



# Energy Biographies Research Report

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## Publication details

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## Website

<http://energybiographies.org>

# Contents

<b>Executive summary</b>	<b>2</b>	<b>5. Concluding summary</b>	<b>42</b>
<b>1. Introduction and overview</b>	<b>4</b>	5.1 Key research findings and insights for policy	43
1.1 Thinking about social change: from behaviour to values and practices	5	5.2 Contributions to scholarship	47
		5.2.1 Contributions to theoretical approaches	47
		5.2.2 Methodological contributions	48
<b>2. Theoretical pillars: practice theory, lifecourse studies, community</b>	<b>6</b>	<b>6. Appendix 1: Sample/recruitment details</b>	<b>49</b>
2.1 Understanding practices	7	6.1 Ely and Caerau	50
2.2 Community and agency	9	6.1.1 Selecting the sub-sample	50
2.3 Insights from lifecourse studies	9	6.2 Peterston-super-Ely	50
		6.2.1 Selecting the sub-sample	51
<b>3. The Energy Biographies methodology</b>	<b>12</b>	6.3 Lammas	51
3.1 Methods employed	13	6.3.1 Selecting the sub-sample	51
3.2 Phase I: Initial narrative interviews	16	6.4 Royal Free Hospital	51
3.2.1 Interview 1	16	6.4.1 Selecting the sub-sample	52
3.3 Phase II: Extended Biographies and Multimodal Methods	17	<b>7. References</b>	<b>53</b>
3.3.1 Activity 1	17	<b>Figures</b>	
3.3.2 Interview 2	18	Figure 1 Overview of methods used	14
3.3.3 Activity 2	18	Figure 2 Example of photonarrative from Activity 2	19
3.3.4 Interview 3	20	Figure 3 Christine's pylon	27
<b>4. Key findings</b>	<b>21</b>	Figure 4 Jack's microwave	28
4.4 Thinking about everyday life: exposing incremental transitions and their effects	22	Figure 5 Jonathan's car	30
4.4.1 Incremental transitions in personal life	22	Figure 6 Lucy's patio heater	32
4.4.2 Community-level transitions	24	<b>Tables</b>	
4.4.3 Summary	27	Table 1 Overview of <i>Energy Biographies</i> sample	15
4.5 Making infrastructure visible	27	Table 2 Timeline	52
4.5.1 Summary	30		
4.6 Living worthwhile lives: making ethical conflicts visible	31		
4.6.1 The relationship between how we use energy and identity	31		
4.6.2 Energy, technology and visions of 'worthwhile lives'	35		
4.6.3 Summary	41		

# Executive summary



Public policy is increasingly concerned to address ‘wicked’ problems, which involve complex and unpredictable interactions between social and natural processes. How society produces and uses energy is one such problem that affects others, such as climate change, resource depletion and biodiversity loss. Understanding how and why people use energy in the ways they do is therefore a key input to public policies designed to transform how energy is produced and used along more sustainable lines.

Everyday life is characterised by large changes in energy demand throughout the lifecourse, often associated with significant transitions (leaving home for university or entering work, cohabitation or marriage, childbirth, moving house or job, retirement, taking in elderly relatives, and so on). At such times, people’s social relationships change as they move between different places and communities. They are called upon to make changes to the practices they engage in every day, such as altering levels of domestic heating for elderly relatives or babies, or shifting transport modes when commuting. These changes often have significant implications for how they use energy. A detailed understanding of the impact of such changes on energy consumption, and of the dynamics to which such changes are typically subject, is therefore an important input to energy policy.

To address this need, *Energy Biographies* created a bespoke social science methodology that draws on insights from lifecourse studies, practice theory, and geographical studies of community and place. In bringing together these insights, it recognizes that what people do and how they understand themselves are multiply conditioned. Rather than simply being an outgrowth of more or less rational choices based on available information about the likely consequences of their actions, actions and beliefs are actively moulded by the technological infrastructure on which everyday life depends, the shared practices in which people are participants, the relationships and experiences which shape their biographies, and the evolution of the different communities (of place and of interest) in which they are located.

To explore the combined influence of these different conditions on how energy use may change in different community contexts and at different stages in the lifecourse, between 2011 and 2015 *Energy Biographies* conducted narrative biographical interviews at four case sites (Ely/Caerau and Peterston in Cardiff, the Llamas ecovillage in west Wales, and the Royal Free Hospital [RFH] in London). Working from an initial sample of 74 participants, researchers identified 36 interviewees to participate in two further rounds of interviews over the course of 18 months. Before each of these additional interviews, participants were asked to photograph aspects of their daily energy use. In the final interview, they were also asked to view, and then discuss, two films about the future of domestic energy use.

74

**Working from an initial sample of 74 participants**

36

**participants took part in two further rounds of interviews over 18 months**

*Energy Biographies* findings identify several overlooked influences on how energy use changes across the lifecourse and within different community contexts. They suggest that the dominant foci of policy on energy demand (e.g. technology-enabled changes in individual behaviour) may be misplaced, and offers openings towards alternative pathways for change.

*Energy Biographies* data shows how lifecourse transitions are often incremental and unplanned, rather than being discrete moments that involve intentional role and/or status changes. People’s accounts of such transitions often show how they are linked to wider social changes, and are shaped by memories of the past and anticipations of the future.

Overall, *Energy Biographies* shows that, over time, changes in how people use energy are shaped by a range of influences that condition what people are able to be and to do

Communities of place and interest can provide grass-roots foundations for building effective shared agency to help reshape how energy is used. As data from RFH shows, it is difficult for workplace energy demand reduction initiatives that focus on providing information to individuals to work in the absence of shared agency. However, policies intended to support such initiatives may sometimes operate with temporal dynamics (relating e.g. to time-limited incentives) that clash with the bottom-up evolution of community initiatives.

People recognize that they are dependent on complex energy infrastructures and energy using devices over which they often have relatively little influence or control. The extent to which infrastructure or devices remove agency from people in the name of convenience is identified by many interviewees as a negative feature of their home environments. *Energy Biographies'* methods demonstrate how this dependence changes and increases in complexity over time. Data from Lammas shows that, while people often feel their agency in reducing energy consumption is limited, participating in a process of change that is supported within a community of place and of interest, and is also supported by policy, can help people understand and transform complex forms of dependence.

Data from all sites shows that biographical methods can reveal how the ways in which energy is used are not simply functional, but also shape our sense of identity and of what constitutes a 'worthwhile life'. People may develop strong emotional attachments to particular practices, which may be either inherently unsustainable (e.g. driving high performance cars), or more sustainable (e.g. permaculture). A given individual may be emotionally invested in practices from both categories.

One reason for the continuing importance of such attachments is how they help people deal with disruptive lifecourse transitions (e.g. changing jobs, moving house). At the same time, diverse attachments may come into conflict as a result of such lifecourse transitions. Such conflicts generally have a moral aspect, and *Energy Biographies* data suggests they may take different forms in distinct socio-economic strata. For example, more affluent people may find it hard to reconcile their emotional investments in particular ideals of the good life with their understanding of the

financial costs and/or environmental impacts of particular energy practices. Less affluent individuals, by contrast, may be faced with a clash between the energy implications of caring commitments (e.g. to elderly relatives or children) and their commitments to energy efficiency. A key finding is that such conflicts may be hard to resolve. Not only are they materially rooted in life circumstances, they are often related to identity, and this can evoke powerful emotions that make them difficult to talk about. They can thus make durable change to practices difficult.

For many people, convenience (as conventionally understood) appears not to be a foundational value. Just as a biographical, lifecourse-based approach can show people may become attached to particular practices, it can also show how they may form attachments to particular technologies or devices even if (or sometimes because) they are 'inconvenient'. In many cases, the value found in such attachments derives from how they foster experiences of connectedness or active physical, emotional and/or imaginative engagement with others and with the world.

Energy demand research which does not register these biographical influences on how and why people participate in practices and use technologies may not be sufficient to understand why changes in how energy is used occur. Further, policy initiatives which do not recognize these contributions may have less chance of success. Policies based on the use of smart metering, for example, view informational feedback as an important input into behaviour change. But the kind of feedback identified by interviewees as an important motivation for why they value particular practices and technologies is of a different kind – involving effortful emotional, imaginative and sensory/physical elements.

Overall, *Energy Biographies* shows that, over time, changes in how people use energy are shaped by a range of influences that condition what people are able to be and to do. These link individual biographies, technological infrastructures, shared practices and community contexts in ways that have remained often hitherto unappreciated, and which the methodology employed by the project can address.

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# Introduction and overview

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## 1.1 Thinking about social change: from behaviour to values and practices

Contemporary public policy is characterised by its preoccupation with a range of ‘wicked’ problems (Rittel & Webber, 1973), issues which involve complex interactions between natural and social processes, along with unpredictable outcomes which emerge over the long-term as a result of near-term priorities. Climate change, resource depletions and biodiversity loss are some key examples. How society produces and consumes energy is another, which is itself closely intertwined with these three. Making the transition to societies in which the first three problems are dealt with successfully will mean changing how energy is produced and used – both by increasing the amount of energy coming from renewable and non-polluting sources, and by reducing demand.

The *Energy Biographies* project set out in 2011 to consider the relevance of biographical accounts to understanding how everyday energy demand changes throughout the lifecourse. To do this, the *Energy Biographies* team formulated a novel methodological approach that involved both longitudinal narrative interviews with interviewees living in four locations in Wales and England, and multimodal techniques that involved photography and film. This approach was motivated by three theoretical ‘pillars’ for understanding the social dimensions of energy demand: practice theory, lifecourse studies and relational, place-based understandings of community. The combination of these perspectives with a unique methodological approach was intended to bring into the foreground different influences on how people make sense of the ways they use energy and of the impact of transitions within their lifecourse on energy use. The theoretical pillars of the project suggest that focusing on such transitions may make more visible and tangible for people the social networks, conditions and infrastructures which help to shape their lives. By eliciting from interviewees narratives about past transitions and using novel methods to explore potential future ones, *Energy Biographies* sought to make connections between the background conditions of their lives and peoples’ own accounts of what matters to them (Sayer, 2011). In this way, the project sought to avoid either one-sidedly emphasising the importance of social structure in constraining or enabling change, or placing too much stress on the capacity of individuals to autonomously effect change in their lives. The *Energy Biographies* approach held together, on the one hand, the importance of identity and agency to social change with, on the other, the links between what people do and how they come to

understand who they are. These self-understandings are historically contingent, embedded in shared practices (Finn & Henwood, 2009) and a diverse range of community contexts. The project aimed to enlarge perspectives on energy demand by detailing the ongoing contributions made by individuals in their everyday lives to shaping broader processes of change, as well as to moulding ‘the sensibilities and moral reasoning that underpin them and the local cultures (social space, locality, artefacts, symbolic representations and so on) through which they [i.e. change processes] are given substance’ (Neale & Flowerdew, 2003, p. 192). The project’s unique contribution was thus to explore how people make sense of how they use energy, and how they can effect change, against a richly textured backdrop composed of technologies, practices, community networks and lifecourse transitions.

### Overall, the *Energy Biographies* project set out with four ambitions:

1. To explore how energy biographies can be used as a conceptual and empirical basis for examining how people use energy in everyday life.
2. To develop biographical methods, carefully crafted for use in this area, and examine how they can render visible to people overlooked aspects of how they use energy every day, why and how their everyday practices are sustained, and how key lifecourse transitions have shaped their current lifestyles and energy practices.
3. To reflect on these methods and use the data gathered to identify how and in what circumstances lifecourse transitions may offer opportunities for significant change in how people use energy at home and in the workplace.
4. To examine how participation in different forms of community (e.g. across home, work, leisure, travel activities) sustain or undermine individual and collective efforts to reduce energy use.

In the rest of this report, we describe to what extent these ambitions were achieved. First, however, we explain the theoretical pillars of our work, before laying out in more detail the nature of the methodological approach we adopted.

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**Theoretical pillars:**  
practice theory, lifecourse  
studies, community

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Dominant trends in policy interventions concerning how domestic and industrial consumers use energy have, to date, been shaped by particular kinds of evidence. They have also therefore tended to reflect particular assumptions about what influences energy consumption that have guided dominant research traditions in psychology and the social sciences. That the key to wider social change is to transform how individuals make choices to behave in different ways has, for example, long been presupposed by such traditions. More and better information about the financial costs of consuming energy, some researchers have therefore suggested, may be a major driver of change in how energy is consumed. This conclusion is based on the assumption that the more individuals know about the consequences of their behaviour for their own interests, the more they will exercise their power to choose different behaviours which further their interests more effectively. To support policies that kick-start this kind of change, the use of technological innovations such as smart meters has been encouraged. Utilising such devices to provide more (and indeed, real-time) information about changing levels of energy usage for domestic or commercial consumers has therefore been placed in the forefront of strategy on shaping energy demand (DECC, 2009).

