found that distrust of those responsible for energy systems management, but particularly of energy companies, was highly prevalent. Though this might be expected, it has important implications for thinking about different aspects of transition.

Attitudes toward *how* we deliver transitions (i.e. the particular approaches taken) were bound up with distrust. For example, in relation to demand management – discussed earlier – preferences for active rather than passive management were in part related to distrust of those who would have control and the future potential for abuses of power. In this vein questions about responsibility for transitions – i.e. who pays and how we pay for energy system change, as well as questions about who benefits – arose as key tension points in terms of trust. While on the one hand, energy companies were positioned as having responsibilities for facilitating desirable energy system transitions – and in particular the significance of energy companies as profit making

entities was salient in this regard – they were also regarded as untrustworthy because of existing vested interests. For some any 'real' transition was viewed as unfeasible without addressing the core interests of existing energy companies. The profit making nature of energy industries also fed in to *mis*trust about other aspects of energy company involvement in transitions. For example, when discussing policies like the Green Deal (DECC, 2012) as an approach to transitioning, existing distrust relating again to the profit making focus of the energy sector, translated into mistrust about intentions behind such policies.

Questions of "who pays" were linked to discussions of energy bills and costs. In the research costs were treated very carefully due to the high levels of uncertainty associated with this aspect of energy system transitions. The discussions of costs were approached through a series of "what if" prompts and probes. In particular we posed a key hypothetical relating to preferences for higher but stable bills or potentially lower but fluctuating bills. In general, we found higher favourability toward stable energy prices regardless of if they were higher or lower. This is a complex area of public attitude research and more detailed exploration of preferences with regard to cost is identified as a key area for future research. Central to this research would be the necessity to address the multiple dimensions of concern about costs (e.g. long-term stability versus fluctuation, existing market structures, perception of energy as a basic need). This is particularly important as there is a danger of simplistic interpretation with regard to public responses to questions about cost: For example, publics will frequently reference the importance of cost 'off the cuff', but when probed this aspect of public discourse is far more complicated and nuanced than can be revealed through straightforward questioning about higher or lower bills/costs.

Conclusions

In this briefing we have outlined early findings that provide insight into some key aspects of public attitudes and acceptability with regard to energy system change. In sum, they offer evidence which points to the possibility of public contestation around potential future energy supply options, like CCS and bio-energy, but also around continuation of hydrocarbons particularly in the context of unconventional extraction (e.g. shale gas). They reveal strong positivity about renewable forms of energy, and crucially, that this is persistent even in the context of other options and demand-side management. This coexists, however, with a sense of familiarity regarding hydrocarbon fuelled technologies *in everyday life* that could itself act as a potential barrier to change.

The research shows that familiarity, experience and word-of-mouth are important factors governing take-up of newer technologies and approaches. This means that the adoption of actions involved in energy system change is likely to be better supported through engaging collectives in similar undertakings at the same time, as opposed to targeting schemes at individuals and households. The research highlights the significance of understanding some aspects of lifestyles as bound to deeper values – expectations are for lives to 'be lived' not just 'sustained'.

The findings point to the importance of paying attention to the specific contexts in which sustainable transitions in the energy sector will manifest. This includes understanding political and social histories as well as differences in terms of rurality or urbanicity and scale. The project further highlights how issues of trust need to be understood in the design of approaches to delivering transitions. Such trust issues can be countered partly through creating approaches that either make use of trusted sources or do not rely on relations of trust because risk is minimised (e.g. as in grant schemes where there is no financial risk involved), and partly through efforts to behave in ways that engender greater trust in existing organisations, businesses and institutions involved in the governance of energy systems. Finally, the research reveals a preference for stability in pricing and highlights that public discourse about cost is multi-dimensional and is related to much wider aspects of concern, such as profit making within energy industries.

The full report on the findings from the deliberative workshops will be launched in early autumn 2012.

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[1] This research formed part of the programme of the UK Energy Research Centre and was supported by the UK Research Councils under the Natural Environment Research Council award NE/G007748/1. Additional support was provided by the Leverhulme trust (F/00 407/AG). For their contributions to the research we would like to thank Brain Drysdale, Tracy Sweet, Christina Demski, Alexa Spence, Lorraine Whitmarsh, Modassar Chaudry, Peter Pearson and Nick Jenkins.

[2] Deliberative workshops were undertaken in London, Cardiff and Edinburgh and three other sites selected for their specific characteristics with regard to energy – i.e. Cumbria as the site of Sellafield nuclear facilities, Merthyr Tydfil as an area with a long history of coal and Glasgow sampling from settlements adjacent to Whitelee wind farm. All of the specific sites can also be regarded as more rural, as we specified sampling from rural locations in these areas. The workshops were designed as a one day format with 11-12 participants in each group (total participant n=68). The day involved participants in large group discussions and engagement with the key policy issues underlying thought about whole energy system change (e.g. infrastructure renewal, climate change, energy security, affordability, demand reduction) as well as with the meaning of 'whole energy system change' and the purpose of scenarios. Participants then spent the majority of the day divided into two smaller groups of 5-6. In these smaller groups they were guided through a structured discussion designed to prompt deliberative thought as they collectively created their own energy system scenarios using an online tool (see MY2050). Discussion included aspects of system change not encompassed in the scenario tool in order to achieve a sense of views on more forms of system change. Participants were also given information different to that provided within the scenario tool to facilitate their engagement with and understanding of the technical aspects of system change. The final aspect of the workshops involved participants in discussing 'scenario narratives' created to reflect three plausible future energy system scenarios and written from the perspective of the first person. These were developed from a range of scenario sources and from information attained through interviews with expert sources. For the workshops overall, technical information was developed in collaboration with Cardiff University Schools of Engineering and Architecture, as well as from desk top research and insights derived from interviews with expert stakeholders.

[3] Name has been changed to make anonymous.

For more information about the research please visit: www.understanding-risk.org & www.ukerc.ac.uk