The extent to which everyday energy use can best be understood as the outcome of decisions taken by individuals to behave in specific ways has been widely questioned, however. Criticisms of this influential interpretation have been particularly common from social scientists who are interested in how individual behaviour and attitudes are inseparable from elements that constitute a shared social reality, whether these are values, practices or even technological infrastructures. From this perspective, behaviour and attitudes are seen as conditioned by wider processes of social change. These processes, in turn, exhibit path-dependencies of various kinds which can make change hard to reverse or redirect. Examples of such path-dependencies can be found in the effects of technological evolution on everyday practices (Berkhout, 2002), as in the reshaping of social relationships by the emergence of, first, mobile phones then smartphones. Others may be found in the 'trajectory' taken by practices themselves, considered as assemblages of the skills needed to do something, the equipment or materials of which these skills make use, and the social meanings which surround the practice (Shove & Walker, 2014). Such perspectives offer valuable insights into the ways in which how we act and what we believe are not simply matters of individual choice and reflection. How we use energy is shaped by complex entanglements of practices and technologies which have long histories (Ozaki and Shaw, 2014).

## 2.1 Understanding practices

From the point of view of practice theory, what people do is shaped by the ways in which social actors collectively 'get things done' (Reckwitz, 2002; Schatzki, 1996; Shove, 2010). How people store food, for example, is not simply a product of what individuals choose to do. It is conditioned by how widely-shared ways of 'getting things done' have developed over time. For example, choosing to buy and eat ready meals is not simply a choice taken in a vacuum; individuals are inclined towards it by the development of frozen food and by working patterns that make frozen food a convenient way of coping with a reduction in the time available to prepare meals (Shove & Southerton, 2000). How things are done, in this sense, is through practices which have a life of their own independent of what particular individuals do, although practices continue to exist because enough people still engage in them (Shove, Pantzar, & Watson, 2012).



Part of what makes up practices is technology, which provides the tools but also the supporting infrastructure upon which practices depend. Practice-focused approaches recognise this, while also seeing the role of technology very differently to behaviour-focused ones. Where behavioural approaches have sometimes emphasised the transformative power of individual technologies, practice-focused perspectives have often made connections between how practices change and other scholars' analyses of the influence that broader patterns of technological innovation ('regimes') can have on whether particular technologies are taken up or fail to achieve traction (Geels & Schot, 2007). For example, 'niche' technologies may, if existing infrastructures and frameworks of governance support them, move into the mainstream, as was the case with mobile phones, facilitated by telecommunications networks and their regulation. As a result of such technological changes, social expectations may themselves change – as with the effect of the mobile phone on practices of communication, norms relating to behaviour in public places, and so on. On the other hand, other innovations, such as decentralised renewable energy generation from photo-voltaics or small-scale wind, may struggle to have transformative effects without broader technological, infrastructural and social change, such as to how electricity is stored and distributed, or to how electricity generating infrastructure can be owned and sited.

From such points of view, the linear models of transformation invoked by behaviour-focused policies, based on necessary connections between particular interventions at one level and effects at another, appear naïve and unrealistic. Such policies tend to target individuals as rational, decontextualized actors motivated by self-interest. Practice-based approaches, on the other hand, draw attention to the existence of constraints which can limit how far individuals are able to change their lives through their own agency moment-to-moment, and also point to the existence of contingent, uneven processes of evolution of values, practices and technical systems which change the nature of these constraints beyond the reach of individual agency.

Nonetheless, in emphasizing that assumptions about the relationship between reflection, choice and behaviour ignore wider social conditions, we should not throw the baby out with the bathwater. It remains possible for people to adapt, improvise and even change wholesale the practices they engage in (Hitchings, 2012), as studies of transitional moments in people's biographies make clear (Hards, 2011, 2012). Questions about the circumstances in which such change becomes possible, and how to promote people's capacity to act in ways that have the potential to effect change in an increasingly complex, fast changing and uncertain world remain open, however.

The *Energy Biographies* approach affirms that people's stories of change may provide a valuable source of answers to these questions. A biographical approach informed by both practice theory and the other theoretical pillars we discuss below may help to understand how practices and technologies become entangled both at a social level and within individual lives, while also enabling us to understand individual stories of change, adaptation and improvisation. Studying the dynamics of everyday energy use empirically with the aid of a biographical lens, is ideally suited to eliciting people's investments in the ongoing normalcy of daily life, but also to identifying moments of routines in which what is taken for granted or considered desirable may be questioned or disrupted (for the background to this methodological discussion, see Henwood, Pidgeon et al, 2010; Henwood and Pidgeon, 2015). Importantly, a biographical approach also sensitizes research towards incremental as well as sudden life-changing moments where an individual's everyday practices and lifestyles can become set on a particular course: becoming a teenager, adult or parent; major transitions in work, relationships or group memberships; moving house etc. Such biographical transitions may be accompanied by significant shifts in our guiding values and in the practices in which we engage (Hards, 2011, 2012), as in the case of going to university or having children, for example. Finally, it allows researchers to explore with participants possible future biographical trajectories and how these may open up or close off opportunities for change in the present (Adam & Groves, 2007).

Importantly, a biographical approach also sensitizes research towards life-changing moments where an individual's everyday practices and lifestyles can become set on a particular course: becoming a teenager, adult or parent; major transitions in work, relationships or group memberships; moving house etc

We currently know very little about the ways the energy use implications of different lifecourse transitions are interpreted by individuals. Our knowledge of how such interpretations are bound up with the different community contexts that people inhabit is equally scant. Finally, relatively little information is available on the possibilities for energy demand reduction interventions that may be offered by biographical transitions. In the next two sections, we examine established perspectives on lifecourse and community as complements to practice theory.

## 2.2 Community and agency

A concern for community and place adds a spatial dimension to the *Energy Biographies* approach to sense-making, which acknowledges that human lives are relational in nature, always interdependent with other lives in space and in time. Human geography recognizes that social relationships are shaped by the places in which they emerge, just as social relationships reciprocally shape these places in turn. Individuals understand their situation in the world and their capacities for action through belonging to various groups at different scales, from families and neighbourhoods to cities, regions and nations (Wetherell, 2009a, 2009b). As well as being located in place, these groups may also form around participation in particular practices (Wenger, 2000). Indeed, people may be part of multiple groups related to work, leisure, place, etc. that extend across different spatial scales (Massey, 2005). These groups may be conceptualized as communities to the extent to which they exhibit shared understandings of the world anchored in place or in practices. In particular, a feeling of community may be associated with a shared vision of how the world should be, and a set of values that anchor this vision (Silk, 1999). From such visions, collective agency can grow, based around a community having control of shared resources, and granting to individuals involved within it a sense of being able to influence their own and also shared futures (Ewart, 1991). Rather than viewing agency as growing from the self-assertion of monolithic identities, as in traditions of nationalism, such approaches see it as related to the creation of shared identities around common concerns. Such higher level identities bridge across differences, while also preserving them (Muir and Wetherell 2010). As our own research goes on to consider, the experience of community is not only one of more or less shared agency, but also of a shared space in which collective reflection on the ways in which 'things get done' is possible. Consequently, the experience of community is intertwined with biographical experiences through which people make sense of their world. Shared visions and values are interpreted in relation to the individual lifecourse, and vice versa.

## 2.3 Insights from lifecourse studies

As well as the spatial dimension, the *Energy Biographies* project draws upon established temporal perspectives on sense-making (see e.g. Henwood and Shirani, 2012a, 2012b; Henwood, Shirani and Coltart, 2014). Biographical or lifecourse approaches to everyday life explore how understandings of the present are bound up with individual narratives of personal and social history, which reach backwards as well as forwards in time (Chamberlayne et al., 2000). Such approaches are also informed by a recognition that participants' thoughts, actions, emotions, attitudes and beliefs are all dynamic through time (Saldaña, 2003). Interviews based on a biographical perspective enable researchers to explore lifecourse issues with participants that are emergent, i.e. their existence and/or significance unfolds temporally. Thus, as well as bringing past transitions into the present, such interviews invite the study of possible future biographical trajectories. They also foster understanding of how practices, and with them, levels of energy use, may change in tandem with transitional points in the lifecourse, such as having children, moving house, or retirement. In addition to mapping the potential for change present in these transitions – which may come to be experienced as changing 'pressures' – it is possible to investigate how individuals have responded to such pressures (see e.g. Shirani, Henwood and Coltart, 2012). The accumulation of data in qualitative longitudinal research thus arguably provides a better understanding of the individual (Thomson and Holland 2003), offering a more substantial base for understanding a person's life and the changes throughout it than a one-off approach.

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## Biographical approaches allow researchers to explore people's practical and emotional investments in the taken-for-granted activities on which everyday life depends and which shape its textures

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Part of this richer understanding contributed by a biographical focus is what has been called 'complex subjectivity' (Henwood and Parker, 1994), in which individuals' interpretations of the historical and social realities they inhabit are understood as linked to shared repertoires of concepts, images and meanings. The specific significance of these meanings is, in turn, linked to developmental and ongoing emotional tensions experienced by the individual as s/he seeks to maintain some sense of a stable, or at least intelligible, identity in the face of biographical and historical change (Parker, 1997; Wetherell, 2009a, 2009b). In order to open up these dimensions of meaning-making to analytical scrutiny, a biographical approach inspects such things as the interconnections and disconnections people perceive and imagine between their own lives and the lives of others who are of the same and/or different generations. Having identified shared cultural 'imprints' among those who have lived through particular historical epochs, these can then be examined as possible conduits for intergenerational transmission of authoritarian or permissive pedagogic or parenting values and practices, for example. However, when the focus is upon complex subjectivity, biographies are not only studied for the shared cultural meanings they take on, but also for how these meanings are re-worked in situ in ways that can point towards their deeper psycho-social meanings (Finn and Henwood, 2009; Coltart and Henwood, 2012).

While community perspectives situate individuals in their spatial contexts, lifecourse perspectives therefore acknowledge the temporal 'situatedness' of the individual, and point towards the deeper significance of transitions throughout the lifecourse for identity. The content of longitudinal, biographical interviews are narratives of change in which researchers seek to read, as well as the contours of lifestyle changes, the emotional textures of the significance interviewees attribute to these changes. Biographical approaches allow researchers to explore people's practical and emotional investments in the taken-for-granted activities on which everyday life depends and which shape its textures. Practices (such as using central heating) may therefore be seen not just as shared ways of getting things done, but as significant for people in relation both to shared repertoires of meaning (e.g. the cultural importance of a warm and welcoming home) as well as to biographical experiences (e.g. associations between the warm home and childhood).



The three theoretical pillars of the *Energy Biographies* project underline the importance of going beyond the surface of behaviour and professed attitudes to bring into the foreground and render visible background elements of social and social-psychological reality which help to shape individual but also shared perspectives and capabilities. These elements may create path-dependencies that constrain how energy is used, but they may also create opportunities and capacities for rethinking and redesigning how energy is used by individuals and communities. Users of energy are thus conceptualized

- as participants in shared practices over which they have often limited, yet still real influence;
- as members of multiple communities of place and practice for whom shared visions and questions of shared agency can become important in specific ways over time;
- and as subjects of biographies, allowing researchers to trace life changes (some of which set in train different trajectories) and shifts in lifestyle.

By conceptualising users of energy in these ways, and focusing on the biographies of energy users, researchers are able to

- explore the emotional textures of lifecourse transitions and of the changes in practices associated with them, and the ways in which practices are dependent on devices and infrastructures that, while constituting the material supports for social action, often remain in the background.
- trace within people's accounts of their practices the less immediately tangible ways in which practices contribute to identity through the shared 'structures of feeling' (Hoggett and Thompson, 2012) that characterize people's emotional investments in them.

In contrast to dominant understandings of users of energy as individual, more or less rational consumers, *Energy Biographies* began with a rich concept of individuals as relational, complex and engaged interpreters of their world, and as actors seeking to influence their lives within families, peer groups, and communities. Setting up our project in this way meant that we would be able to look in depth at what it means for people to live in a conditioned and contingent world where there are various ways of becoming involved in its material, social and cultural realities and possibilities. Highlighting the idea of involvement in this way should not suggest that we set out to displace the importance placed in the research literatures reviewed above on understanding how the ways in which people use energy are socially-conditioned. However, we do seek to create opportunities for reflection on the everyday conflicts people experience around their energy use, and to open up spaces where there may be potentials for change. In the next section, we describe in more detail the methods employed by the team, guided by the insights we have taken from existing scholarship.

# The Energy Biographies methodology

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While acknowledging the complex backdrop to how energy is used and consumed, the uniqueness of the methodological approach taken by *Energy Biographies* lies in how it emphasises the role of individuals and groups as makers of meaning, and of the contribution made by sense-making to shaping practices. Further, while qualitative research has been conducted on people's experience of different everyday practices which consume energy (such as heating, lighting, using computers and so on), *Energy Biographies* brings together specific longitudinal methods to make tangible, over time, the interconnections that evolve between the multiple areas of everyday life in which energy is consumed, and between how people 'get things done' and what matters to them.

As we saw above, the project views individuals who act in and make sense of the world as doing so in concert with other individuals and groups through time, and as participating in practices and having dealings with technologies which possess emotional as well as instrumental significance. The importance of these relationships and activities derives from the fact that individuals are complex, relational subjects, who experience the world through their bodies, emotions and shared 'structures of feeling' (Hoggett & Thompson, 2012), rather than simply being processors of information (Groenhout, 2004). These subjects are therefore only individuals because they are also connected to the social and natural world through multiple capacities that provide knowledge of this world and how to act within it (Hollway, Venn, Walkerdine, Henriques, & Urwin, 2003).

A relational subject is also one that makes meaning by drawing on shared resources – values, narratives, frames – which are made accessible to it via its social relationships, the practices in which it engages, and the institutions in which it participates. Further, people's perspectives on the world are also products of biography, and of the ways in which they interpret and add to collective histories. As such, subjects are not just relational because they are part of communities distributed in space, but are also implicated in relationships with temporal dimensions (Adam, 1995). The sense-making subject experiences and interprets itself and its world against horizons of past and future (Henwood and Shirani, 2012a&b). Biographical and historical narratives ensure that the past persists in the present, and also presages the future, meaning that the relationships subjects are implicated in are always dynamic and in motion (Chamberlayne, Bornat, & Wengraf, 2000).

With all this in mind, the *Energy Biographies* project adopted an approach to understanding how people consume, and in some cases, produce energy which was interview based, biographical and narrative in its focus, and designed to create a qualitative longitudinal (QL) structure for the research, allowing change and continuity in practices to be mapped over time (Corden & Millar, 2007). Participants were interviewed about the everyday practices in which they engaged and their energy implications, but were also encouraged to explore biographical experiences of changes in energy use. Further, interviewees were drawn from different community contexts, in which links to communities of place but also of practice could be explored, along with how participants made sense of specific energy demand reduction interventions relevant to their case site.

### 3.1 Methods employed

The study involved four case site areas across England and Wales<sup>1</sup> (more details about each case site are available in Appendix 1):

- **Ely and Caerau (hereafter Ely)** – a socially deprived inner-city ward of Cardiff with a community development organisation working on issues related to fuel poverty and energy saving
- **Peterston-Super-Ely (hereafter Peterston)** – an affluent commuter village on the outskirts of Cardiff with an active environmental group
- **Lammas/Tir-y-Gafel ecovillage** – a new low-impact community development involving nine households in Pembrokeshire, West Wales
- **The Royal Free Hospital (RFH)** – a large teaching hospital in North London with a number of carbon reduction and energy-saving targets

An initial phase of scoping, involving interviews and discussion with case site representatives, was undertaken to elicit detailed contextual information for each case. This included general history and social context as well as past, current and planned energy interventions in the area. These interviews also helped to facilitate engagement at the very start of the project with individuals and groups who might have found the outcomes of the research useful,

<sup>1</sup> See Appendix 1 for more information on the case sites, and about how the project team approached and recruited participants from each site (including sub-sample), together with breakdowns of demographic differences.



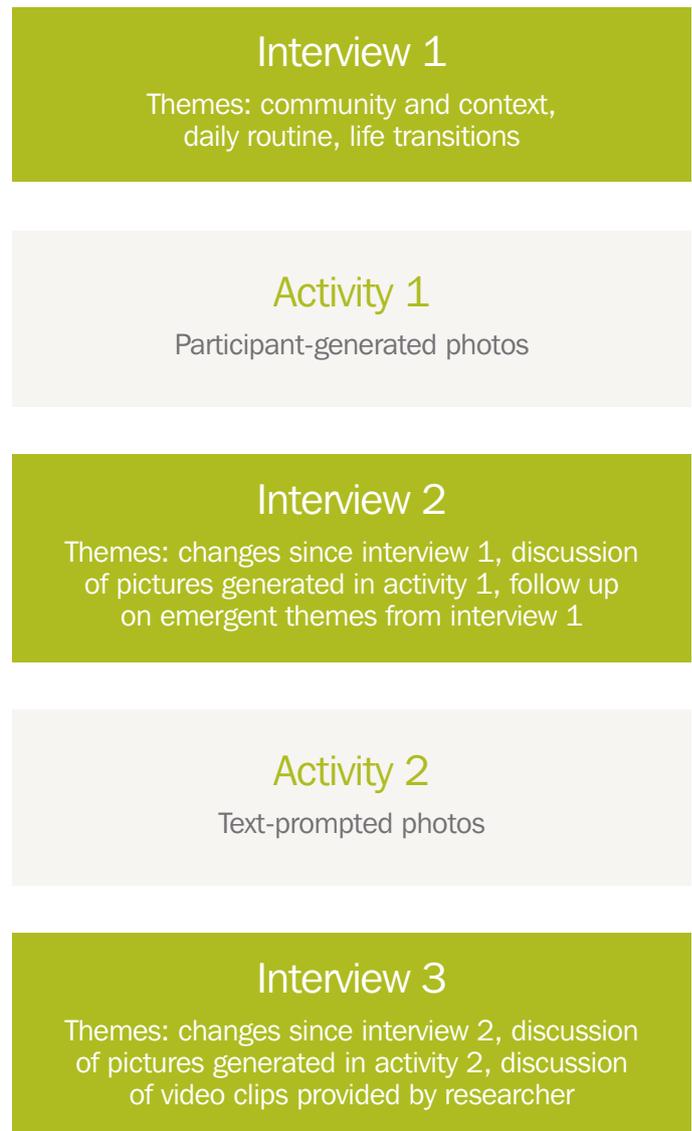
Energy Biographies interviews encouraged participants to revisit key moments of their life histories (e.g. transition to adulthood) and aspects of their everyday life (e.g. established routines)

as well as informing the development of participant sampling frames. Discussions at Lammas/Tir-y-Gafel and RFH were recorded and transcribed but were less formal and not recorded in the cases of Ely or Peterston as at these initial meetings individuals had yet to decide whether to participate. Case site representatives facilitated recruitment by distributing information about the research and pre-interview questionnaires within their communities. An overview of the sample is given in [Table 1 on page 15](#).

Individual interviews were used to elicit people's narratives and stories about their use of energy and energy practices, and how these narratives related to energy demand-related activities within the different communities with which interviewees identified. As an individual's ways of identifying with communities of place and practice is a dynamic phenomenon, it is one that fits well into developing policy research perspectives that are interested in articulating the fragility of people's lives and uncertain futures in a fast changing world (Henwood and Pidgeon, 2012; Muir and Wetherell, 2010). Biographical-narrative interview methods facilitate the study of such emergent dynamics and, as part of this, explore the ways in which people make investments in routine practices that matter to them in their everyday lives (see e.g. Finn and Henwood, 2009). This is one of the main reasons why such small, everyday practices are able to become important "matters of concern" (Latour, 2004). *Energy Biographies* interviews encouraged participants to revisit key moments of their life histories (e.g. transition to adulthood) and aspects of their everyday life (e.g. established routines), in order to prompt awareness of their personal investments in particular ways of using energy. Another central focus were lifecourse transitions that had served to intensify or reduce people's energy use in the past, as well as potential routes for change in the future. The interviews also encouraged participants to discuss their own evaluations of existing energy reduction interventions within the communities of place or practice in which they were involved.

This approach drew on well-established principles and practices within interpretive, qualitative social science (Andrews, Squire, & Tamboukou, 2013; Denzin & Lincoln, 2004; Hammersley and Atkinson, 1983; Henwood & Pidgeon, 1992) to produce a bespoke methodology (Henwood, 2014) for examining *Energy Biographies*. This methodology included several elements, presented in [Figure 1](#).

**Figure 1** Overview of methods used



**Table 1: Overview of Energy Biographies sample**

	Ely		Peterston		Lammas		RFH	
	Phase 1	Phase 2*	Phase 1	Phase 2*	Phase 1	Phase 2*	Phase 1	Phase 2*
Men	8	3	10	2	9	8	7	5
Women	8	2	10	3	9	8	13	5
Under 25	0	0	3	1	0	0	1	1
25-36	3	2	2	1	4	2	11	4
36-45	4	0	3	1	11	11	3	2
46-55	3	2	4	0	3	3	3	2
56-65	4	0	5	2	0	0	2	1
66+	2	1	3	0	0	0	0	0
White British	16	5	20	5	14	12	8	4
Other ethnic group	0	0	0	0	4	4	12	6
Lives alone	3	2	3	2	3	1	3	2
Lives with partner	5	1	5	0	2	2	5	0
Lives with partner and children	3	2	9	2	13	13	5	3
Lives with children	2	0	0	0	0	0	1	1
Lives with parents	0	0	3	1	0	0	1	0
Lives with multiple generations	2	0	0	0	0	0	0	0
Lives with housemates	0	0	0	0	0	0	3	3
Lives with partner and housemates	1	0	0	0	0	0	2	1
Employed/self-employed**	8	3	10	2	18	16	20	10
Unemployed/ Homemaker	2	1	1	1	0	0	0	0
Student	0	0	3	1	0	0	0	0
Retired	6	1	6	1	0	0	0	0
<b>Total participant</b>	<b>16</b>	<b>5</b>	<b>20</b>	<b>5</b>	<b>18</b>	<b>16</b>	<b>20</b>	<b>10</b>

\* By phase 2 some participants had experienced life transitions that resulted in a change in their living/working status

\*\* Although Lammas/Tir-y-Gafel participants often did not draw firm distinctions between home life and work, we include all Lammas/Tir-y-Gafel participants and volunteers in this category as they were all engaged in making a living from the land as a condition of meeting their planning requirements.

This Phase I work involved 74 participants, generating an extensive qualitative data corpus suitable for comparative narrative analysis across the four case sites

### 3.2 Phase I: Initial narrative interviews<sup>2</sup>

The team conducted episodic narrative interviews (Elliott, 2005; Satterfield, 2001, 2007) to elicit personal event narratives (Squire, 2008) and draw out connections between these narratives and how energy is used by participants and those with whom they are connected within their communities (family, friends, co-workers etc.). As noted previously, narrative interviews can encourage talk which extends an interviewee's perspective temporally across the lifecourse but also in space, making connections with others (Henwood, Shirani, & Coltart, 2010; Henwood and Shirani, 2012a), thus reflecting the research objective of exploring experiences of transition and how they sustain or change the practices in which interviewees participated. While interviews were conducted in different starting spaces, such as at home or in the workplace, interviewers sought to elicit stories about a full range of different phases of the everyday, including leisure and work. This Phase I work involved 74 participants, generating an extensive qualitative data corpus suitable for comparative narrative analysis across the four case sites.

#### 3.2.1 Interview 1

Initial interviews were divided into three parts designed to cover a broad range of topics related to the project's aims, which could then be followed up in more specific detail with particular participants in waves 2 and 3.

1. The first section of the interview explored the participant's background, the community in which they now lived, and any energy-related interventions they were aware of in their area.
2. The second section of the interview involved detailed descriptions of everyday energy use (e.g. frequency with which appliances were used). This was followed by several questions on unusual occasions – e.g. interruptions to energy, travel and holidays – and on the similarities and differences participants could see between their own energy use and that of their parents.
3. The final section of the interview focused on significant lifecourse transitions, before prompting about anticipated futures (for themselves and future generations) through direct questions.

These interviews lasted from 50 minutes to 3 and ½ hours (1 ½ hours being about average). A small number of people did the interviews in couples and there was one family group. Second and third interviews were both done with individuals.

After interview 1, a sub-set of participants were selected to take part in the longitudinal element of the project (see Appendix 1: Sample/recruitment details). Using a qualitative longitudinal approach was intended to allow us to create more complex and detailed understandings of how and why individual *Energy Biographies* develop as they do, as well as of the unintended and intended consequences of energy demand reduction interventions.

<sup>2</sup> We describe in this section the way interviews and activities were undertaken in three of our case sites. Because of delays in getting ethical approval for RFH and wanting all participants to undertake the text-prompted photo task at the same time, RFH participants followed a different temporal order – interview 1, activity 2, interview 3, activity 1, interview 2. This seemed to have an impact on which photograph task participants preferred (as they were asked for their comments on the task in each interview).



The use of camera-equipped smartphones offered another means for our participants to engage with their energy practices

### 3.3 Phase II: Extended Biographies and Multimodal Methods

Adopting qualitative longitudinal (QL) methods enabled us to study *Energy Biographies* in more extended ways as they unfold and change dynamically through time (Henwood, Neale and Holland, 2012). Neale and Flowerdew point out how QL methods are not concerned with the precise measurement of discrete variables in order to establish causes and effects within a chronological sequence, as in quantitative longitudinal research. Instead, they focus on how people negotiate the ‘time and texture’ of their everyday relationships with others, and rely on the interpretive resources provided by ‘sensibilities and moral cultures’ (2003, p. 192). Another notable feature of QL study of the dynamic unfolding of identities and relationships is how it can examine the ways in which people make sense of the world in relation to wider socio-cultural transformations of values, meanings, representations and practices (Henwood and Procter, 2002). This approach can therefore also be used as a means of researching wider social changes (McLeod and Thomson, 2009). Qualitative longitudinal studies that involve several occasions of data collection provide a unique opportunity to consider change and continuity over time (Saldaña, 2003). Accordingly, the ‘long-view’ offered by QL research<sup>3</sup> provides the possibility of developing more complex and realistic understandings of how and why individuals and communities live as they do, as well as the (un)intended consequences of interventions and policies upon these communities and individuals (Thomson, 2007).

From our Phase I participants, we selected a subset of interviewees from each case site (n=36 in total) to engage in QL research incorporating repeat interviews after approximately 6 and then 12 months. This was to provide a rich resource for understanding the complexities that can be revealed by analysing cumulative individual case histories as evidence of processes that unfold over time (see e.g. Henderson et al, 2012). This enables researchers to focus, within their analysis of personal narratives on how the past is used to construct the present, the ways in which the past comes to be reworked in the present, and how imagined futures help to reconfigure biographical experiences (Coltart and Henwood, 2012; Henwood and Coltart, 2012). To achieve greater purchase on how individuals participate in different practices over time, and to facilitate discussion with interviewees of how they use energy by making practices more visible and tangible, we employed visual participatory methods in the periods between interviews. Our lives are multi-sensory, and the meaning of social life can therefore be expressed through more than one modality (see e.g. Henwood, Shirani and Finn, 2011). The use of camera-equipped smartphones offered another means for our participants to engage with their energy practices and for us to capture the multimodality of interactions (Mountian et al., 2012).

#### 3.3.1 Activity 1

Between interviews 1 and 2 participants were asked to photograph things they felt were relevant to energy use, falling under four main themes: home and garden; out and about (including work); having fun; and travel. We chose not to have a separate category for paid work as a number of our participants were not in employment. The themes were introduced to sustain participants’ interest and engagement in the task, which took place over several months, rather than being completely free-form. Each participant was given an information sheet about the task, and a camera phone plus instructions for using it, unless s/he preferred to use his/her own phone. The information sheet detailed all four themes and set out the two-week calendar periods they related to, which differed across case sites due to the different interview dates in each case. At the beginning of each theme period, we sent a text message to participants reminding them about the task.

<sup>3</sup> For pioneering work by Professor Janet Holland et al at South Bank University, see <http://www.researchcatalogue.esrc.ac.uk/grants/RES-346-25-3014/outputs/read/627c0886-0d47-47c1-9e4c-004a802e17d6> or <http://www.restore.ac.uk/inventingadulthoods/qualitative.shtml>

Between interviews 1 and 2 participants were asked to photograph things they felt were relevant to energy use falling under four main themes: home and garden; out and about (including work); having fun; and travel

Individual participants provided images ranging from 5 to over 400 in number, with around 40 being the mean. These were then discussed with participants during the second interview (see below). We had initially opted not to give participants guidance on how many photographs to take because we did not want to give the impression there was a correct amount. However, after a few participants submitted large numbers of photographs (a full discussion of which was difficult within the interview time) we did suggest around 30-40 images as a guideline for our last case site (RFH).

### 3.3.2 Interview 2

As with the first, the second interview (approx. 6 months after interview 1) was divided into three parts:

1. The first section involved catching up with participants and finding out about any changes in their lives since the previous interview. Most people had experienced some change, even if they initially regarded it as relatively minor (e.g. having a new kitchen fitted).
2. The second, and main, part of the interview focused on images participants had taken in activity 2. These had not been seen by the researchers beforehand so were loaded onto a laptop during the interview and the participant was asked to talk through what they had taken. This provided more freedom to interviewees to raise issues they themselves felt were important, rather than this being determined by the researcher.
3. In the final part of the interview, participants were asked for further reflections on themes that had emerged in interview 1, such as frugality, guilt and waste in relation to energy.

### 3.3.3 Activity 2

The second task, which took place between interviews 2 and 3, involved participants taking pictures in response to a text message (SMS) prompt. Participants across all case sites were sent text messages on the same days and times (between August and November 2012) asking them to take a picture of what they were doing at that moment and to return this to the research team as soon as possible, either using their phone to do this via multimedia message (MMS), or via email.

Participants were given the dates, but not the times, when they would be contacted in advance, as not everyone carried their phones with them all the time. Some participants (particularly those in the hospital) could not always have access to their phones but the current time was included in the text message, and they were asked to take a picture that represented what they were doing at that time.

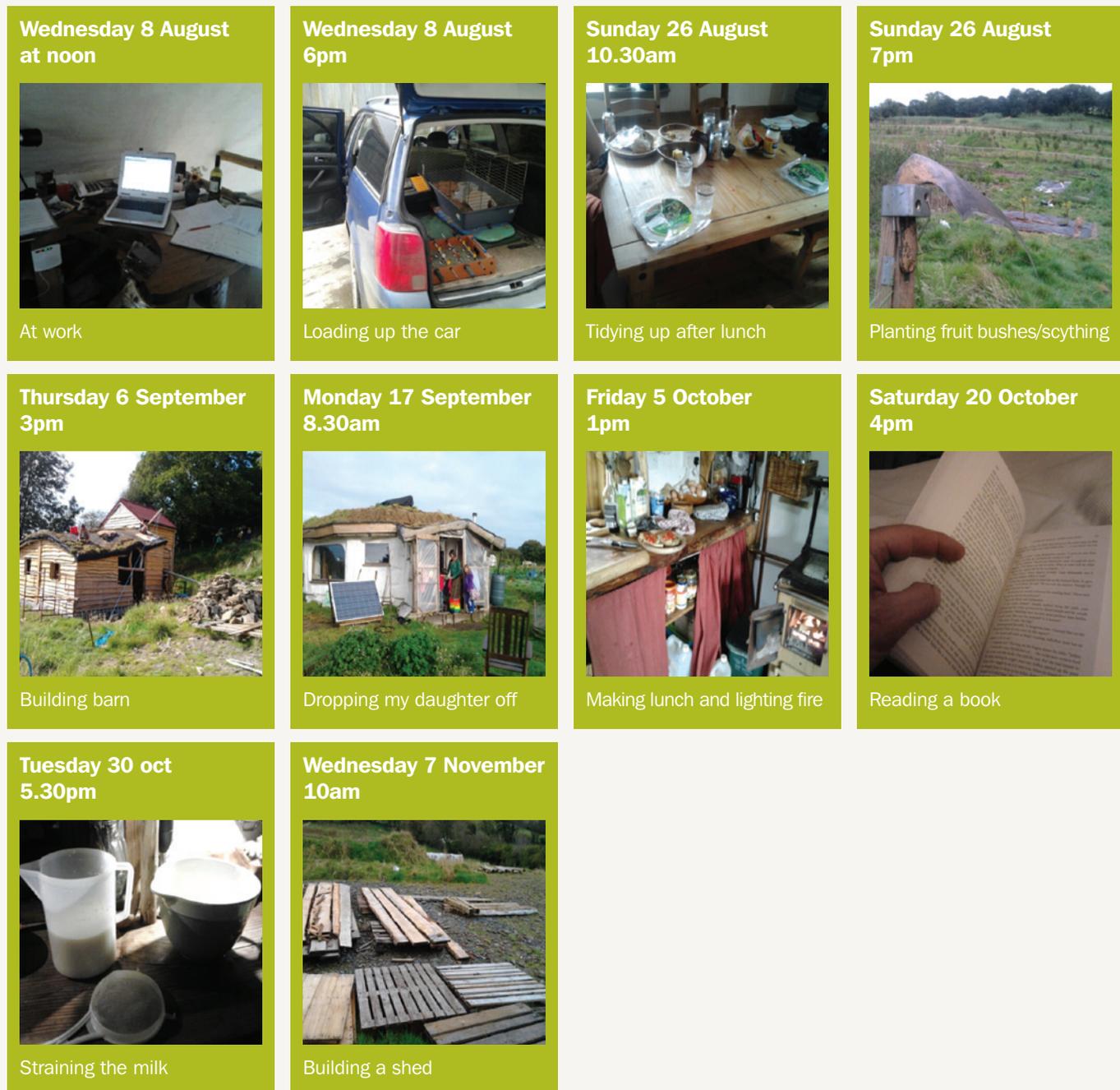
There were some technical issues with this task. Our messages were not always received by participants, and some participants were not always able to return images to us because of technical difficulties, an eventuality of which the research team was not always aware until conducting third interviews. On other occasions participants forgot to do the task despite being prompted. In total, we received 274 of a possible 360 images. Response rates were better from Lammas/Tir-y-Gafel and RFH than from Ely and Peterston. There did not seem to be a difference between response rates based on age, despite some perceptions that younger people would be more familiar with using SMS/MMS technology, although some respondents commented on it being an unfamiliar activity and getting children to help.

**274** In activity 2 we received 274 of a possible 360 images

Participant photos were kept in folders for each date to allow a quick visual comparison across the case sites. If participants included a caption, these were recorded in a spreadsheet. Once all 10 images had been received, a photo narrative was created for each participant with the images in date order, including captions where we had them (see Figure 2).

In the final part of interview 2, participants were asked for further reflections on themes that had emerged in interview 1, such as frugality, guilt and waste in relation to energy

Figure 2 Example of photonarrative from Activity 2





The final section of interview 3 used video clips to prompt discussion of wider social futures

### 3.3.4 Interview 3

Again, the final interview was divided into three parts, although the main themes related to expectations regarding the future of energy use, contextualised both in relation to individuals' own lives and to shared social visions of the future:

1. The first section involved catching up with participants and finding out about any changes in their lives since the previous interview. This also included questions on site-specific changes (e.g. the release of a documentary that had been made about Lamma/Tir-y-Gafel).
2. Section 2 involved talking through the photo narratives so participants could explain the pictures and we could ask for captions where these had not previously been provided. Participants were then asked how they felt this represented their daily lives, or if they thought anything was missing. They were then asked to reflect on whether the images might have been different if they had been asked to do the task one year earlier, then how they might differ one year and finally 15 years into the future.
3. The final (and most time-consuming) section of the interview used video clips to prompt discussion of wider social futures. Participants were initially shown clips from a film by Disney about the Monsanto-sponsored House of the Future at Disneyland (1950s). They were then asked what they did/not like about it, what it said about society at the time, and what they would expect to be different in a contemporary imagining of a future home. They then watched clips from the Channel4 series *Home of the Future* (2012) and were asked about this vision of the future, what they did/not like etc. They were also asked to think about how some of the technologies and practices represented in the second film might affect other areas of life e.g. travel, work.

In this interview, videos were introduced not only in order to sustain participant engagement, but also to encourage reflections on wider social change, connecting transitions within individual biographies to broader patterns of change (for more discussion of the rationale for this approach, see Shirani et al., 2015).

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# Key findings

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## Our interview data from the first round of interviews presents a variety of stories of change told by participants

### 4.4 Thinking about everyday life: exposing incremental transitions and their effects

In this section, we focus on the ways in which people talked about biographical transitions in describing how their energy use has changed over time. As noted above in section 3, one of the questions we wanted to explore concerned the extent to which lifecourse transitions might offer opportunities or openings for encouraging changes in everyday life that promote the reduction of energy consumption. We examine below how our interviews make tangible incremental, gradual aspects of transitions that are manifested within the texture of everyday life, which may hitherto have gone largely unnoticed by participants. We examine such gradual transitions at two levels – the personal and interpersonal level, and then that of community-wide transitions, examining here specific energy demand reduction initiatives.

#### 4.4.1 Incremental transitions in personal life

Previous work by the team before the *Energy Biographies* project has examined the relevance of personal lifecourse transitions to shifts in values (Shirani et al., 2013). Employing QL methodology in *Energy Biographies* has enabled the team to build on these and other insights from earlier work in exploring how both planned and unplanned transitions (Shirani & Henwood, 2011) reshape the ways in which people use energy and how they make sense of these activities. The incremental nature of many of these changes, we suggest, raises questions about any strong emphasis on understanding lifecourse transitions through the lens of ‘critical’ or ‘fateful’ moments (Giddens, 1991; Holland & Thomson, 2009).

Giddens (1991: 113) describes fateful moments as times when an individual stands at a crossroads in their lifecourse, or when a person learns information with fateful consequences. This concept implies, however, a determinate, identifiable passage in time, perhaps centring on an event that punctuates and divides the lifecourse into ‘before’ and ‘after’. It also implies that any change will be recognized by those involved in it to be identifiable and punctuating in this sense, and thus as a critical or highly significant turning point (Hards, 2011, 2012). If such assumptions are not always the case, then there are significant implications for the methodologies we use to study transitions. Transitions may not

always be recounted in response to direct questions about energy use and lifecourse transitions. Instead, they may become evident through wider, detailed questioning and careful development of interview discussion.

Our interview data from the first round of interviews presents a variety of stories of change told by participants (Shirani et al., 2015). It demonstrates that significant change to practices may be gradual/accumulated, and may be regarded – by participants and/or the researcher – as relatively mundane, and as previously unreflected-upon. Upon reflection, many participants described close relationships, with family or friends, as having had significant effects, over time, on how they used energy.

“ But yeah part of the reason why I double check I didn’t leave the light on, it is on but I do tend, that’s what I’ve taken home with me more than the first job I think, he’s [Ben’s friend] just really drummed into me “just look just turn off, it doesn’t take that much to turn off a light”, I hardly ever take plastic bags from the supermarket if I can just carry them or if I can put them in a bag then I do that just because he did and I think it’s a good way to lead your life by. I think if everybody starts doing it then it will sort of slowly start to change or start to prevent the inevitable demise of the world! [Laughs] (Ben, RFH)

Through such established relationships, which represent sources of moral influence but also trusted sources of information, not only piecemeal shifts in values can happen. Concrete transformations in practices may also occur, as in this account of changes made in how clothes are washed.

“ I’m quite pleased with my new washing machine, its good ... because my sister got the washing machine in Tenerife I knew about the cold water and because when I first asked, ‘cold water? How can you wash with cold water?’ And you know when she took it out after half an hour it was clean and she said ‘when you look at it Caroline we don’t dirty clothes like that’. And well there you are it just proved the other day my son had his, brought home his football kit so that’s Saturday and his socks were filthy and yet I put it quickly in the half hour cold wash and it was fine. And I thought hmm. So it just goes to prove we don’t need all the two hours programmes (Caroline, Ely)

Living in shared houses, perhaps as a student, or before moving into a house of one’s own, was also seen as a common source of varied views on how to use energy, and therefore as a source of incremental change.



“ [...] the people, my flatmates, the last house that I lived in they were all quite kind of, the guy had a little, he was trying to get a forest garden going in an allotment and the other girl was vegan, you know they were all quite kind of conscious of it all. Like little things that would happen in the house I would be like ok I didn't know that. Like even just like using the cooker, in the way that how much gas I would use if I blast it up and you know, like something like the flames are going around the pan and my flatmate would go 'oh you don't have to have it that high, you are wasting gas' and whatever and like I would never have thought about things like that, or just little conversations and the way that they would sort of chip things into conversation I wouldn't have thought about it. But it has been a gradual, gradual process (Jada, Lammas)

Here, myriad conversations and others' observations on an individual's own habituated ways of doing things shape, over time, a particular trajectory along which change occurs. It is important to recognise that the kinds of alterations evidenced in these last few extracts are a mixture of unplanned and intentional change, driven by serendipitous encounters with other ways of getting things done and the meanings others associate with practices.

These extracts illustrate that change in practices is by no means linear, and neither is it driven by punctual decisions that produce clear intentions and firm plans. Instead, change in values but also in practices appears often non-linear, and unintentional. What these extracts make visible in lifecourses is how, while agency is relevant to understanding change, actions may often be decoupled from intentions, as well as not producing change in straightforward, clearly measurable ways.

Further illustrating how lifecourse changes can develop incremental path dependence, this extract shows how even residents at Lammas/Tir-y-Gafel saw the process of deliberate change they had undergone in moving there as a gradual process which had built momentum over time:

“ No I never thought that we would actually do it, actually move here. There was this thing called Doing Lammas, like are we going to Do it? Are we going to do Lammas? We did our homework and it was a bit like being as at a fairground on a really scary ride you know, at the beginning of the process you thought 'this seems really interesting I think I'll go and have a look at this' and then the next thing you're in the queue and then at some point it's like 'well we need £2000 off you to secure something and as a sign

of your commitment' and it's like 'oh shit are we going to do that? Are we going to give £2000?' that's a big amount of money, that's a big commitment and then we'd be like writing the cheque and we'd be putting it in the envelope and it's like 'are we going to post it?' We've posted it, we're like up the ladder, the ride's at the top and we're getting closer and closer and then you know that moment when the person before you goes down and you're just like 'oh my god, reality!' [Laughs] (Laura, Lammas)

Making incremental transitions visible and tangible for participants through QL methods underlines the important contribution interpersonal relationships can make to change. Concepts from lifecourse theory, such as linked lives (Shirani et al., in preparation) alert us to how transitions in one person's life often have implications for linked others (e.g. family members requiring care, children becoming more independent and less reliant on parents for transport). In such contexts, one transition may have an additional cumulative impact on others. For some residents at Lammas/Tir-y-Gafel, having children had provided a fundamental motivation for moving to the ecovillage (Shirani et al., forthcoming). While decisions about ecovillage living were complex and multifaceted, it appears that for some the move would not have been undertaken if they hadn't previously made the transition to parenthood. Rather than focusing on the individual as a carrier of values or chooser of behaviours, our research underlines the importance of such relationships for understanding both planned and unplanned change.

It is clearly more difficult to design a study to explore unplanned events, particularly when they occur relatively suddenly. A strength of using the QL approach was that we serendipitously captured a number of unanticipated events as they happened to occur during the course of the project and we were then able to explore their implications in the short-term. These unanticipated events may have significant implications for energy use; therefore we argue that it is important for research to move beyond focusing solely on planned transitions. In addition, a biographical, lifecourse-based approach allows researchers to examine broader changes within infrastructures and practices that sit in the background of everyday life, and which may affect it in subtle or not-so-subtle ways, but with effects that grow in ways which remain incremental and difficult to notice. Through biographically-focused interviews, it is therefore possible to trace the effects of wider social transformations on individual lives.

## Changes within a number of households in the Cardiff communities we studied were made possible by the feed-in tariffs created by the UK Government to encourage decentralised renewable energy by providing financial returns on investment

For example, the impact of wider social changes (including infrastructure investments and the economic climate), of policy (e.g. changes made to feed-in tariffs or FITs by the UK Government in 2012) and of broader expectations about social life (e.g. of workers being geographically mobile) were commented on by interviewees, exposing to view otherwise difficult-to-register contours of social change (Butler et al. 2014). Changes within a number of households in the Cardiff communities we studied were made possible, for example, by the feed-in tariffs created by the UK Government to encourage decentralised renewable energy by providing financial returns on investment.

“**Interviewer:** Okay and you talked about the village being environmentally quite conscious. Do you think the environment was a big reason behind solar panels or do you think it was more financial in terms of electricity bills going up or a sort of an amalgamation of all those?”

**Mary (Peterston):** [...] it was an openness to looking to be more environmentally friendly plus the feed-in tariff at a time when interest rates were low, so people were able to say, ‘I’ve got some money, I’ve got decent savings and it’s not earning very much and, actually, I could be doing some environmental good and getting some benefit from it.’”

In her interview, Mary makes links between economic trends, policy interventions and expressed commitments to socio-environmental sustainability – both her own and commitments on the part of others living in Peterston. These links, she suggests, generate an opening for a challenge to existing systems of energy production and consumption.

Further, perceptions of the unsustainability of ongoing and potential future transitions in wider society in both the short and longer-term future were cited by interviewees at Lammas/Tir-y-Gafel as reasons which contributed, among other cumulative motivations, to their decisions to live in a low-impact way in the present (Shirani et al., forthcoming).

“**I think because we have quite a strong feeling that the world is a very unstable place at the moment, I think we’re not really planning on particular courses of action; we are doing a lot of planning for the future but it’s mostly about building resilience within our family and community units more than it is about any particular outcome. So, yes, tools; good facilities; workshop; good productive food growing systems; a robust local community; good stable family; good mental health; good relations with children; all those sorts of things seem to be really important and they are what we**

**are working towards but exactly what they are going to be applied to I don’t think we’d really presume to know ... I don’t think we’d even really presuppose that we could even go to the shops and buy food next year really. I think we’re quite, not that that’s a threat or much of a burden but I think we feel it as being quite unstable and maybe more than other people do and maybe even more than it really is. We’re quite conservative, I think there’s a kind of conservatism of not relying upon infrastructure of the wider society.’ (Darren, Lammas)**

Such perspectives testify to feelings that some wider social transitions, like the move to low impact living, maintain continuity in identities and self-conceptions, in the ways they allow individuals, families and groups to build and maintain commitments to ideals that are felt to be central to a ‘good life’ and the ways in which they are expressed in a quietly accumulated set of habits and practices.<sup>4</sup> Some interviewees saw broader social transitions as evidence of significant cultural shifts.

“**We notice as old lagging environmentalists a generational change in the attitude to recycling for example and energy conservation and a whole host of environmental issues and I’ve probably said it to you before you know we move from being crackers you know crackpot kind of ex-hippies to being mainstream without changing our stance whatsoever, it’s merely the world changed around us.’ (Jeremy, Peterston)**

In such cases, social change was interpreted as bringing widely-shared practices and social values into alignment with long-standing commitments and attachments interviewees saw as central to their own identities as environmentally-concerned citizens (Shirani et al., 2014).

### 4.4.2 Community-level transitions

In addition to gradual changes manifested within ‘linked lives’, and the relationships between such changes and wider social transformations, the *Energy Biographies* approach wanted to understand how belonging to communities at different scales affects individual and collective efforts to reduce energy use. As noted in section 2.2 above, such communities may be communities of place, but may also form around participation in particular practices (Wenger, 2000), and may thus be spatially spread out, with interactions mediated by online communication or by other means. People may thus be part of multiple communities that extend across different spatial scales (Massey, 2005). By studying communities that were located in specific places (such as Ely and Peterston), along with the workplace community of

<sup>4</sup> Here, the kinds of conflict between commitments to distinct identities or ideas of the good life that we explore below in section 4.6 are absent.

## Our case site analysis indicates that the capacity to imagine and articulate a shared future that reflects values also shared to some degree can strongly support social action around energy within communities – whether in motivating change or in responding to it

RFH and the place-based but also practice-based community of Lammas/Tir-y-Gafel, the project was able to render visible distinct aspects of community which shape how individual communities deal with the opportunities and challenges presented to them as policy interest in, and broader awareness of, the imperative of energy demand reduction grows. These were shared ways of imagining a future for the community, and how social action was developed ‘on the ground’ in relation to energy. These elements of community life were strongly interrelated, with each reciprocally influencing the other (Parkhill et al., 2015).

During the course of our study, some communities experienced a significant number of changes (e.g. Lammas), whilst for others, change was more muted (e.g. Peterston).

- **Ely** – Between interviews 1 and 2 the planned Futurespace solar PV scheme became unviable due to FIT changes. This resulted in changes to the community group as they developed work in a new direction and had to re-establish themselves in the community. The future changes they had planned for the community that would have been funded via the FIT revenue also became impossible.
- **Peterston** – The community was also affected by FIT changes, although not as substantially, given that a solar panel co-purchasing scheme there was based around individual investment. Activity in the local community and sustainability-focused organization Cyswllt Peterston Connect (CPC) increased (e.g. establishing a community orchard).
- **Lammas/Tir-y-Gafel** – Between each interview, a large number of household-level and community-level transitions occurred. Negotiations with Pembrokeshire County Council over building regulations for individual houses took place, and there was some dispute about whether these discussions should be dealt with at community level or not. A communal building (the Hub) was constructed, along with a micro-hydroelectric system and distribution infrastructure. A film-maker made a short film about the community, which was then released, creating more publicity and exposure.
- **RFH** – In April 2012 RFH became part of an NHS trust. This was expected to have benefits in terms of sustainability, because of the longer-term planning horizon it would bring. A district heating scheme involving the Camden local authority using the Hospital’s energy centre began operating. Managerial changes were made in the estates department, affecting staff with responsibility for sustainability and energy initiatives.

Some of these changes were initiated within the communities. Others originated elsewhere, creating a rather different kind of focus for community activity, and how to make sense of it, in response to the changing energy landscape. Our case site analysis indicates that the capacity to imagine and articulate a shared future that reflects values also shared to some degree can strongly support social action around energy within communities – whether in motivating change or in responding to it. Such imagined futures were not all-encompassing or supported by absolute consensus. Nor did they need to be embodied explicitly in a vision statement or manifesto. However, some level of a shared perspective on what matters and how to achieve aspirations did allow for principles to be developed and some level of strategically-planned action to be undertaken as part of the processes through which groups within communities organized themselves. These developments provided for community members clear reasons why certain aims or actions were desirable, and others not. In Ely, for example, fuel poverty gave the Futurespace initiative a clear vision of a problem and thus a way of talking about the value of PV installation:

“ [...] when I first joined I probably thought that that was a good idea that I would help people in fuel poverty and then the environment would be secondary’ (Kelly, Ely).

This issue was seen as potentially uniting the majority of the geographical community of Ely, even beyond the group itself:

“ a lot of people in Ely are on benefits and... they’ve got young children, they struggle and people are on gas cards and they are so expensive to run’ (Sally, Ely).

Residents at Lammas/Tir-y-Gafel talked of a shared vision, which was nevertheless not that of an intentional community in the strong sense of one organised around a specific set of beliefs shared by all inhabitants. Interviewees’ narratives included a range of reasons for choosing low-impact living, which created challenges for developing a community ethos:

“ All communities can be really hard and there’s a lot of disparate and intelligent people here...who actually, when you look closely, are here for lots of different reasons that sort of float around “sustainable, low-impact, green” but that is not a combining ethos (Roy, Lammas/Tir-y-Gafel)

Indeed, the uniting vision here may be said to be a commitment to use and combine a variety of practices to experiment with what low-impact living might mean in practice. While no ‘end-state’ was clearly envisioned, interviewees imagined a future evolving out of a range of collective activities through which the community would learn about what ‘low-impact’ living could mean in practice, when encouraged by a supportive policy environment (see Appendix, section 6.3).

While interviews from two very different sites (Ely and Lammas) point to the importance of shared ways of imagining the future in galvanizing and sustaining social action, other factors emerged as relevant too. Interviewees at RFH indicated that they felt the potential for driving change within the workplace was influenced by the existence of communities within departments.

“It’s more like a little community to ourselves. I mean saying that I know other people in other departments you know, people you know that I would deal with but it is more them and us... [it’s] still kind of like your own little village (Russell, RFH).

Mobility of staff within the hospital also created possibilities for change. Some, having worked in a number of different departments themselves, saw this experience as an important resource that had increased the flow of knowledge and engagement throughout other staff networks in the workplace.

“Even going from my office from one ward around to the next ward to the stationery cupboard, I can’t go and get a block of paper and it will take me three minutes. I’d be gone best part of half-an-hour because I will bump into somebody, if not two or three people [...] (Scott, RFH).

In contrast, top-down initiatives within the hospital were often represented as unanchored, as targeting individuals merely as individuals. The information provided by management via display screens and emails to individuals represents a convenient and efficient way of reaching a large number of people, but targets these individuals outside the attachments and relationships that they form at work through communities of practice. This means that the forms of agency available to people are limited, and not reinforced by opportunities to interpret efforts as shared. Using these existing relationships to develop interventions by recruiting ‘champions’ within work communities might therefore offer more potential for driving change and sustaining its momentum.

Over time, our other case sites provided valuable insights into the connections between the ability of communities to take social action and the ability to adapt to unforeseen circumstances in trying to achieve valued outcomes. Various examples emerged of unforeseen external stresses that communities had to deal with. In the case of Ely, Futurespace met with difficulties caused by FIT changes which it could not resolve. The reliance of the organization on a narrow network of relationships centred on its key organisers in order to organize activities meant that trust in the organization and other initiatives associated with it was more likely to be undermined by such adverse events. At the same time, there was also a great deal of sympathy in the community for the organisers.

“But I know they were devastated you know because they did such a lot of work and it’s a bit heart-breaking really for them, I felt really sorry for them [...] (Caroline, Ely).

Nonetheless, such feelings perhaps underlined the extent to which interviewees and people they knew who were not involved in the group saw Futurespace as something *within* the community but not necessarily as reaching deeply and broadly into it. At Lammas/Tir-y-Gafel, the need to comply with planning regulations imposed additional strains on which many interviewees there commented. The need to build houses, grow food, provide energy and so on coexisted with the requirement to ensure that dwellings and infrastructure were constructed within building regulations and other planning rules.

“Any one of those things is, would be a full time undertaking within itself. We’ve decided to do them all at once and we have agreed to meet...these kind of abstract targets within five years as well, so it blows my mind (Michael, Lammas/Tir-y-Gafel).

Uncertainty about which regulations might apply altered people’s sense of how able they might be to adapt, although, over time, Lammas residents developed working relationships with officials. Having a sense of shared agency in relation to how energy is consumed therefore appears to be related to how far people felt that external events were determined by drivers (such as the policy environment) over which they had no power (cf. Rae and Bradley 2012).

In both cases here, analysis of data showed a strong relationship emerging from within interviewees’ accounts between, on the one hand, the capacity of groups to adapt to external pressures, and on the other, the instability/rigidity of relevant planning or other governance frameworks at a wider, i.e. regional or national level. Enforced change at national level can threaten local capabilities through the speed with which it is introduced, as in Ely. On the other hand, rigidity can also be a barrier to change as at Lammas/Tir-y-Gafel. It is possible to generate community adaptive capacity through social relationships within communities to help deal with issues such as this, but this is also dependent on relationships that extend beyond them. At Lammas/Tir-y-Gafel, for example, shared expertise, a degree of shared vision and mutual aid went a long way towards helping households deal with competing demands. In Ely, on the other hand, the relative thinness of the networks supporting Futurespace meant that sudden changes in the policy environment undermined the vision the organization had articulated.

If narrative interviews can help make visible the different dynamics at work within community energy initiatives of various kinds, they can also do this for the energy infrastructures on which everyday life relies

#### 4.4.3 Summary

- We have highlighted, as in our previously published work, the importance of our methodological approach, including biographical, QL and multimodal elements, for elucidating lifecourse transitions and their impact on everyday energy use.
- Whilst the study of lifecourse transitions is increasingly popular in energy research, our project makes an original contribution through its focus on the gradual, cumulative character of more mundane transitions, rather than focusing solely on planned transitions that involve a role/status change.
- As well as considering both personal lifecourse transitions and wider social changes, our analysis sought to promote understanding of how the two are interlinked.
- Although the data collection at each site occurred over a one year period and was therefore relatively intensive, more extensive timescales are also covered in the interview narratives by asking about longer-term pasts and futures.
- Our methodological approach covers a wide temporal span so we can consider not only previously made transitions but also those anticipated in the future.
- A key finding is that there is a need for policy learning regarding the ways that policy is mobilised and implemented in place, and the unintended consequences which may arise because of how the temporal rhythms of policy and community action diverge. Of equal importance is the need for community initiatives around energy demand reduction to build shared agency into these initiatives. Understanding these together may represent an important part of the path toward realising ambitions to achieve wider policy aims (i.e. low carbon transitions) through community-led initiatives.

### 4.5 Making infrastructure visible

If narrative interviews can help make visible the different dynamics at work within community energy initiatives of various kinds, they can also do this for the energy infrastructures on which everyday life relies. We wanted to investigate whether exploring past, ongoing and potential future biographical transitions could render visible, and invite reflection upon, the ‘materials’ of practice (Shove et al., 2012), i.e. the devices and background infrastructure upon which everyday practices depend, and also upon how they constrain and/or enable different ways of reducing energy use. For example, people may habitually leave computers to go to sleep rather than

shutting them down. But in addition, wireless routers (part of the background infrastructure) may also be left on. The importance of specific appliances in helping to reshape how energy is used in the home or at work across society has been the subject of significant interest in recent years, as in the case of the symbiotic relationship between microwave ovens, freezers and how people cook (Shove & Southerton, 2000). It was hoped therefore that *Energy Biographies* might make more visible – and hence researchable – the unacknowledged relationships of dependence on largely invisible infrastructures that are part of the complex relationship between how energy is used and the socio-technical systems through which it is produced and distributed (Strengers, 2011).

Our mixed multimodal and narrative approach undoubtedly led some respondents to reflect further on the infrastructures on which their daily lives rely, with the photography tasks sometimes being particularly fruitful in this regard.

“ We’re surrounded by beautiful scenery, really is beautiful scenery until you look out of one window and there’s a huge, big electric pylon there (Christine, Ely)

Figure 3 Christine’s pylon



For many interviewees, their dependence on infrastructure in the home in particular is often visible or tangible to them, and may be a source of agitation where they are conscious of what they consider to be ‘excessive’ energy use, particularly where money is tight and other priorities are pressing

“ I use the microwave every day, I’m a bit of a microwave-aholic but I use it to cook properly I don’t use it just for warming things up. The microwave when I bought it was really important to me to get one that did conventional oven cooking and grilling and microwaving and the combination of all the three. I wanted a certain size, I wanted it to be in a certain shape with buttons in a certain place so the microwave is something that’s really important to my kitchen so that’s why I took a picture of that ... my previous microwave blew up and I couldn’t manage one day without it, I had to go out immediately and buy another one. Now that’s ridiculous and I know it was but I had to have it so I went straight to the shop and I had to buy one straight away but I went to several shops and it became a bit of a nightmare because I knew exactly what I wanted and so I was only hours without it. (Jack, Ely)

Figure 4 Jack’s microwave



At the same time, however, an important finding was that many people drew on publicly-available concepts of energy efficiency and demand reduction to talk about their relationship with energy. In other words, for many interviewees, their dependence on infrastructure in the home in particular is often visible or tangible to them, and may be a source of agitation where they are conscious of what they consider to be ‘excessive’ energy use, particularly where money is tight and other priorities are pressing. Awareness of using too much energy can motivate action to change things, making possible forms of agency which can be the source of a sense of achievement.

“ I do yeah but it’s when other people don’t do it in the house and then I feel guilty. I like to see the bills reducing, I like to have some credit for them to pay me back per month because obviously they set it at a certain rate based on your property and everything but I like building up the money in the credit fund for them to have to put it back in my account. One year I had £150 which paid for Christmas; these are the things I like to challenge myself to get the money coming back into my account. (Vicky, Ely)

Most often, however, their influence over how energy is used at home and in most work environments was represented by interviewees in terms of only being able to decide what switches to turn off and when. But even this level of control may sometimes be obstructed by some increasingly common devices, which may create some resentment as a result:

“ [...] before we had Sky, we only had Sky recently so before we had Sky we had a remote control to turn off all the electricity altogether at the end of the day and now we’ve got to keep it on standby because of the Sky. (Christine, Ely)

Distinct differences between experiences of the tangibility of dependence were, perhaps unsurprisingly, evident across case sites. Shove and Southerton (2000) draw attention to the complex interconnections between different ways of using energy, in particular the ways in which freezers and microwaves make new ways of storing and preparing food possible that are mutually reinforcing, and which then have ripple effects on domestic life more generally, and in particular on how time is managed. Such complex relationships of interdependence between different practices, and the effects of path dependence they can create, are less tangible in general, and this was generally confirmed by interview data from our sites. Nonetheless, this was not always the case. Biographical reflections led, in some instances, to narrative reconstructions of just these kinds of complex interdependence, as here in relation to freezing food.

“ I think they’re necessary but I think we’re all a bit obsessed, like I think when people have two freezers like my mother-in-law has a chest freezer and she doesn’t know what half the stuff in there is and I was talking about this with a friend and they said they cleared out their grandmother’s freezer once with her and there were things that had been in there for like eight years that she’s like made and dated and you know like dated when she made it and cos it was at the bottom of this freezer you know. And so I think, I think it also results in a way of wasting more food because you go oh I’ll just shove it in the freezer but actually you never end



up using it or you end up chucking it out because it's been in there too long or whatever so. **(Lucy, Peterston)**

The biographical focus of our interviews here brings to the fore intergenerational differences in how people use and understand the purpose of freezers. In particular, eliciting stories from interviewees about how they and those close to them 'get things done' makes visible here the unintended consequences of freezing food becoming a common and habitual practice.

Elsewhere, such interdependencies between practices and their effects over time were undoubtedly harder to trace. The work environment for interviewees at RFH appeared, in particular, to make such relationships less tangible. Interviewees reported that, despite the hospital initiating a wide range of policies aimed at reducing energy use, information on these policies and how to respond to them had relatively little effect, perhaps reflecting the somewhat 'distant' modes of delivery thought necessary for a large organisation, such as emails or messages on display screens (Parkhill et al., 2015). Sarah's comment here is typical:

“ I guess, I just think it's a lot of money for, you know, if people are in a rush and they're walking past, how much are they actually going to take from that? **(Sarah, RFH)**

From our analysis of interview data, a key difference between other sites and Lammas/Tir-y-Gafel appears to be the way many interdependencies between practices and between technologies come into view and into question at Lammas. This is likely due to how residents have undertaken a deep and broad revision of everyday practices in the course of developing a new model for low-impact living. They are intimately involved with the infrastructure which produces their energy. As such, not only do they have access to information about availability of energy, they also recognise a voluntarily assumed, collective responsibility for managing consumption.

“ We are on a loop with the hub and one other person, so we are on a loop. There are 27 kilowatts coming in, into the Prime and that's divided into three loops so its 9 kilowatts per loop and 3 kilowatts per family and that's like when everything is running perfectly. We will have a back-up of solar in the event that the hydro is not working for some reason or another. So it's just a continual awareness around what we've got and what we can use. **(Vanessa, Lammas)**

Biographical experiences were drawn on by these interviewees in describing the sources of the values and practices they relied on. Undoubtedly important in influencing how far Lammas/Tir-y-Gafel residents were conscious of their dependence on energy was their longer-term experience of attempting to live low-impact lives.

“ I feel fairly confident actually. Both Joseph and I, it kind of became apparent when we wrote down in the application process, one of the questions was, 'What experience have you had?' and we both wrote it down and we kinda realised that actually we had been doing this for a long time. **(Vanessa, Lammas)**

They were thus able to question to a far-reaching extent the practical and technological interdependencies on which mainstream society relied, and also their invisibility.

“ [commenting on hydroponic agriculture] It's like that Western thought of compartmentalising things, so you can take an aspect i.e. the plant and you can disregard all the other elements that make the plant what it is and you can transport it into this completely artificial environment where there's no soil, artificial light you know nutrients that are, where are the nutrients coming from? **(Vanessa, Lammas)**

At the same time, in many instances the construction, over the course of 18 months, of a new community from scratch brought them back in contact with the mainstream, in the shape of specific practices and dependencies (Shirani, Butler, Henwood, Parkhill, & Pidgeon, 2014). The usefulness of relatively high-consumption appliances like freezers and power tools, for example, was widely discussed. But here, the value of such items was seen explicitly in relation to household and community goals, and only as viable when the community achieved its goal of having working communal hydropower as well as household solar power. One of the goals Lammas, as a community, had to achieve was that each household should provide for 75% of its needs from the land within 5 years. Some residents saw freezers, for example, as a necessary part of helping to do this, either by preserving food for domestic use, or for sale. Most residents, as well as directly providing food for themselves and their families, also ran small businesses. This meant that revising their own energy use had to be undertaken with one eye on standards and norms to which business activities had to conform:

“ So possibly we might have a fridge, it's like it's been nearly three years without a fridge now. Erm yeah, which has been fine apart from foraged produce, particularly in the summer. But I'm thinking in terms of the business, I'm thinking I'm going to have to use fridges and freezers. It's almost not professional not to I think anyway because you have to interact with the normal world and they have high standards about their produce. **(Graham, Lammas)**

## Dependence on particular practices, and thus on specific ways of using energy may therefore come to symbolize and/or reinforce the bonds between people

Overall, although interviews and the associated multimodal tasks undoubtedly had some effect in increasing the visibility and tangibility of the energy-using devices and infrastructures on which everyday life in home and workplace depend, other overlooked aspects of how energy using practices were understood were perhaps more important. For example, the combination of biographical transition narratives and multimodal approaches enabled us to explore the moral and ethical conflicts surrounding energy which manifested themselves in interviews. In particular, using biographical methods enabled us to draw out interviewees' perspectives on how specific uses of energy contribute to 'lives worth living', and sometimes lead to conflicts between different values. This is illustrated by the way in which relationships of dependence on the material elements of practices (including both devices and infrastructures) are often not just acknowledged in the abstract, but recognised as emotionally-significant.

“ To contrast with what I just said there's my diesel powered 2 litre car but old embedded energy, old because I couldn't afford new, I could have bought a 1.3 or a 1 litre petrol car, I deliberately bought that because, see this is interesting because say I have to drive to North Wales which I do you know I wouldn't say regularly but over the course of a year I'll make a number of trips to North Wales and I want the power to overtake people on the A470 and I like that sense of power and I, the surge as you put your foot down and I think it's sufficiently self-aware, maybe through my meditation or whatever that I know exactly what's going on there, this is a male thing, this is all wrapped up with testosterone and power and status and it's not the high status car it's about a 20 year old Rover but it's more high status than say a Yaris a Toyota Yaris or a Smart car, there's a kind of masculinity to having a bigger engined saloon car and it's beyond words, it's just a kind of, a gut thing you know. Even though I know it's ridiculous I know that's what's going on, at least I am aware of it and there's loads of blokes out on the road in bigger cars like that and they don't even realise what knobs they're being. At least I know I'm being a fool but of course the other thing about that is that it's a very old car and when I bought it I did think knowing the sort of all the stuff about biodiesel I knew that if push came to shove I could put cooking oil in it and it would still operate so it's another reason why I bought it. So I thought if there is a fuel crisis I'll just put cooking oil in it for emergency journeys! I haven't needed to do that yet. (Jonathan, Peterston)

In the next section, 'Living worthwhile lives', we discuss these themes in more detail.

**Figure 5** Jonathan's car



### Summary

- The bespoke combination of multimodal activities and a narrative interview approach made some less visible and tangible aspects of how everyday practices depend on energy-using devices and infrastructure more visible.
- Many interviewees were already very aware of a range of options for consumption management, particularly in the home.
- Information in the workplace is harder to provide in ways that make a difference.
- In the home or workplace, how responsibility and agency for managing energy use is distributed or delegated is a key issue. Often agency simply means 'switching things off'. The ways technologies (e.g. Sky boxes, wi-fi routers) can remove agency from people (through e.g. a need for 'always on' devices) rather than supporting it becomes significant here.
- Dependence on devices and infrastructures is often complex, involving multiple interlinked practices. Biographical methods demonstrate some success in exposing how such dependence develops over time. At Lammas/Tir-y-Gafel, our approach showed how some value- and community-based revisions of practices and lifestyles can question and change these complex relationships.



## 4.6 Living worthwhile lives: making ethical conflicts visible

In comparing interviews from different sites across the three stages, we found that the combination of methods we employed allowed us to explore how the practices people engage in are interwoven with emotionally significant identities and linked visions of what constitutes a life worth living. The implications of people's self-conceptions and the implicit ethical frameworks on which they rely in articulating how they use energy may be significant for how they continue to use energy. In particular, the ways in which engaging in specific practices can sustain valued self-conceptions through difficult transitions emerged from our data.

### 4.6.1 The relationship between how we use energy and identity

Practices are not just ways of 'getting things done'. They are also emotionally significant to people because of how they are bound up, within biographies, with individuals' relationships with other people and also to their own sense of who they are. Caring for loved ones or maintaining contact with friends are experienced as inseparable from the use of a range of devices and infrastructures, from central heating, cookers and washing machines to motor vehicles. As a result, dependence on particular practices, and thus on specific ways of using energy may therefore come to symbolize and/or reinforce the bonds between people. Participation in particular practices may itself be constitutive of someone's identity, meaning that practices themselves can be objects of deep and complex emotions. We may often identify ourselves as the 'kind of person' who takes pleasure in DIY, commits to caring for an elderly relative, and so on. Emotional attachments to others can help identify enduring associated attachments to practices. Such linked attachments may be associated with sustainable practices like cycling, as in Sarah's description of lifelong positive associations with riding bikes, which began with riding on her mother's bike:

“ So I cycle there and back.... when my daughter was young I had a seat on the back for her and cycled as much as I could.... It's just quicker to get to work, it's so much quicker.... So it was convenience as well and obviously I wanted to try and get fit and yes, it just seemed like, they've introduced an underground sort of cage where you use your pass to get in. So it's quite a secure bike lock up. So once I knew they had that I was more inclined to... And my mum always cycled when I was young, I always remember being on the back of her bike in Dublin. So yes, and when we lived in the countryside in Ireland, I cycled to school two miles each way because there were no buses. So yes, it's just something that's always been there. **(Sarah, RFH)**

But they can also be linked to unsustainable practices, like driving high-performance cars:

“ I would have no wish to rally in a modern in a modern car, whichever engine it was propelled by, no wish at all. It would be quite good fun to drive balls out in the most recent Mini, just to see what it was like through a forest, I would enjoy that yes please! ... but that would be a novelty; it wouldn't be what turns me on. What turns me on is a piece of old kit that you've put together and you've developed and, you know, the cars I have are not just reconstructed but I've developed them as you would have developed them from original. They are not an original but they do stuff that they couldn't do when they were first built. ... That's the appeal for me; you've done this, you've put it together, you and your chum, its adventure, more than motorsport in a sense **(Ronald, Peterston)**

The possibility of losing emotionally-significant attachments may bring about an anticipation of loss, and therefore encourage people to resist change. This may be even more the case where the preservation of old attachments to practices or participation in new ones have helped individuals to negotiate particular biographical transitions. Moving house, for example, might be motivated by necessity or simply desire for a 'better quality of life'. In any case, it can involve significant upheaval and disruption. The contribution, in such experiences, of practices to individuals' identities can be traced (Groves et al., 2015a). Interviews with more affluent respondents, in particular, provided a range of instances where aspirations to a particular lifestyle, symbolized by particular practices and 'materials' were a central theme in biographical narratives of house moves. Often these practices and their material components were seen as 'normal' for the communities into which people were moving: 'it's fairly typical, everyone's got a couple of cars, everyone's you know got wood burning stoves' (Lucy, Peterston).

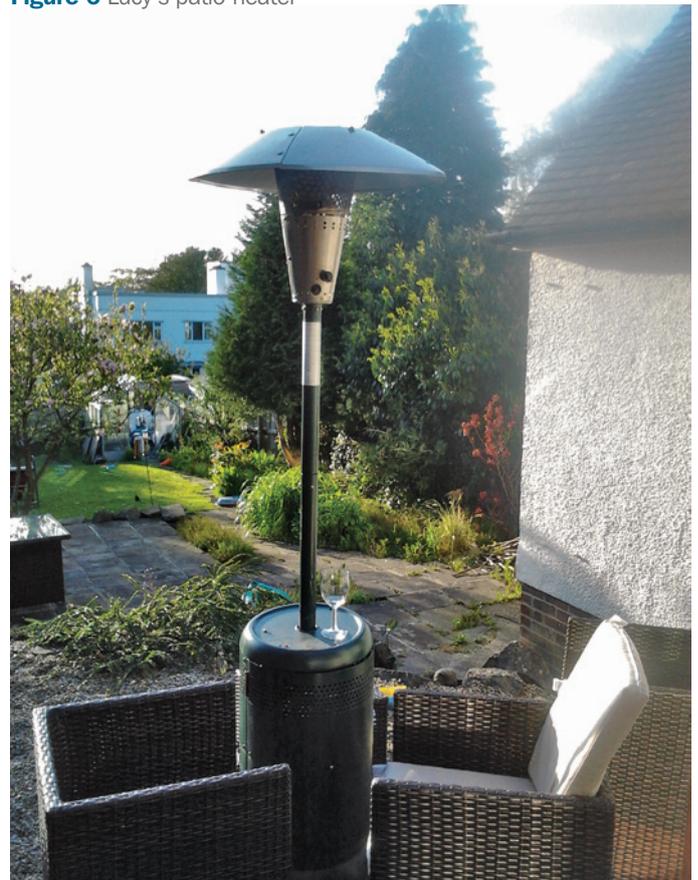
Some practices identified as wasteful were seen as part of a ‘life worth living’, particularly where biographical transitions like moving house or changing jobs are seen as part of a journey towards attaining a particular quality of life

“ No I'd say we're very typical, I'd say typical for a family of five with teenagers who like frequent showers and computers but I would say we are typical ... I think we are more aware now as I said which I think everybody is I think, I think most people have had obviously bills have gone up and I think people are more aware and just education, you know they've been saying about thinking about the future and not overusing our resources and I think people are more aware generally. Equally we are a typical family and we've got washing machines and dishwashers and computers and the kids half term the telly is on you know and they're not always the best and teenage boys couple of showers a day, but I just say that is typical I'd say most families with children will have telly on and computer on and dishwashers so I don't there's anything out of the ordinary. (Lisa, Peterston)

“ I am aware that in the area there are some extremely rich people, not just a little bit rich but really seriously wealthy and I find that with very seriously wealthy people sometimes all the day-to-day stuff doesn't affect them ... You don't see any let-up in the huge gas guzzling vehicles and them speeding through the village, ignoring the 30mph speed limit, as they go in their personalised number plates to their gated homes, it's just one of those things really and it 'Doesn't affect them!' (Elizabeth, Peterston )

Connected to these examples are moments within interviews when participants identified forms of wasteful practices that, despite being wasteful, were seen as valuable and constitutive of some notion of a ‘good life’. In such circumstances, it may be recognised that particular practices, such as motoring or burning wood on open fires, are excessive or wasteful, but that waste in such circumstances may have a meaning that goes beyond meanings commonly associated with wasting energy or other resources – such as carelessness with money, or a transgression of shared norms. In particular, some practices identified as wasteful were seen as part of a ‘life worth living’, particularly where biographical transitions like moving house or changing jobs were seen as part of a journey towards attaining a particular quality of life. This can even be the case where some wasteful practices are acknowledged to be frowned upon within a community where, at the same time, some level of waste is widely seen as normatively acceptable. The use of patio heaters was one example from Peterston, here touched on by Lucy, who had recently moved to the area from London with her family:

Figure 6 Lucy's patio heater



“ Cos we love being outside, we just love that you can you know go, we were sitting out there one evening ... it was like midnight and you could have a drink outside still and it's so lovely here cos it's so quiet and everything so but you wouldn't have been able to do it without that so or you would have been freezing. So that's our kind of, we know it's really bad but we're still going to use it. (Lucy, Peterston)

Equally representative of this kind of attachment to ‘wasteful’ practices, and similarly reflective of a relatively affluent socio-economic situation, is Jack’s transition narrative. Single, financially-secure and living in Ely, Jack describes how he swapped employment for self-employment, and in the process, remodelled the interior of his home with a range of technologies, including examples of what would normally be seen as sustainable ones (such as air source heat pumps), and other examples of ones that would not (e.g. a garden hot tub). The use of a large number of technological gadgets creates a specific ambience in his home, which he feels reflects a sense of autonomy, independence and

The use of a large number of technological gadgets creates a specific ambience in Jack's home, which he feels reflects a sense of autonomy, independence and freedom, but also his interest in energy efficiency



freedom, but also his interest in energy efficiency. He describes how even the standby functions of his electronics contribute to this ambience:

“ I mean nearly everything has got a little light on it; at night time it's like the Starship Enterprise, everything has got a little light on it but I quite like it [...]

He later describes how he reconciles his identities as gadget lover and energy conserver

“ I would use the electricity and the gadgets to make the house look warm and comfortable and I would try to make the gadgets and the use of the electricity as efficient as possible but I wouldn't not put it on, I think its waste, why have things that you don't use? It's my view, so I like to use my things because I work from home I make sure I use them and if I don't use something it goes, so I only have things that I actually use

Some of his friends live simpler lives, including friends who live in communities similar to Lammas. Jack, however, sees his own identity through the lens of an actively chosen level of comfort and convenience.

“ I mean I know I can live without it, I could live happily with just a candle and have done many times but I choose not to. I know I could live a very simple life in an eco-village around a log fire with nothing but I'd prefer not to.

For some, generally affluent interviewees, transitional periods appear as both opportunities and challenges in relation to their identities. Remaining or becoming the kind of person they want to be may entail engaging in practices that are associated with a valued identity in order to manage difficult change. Such identities are not necessarily purely 'aspirational'. Lucy's descriptions of her patio heaters, or the wood fires she and her partner reinstated in their house, arguably have as much to do with establishing an image of herself as a welcoming host for old friends from London as with conspicuous consumption, for example. While lifecourse transitions can disrupt material circumstances, they can also be symbolically disruptive, as is documented by anthropologists (Layne, 1996; Turner, 1974), for example, such transitions often pose to those undergoing them the question 'who am I becoming?' At such times, attachments to particular practices may help individuals to manage these symbolically- and emotionally-disruptive aspects of change (Groves et al., 2015a, 2015b)

Attachments to practices give rise to commitments, which are themselves a form of path dependence to go alongside the incremental forms of path dependence in which devices and practices become entangled as we discussed earlier (section 4.4.1 above). Such commitments create conflicts for some interviewees between distinct values, such as not wasting energy and maintaining a high standard of living, against which they judge their behaviour and that of others. These conflicts often take on a moral character, given that different conceptions of what a 'good' or responsible person would do are generally connected to these values. Jack connects his attachment to energy efficiency with biographically-rooted values:

“ **Jack:** Well I'm from Yorkshire and we make do and mend ... I grew up with that so we didn't waste anything so I don't do it now, I've carried it forward, I hate throwing anything away, I would adjust my meals to accommodate something leftover from a previous day. I see people and I would, I eat everything on the plate, I see people wasting so much it makes me feel quite physically ill actually. I actually feel ill with it, I just see it as unnecessary ... I mean I don't mind spending money, I'd be happy to spend, I would buy and I do buy things which people think are quite unnecessary, I'm quite a hedonist ... the hot tub for instance, that's a good example, most people don't have one but it's fantastic and so I'm happy to spend thousands of pounds on it but I wouldn't, if I had the choice between getting the bus or a taxi I'd get the bus ...

“ **Interviewer:** So you said that wastefulness evoked that really strong reaction you said it makes you feel sick but the hot tub doesn't so what is it about that that's different or?

“ **Jack:** I don't know, I can't answer that. I suppose it's about lifestyle choices, I wouldn't have a big car, I think it's unnecessary, I'd feel very wasteful. I love my car, its costs £20 a year to tax and because I'm nearly 50 my insurance is 200 and something pounds so I get the use of a car for like hardly anything and I won't go into town with it and park and spend £4.50 an hour to park, I won't do that. (**Jack, Ely**)

Waste, for Jack, is represented by things that are 'unnecessary', a criterion that is inseparable from the technologically-enabled conception of home, luxury and enjoyment he has become attached to. A large car is unnecessary to maintain this lifestyle and identity, as he lives close to public transport which takes him from his home (and office) to his shop in the city. At the same time, however, a garden hot tub is seen as a necessary part of this identity, which offers opportunities to host neighbours and friends, to express a quirky and unusual generosity through this relatively uncommon luxury item.

## Marking a moral distinction between wasteful and non-wasteful ways of using energy is, for most interviewees, a key part of understanding the social meanings of energy use

Marking a moral distinction between wasteful and non-wasteful ways of using energy is, for most interviewees, a key part of understanding the social meanings of energy use. Such distinctions were part of broader frameworks for understanding wastefulness that were seen as expressing principles that were important to follow for their own sake – ones which, for many people across our case sites (as with Jack), had often been drummed into them from an early age:

“ So, certain things like that, yes that’s what was instilled into me ‘Don’t let the heat out ... don’t let the cold in!’ that type of thing, my parents were very good at being frugal shall we say with their money, very like that with their money. (Christine, Ely)

“ [...] waste not want not, one of my mother’s sayings and they were both very frugal. It was kind of, eat up your dinner, some children will be glad of it, all the old saws. And from my father, the waste not want not thing, having bits of wood, screws, metal, ‘it will come in handy one day’ [...] (Jeremy, Peterston)

“ I think in a way it was possibly started with just my parents and them just saying, ‘Turn the lights off’ or ‘Don’t stand there staring at the fridge! Take what you want and close the fridge, you’re wasting energy!’ That kind of thing. (Vanessa, Lammas)

At the same time, waste may be redefined as ‘good’ waste, or not as waste at all, where the consequences of particular practices are invoked by interviewees as reasons for acting in particular ways, by contrast with decisions that express commitments to fixed and general principles like ‘don’t be wasteful’. This is particularly the case where ethical considerations of care for children or older relatives, which themselves often mark significant biographical transitions, may override what are recognized as responsibilities not to waste energy either on the basis of general principles or in relation to other (e.g. environmental) priorities. This is an issue we have explored elsewhere (Shirani, Butler, Henwood, Parkhill, & Pidgeon, 2013).



“ [...] in the situation before I had my little boy I was very conscious of saving energy and recycling and all of that and I would have my energy saving bulbs and turning all my appliances, turning all my plugs and not leaving anything on standby, at the moment I still try to do it but to a lesser degree, if I throw my glass jar into my normal rubbish I feel bad but I’m not, I’m not really going to pick myself over, well whatever the expression is, you know what I mean? (Lucinda, RFH)

In these cases, moral conflicts over wastefulness are often resolved readily in favour of commitments to others for whom one has caring responsibilities (such as children). But such conflicts may be harder to resolve where a commitment to reducing waste clashes with commitments to certain practices that are seen as a valued part of one’s identity, and which may also be felt to be an essential part of managing emotionally-disruptive aspects of lifecourse transitions and the threats to identity they may bring (Groves et al., 2015b). We noted above how commitments to different practices may come into conflict with each other, particularly in some more affluent households. In some interviews, these conflicts became conflicts between different identities. For example, in Lucy’s narrative, her commitments to distinct values and practices expanded into a conflict between identifying as a generous host for visiting friends (needing to keep a large house warm and provide food):

“ [...] so big Saturday dinner and a few bottles of wine and big Sunday lunch and stuff like that [...] (Lucy, Peterston) and identifying with being a responsible household manager

“ I literally got the bill about two weeks ago, and I suddenly thought (gasps) (Lucy, Peterston)

Such conflicts may then be dealt with in interviewees’ talk, in specific ways (Groves et al., 2015a). Sometimes they are acknowledged, but their significance is downplayed or even disavowed (Lucy on her patio heater: ‘we know it’s bad, but we’re still going to use it’), indicating that cleaving to one particular self-conception or ethical value gives an individual a way of making sense of the narratives they have woven about how they reached their present situation. They may be dealt with ironically or through humour, thus acknowledging an ongoing state of uncertainty as to whether how one is using energy is the best thing to do (Graham at Lammas: ‘I’ve decided the best thing is to be confused’). Elsewhere, by contrast, they may simply end in an unwillingness to talk about conflicts that are more troubling and hard to acknowledge, as we found in some lower-income households. For example, Christine in Ely contemplated changing patterns of energy use thanks to a long string of contingent changes to family

## Emotional attachments to practices identified in biographical narratives may, as we have seen, help to identify areas of people's lives in which moral conflicts relating to energy use are present – sometimes emerging, sometimes being disavowed or left unaddressed

circumstances (including grown-up children returning home, taking in elderly relatives, and becoming unemployed), saying 'we don't talk about the future as such [...] you just don't know what's around the corner').

Where moral conflicts over waste do emerge into the open, they are typically over forms of waste that are highly visible, making it an emotionally-charged issue, particularly within families and in shared houses. Wasteful energy use is most often mentioned in relation to lighting – whether house lighting left on, or leaving appliances on standby. Beyond such examples, people talk of waste more readily and still more emotionally in terms of other forms of dependence on a range of natural resources, materials and infrastructure such as water for washing, recycling and the supply of goods like paper at work.

“ I mean it's horrible seeing paper being wasted, we print out an awful lot of stuff and you know I go to a meeting I have to print out all these lists and things and throw them in the bin afterwards, an awful waste, it's not nice to be wasting paper and wasting money and wasting space whereas if everything is just computerised it's much easier (Marie, RFH)

“ I see them wasting energy totally. It's very difficult to say. It's like the computers are left on, lights are left on, I suppose it's to do with the staff mainly isn't it, not doing the. Every time I walk out of the toilet at work I will switch the light off. But most of the time I go into the toilets at work, the lights are on. It's all down to the individual. (Adrian, RFH)

In some instances, such forms of waste are within the power of individuals to deal with, although this may be less the case at work (confirming other findings about agency at work, see section 4.4.2 above). Others, however, see visible waste as only superficially important, encouraged by difficult socio-economic circumstances to look behind the light switches, as it were, to other aspects of their dependence on infrastructure that appear impossible to change, due to factors like being in rented accommodation.

“ Well if I could afford my own home, which I doubt very much in London, you know, I'd like to insulate my loft and that the house was fully insulated and I'd love to look at installing solar panels. Friends of ours, my mum looks after two little boys and their parents have just installed them, just down the road actually. Yes, there's lots of systems I'd like to put into place but I'm just restricted here, you know, I can't, there's not a lot we can do, so we just have to be conscious of switching unnecessary lights off and things like that. Use the central heating as little as possible. But yes, it would be lovely to have somewhere that you could facilitate all the energy saving capabilities but not here unfortunately. (Sarah, RFH)

Here, Sarah surveys her living arrangements critically, and with an eye on the infrastructure and socio-economic conditions that have created them. Elsewhere, she notes how the inefficient heating installed by her landlord both wastes energy and undermines her efforts to create a warm home for her daughter. She looks to alternative forms of energy infrastructure as offering future possibilities that might represent a way out, although her power to reach out for these possibilities is very limited. Although she is, like Christine in Ely, constrained in how far she can achieve the 'good life' she desires for herself and her family, she is still able, unlike Christine, to talk about the future. Christine faces conflicts between her caring commitments to family (to her several children and elderly relatives) and the financial and other constraints which affect them. Her identity as a carer and a home-maker, through her efforts at renovating a string of houses, is strained by the sheer effort of handling a range of caring commitments. Sarah's identity as a mother is articulated through her critical reflections on the circumstances in which she is forced to live, the wastefulness they embody, and the possibility of changing, by imagining a future in which she has access to her own sources of renewable energy.

### 4.6.2 Energy, technology and visions of 'worthwhile lives'

Emotional attachments to practices identified in biographical narratives may, as we have seen, help to identify areas of people's lives in which moral conflicts relating to energy use are present – sometimes emerging, sometimes being disavowed or left unaddressed. Such conflicts often appear to be between distinct ethical values, i.e. different anchor points that orient people in their beliefs about what they should do, such as 'don't be wasteful', versus caring for dependents, or an ideal of a good life). More accurately, we might say that these conflicts are about different forms of implicit ethical justification for acting in particular ways – such as comparing the costs and benefits of doing something, a vision of the 'good life' or 'life worth living', a moral principle that should be respected no matter what for its own sake (such as 'don't be wasteful'), or caring commitments and responsibilities. Clashes between such criteria can therefore be understood as clashes between implicit ethical frameworks or theories which may be incommensurable with each other (O'Neill, Holland, & Light, 2008), meaning that these conflicts can be hard to resolve for individuals, their partners and their families.

Such conflicts create normative uncertainties (i.e. uncertainties about 'how to be good') which are manifested across socio-economic categories, but in different ways. For example, we saw



## Contrasting with these more affluent households in our study, are less affluent households, where interviews bring to light different kinds of moral conflicts

above that discussing energy use brings into the foreground in Jack and Lucy's interviews the ways in which emotional attachments to particular practices, and to technologies, devices or gadgets, can be constitutive of identity, and particularly important in helping to manage lifecourse transitions. Contrasting with these more affluent households in our study, are less affluent households, where interviews bring to light different kinds of moral conflicts.

For interviewees from such households (such as Christine, Sarah, or Vicky, for example) 'how to be good' is a question that arises more out of a felt lack of agency in attaining a good (happiness or 'being responsible'). This lack of agency arises either out of an inability to influence how energy is used within the household (e.g. due to inadequate heating systems in rented properties, as in Sarah's case) or in difficulties with controlling expenditure in the face of disruptive events and resulting biographical transitions (Christine, Vicky).

A sense, within these latter kinds of circumstances, that 'we don't know what's around the corner' (Christine, Ely) pointed to some limitations of a biographical approach. While focusing on lifecourse transitions made it possible to bring otherwise invisible conflicts into focus that were deeply embedded in the texture of everyday life, it also encountered problems. Exploring the wider meaning of how energy is used, and particularly the moral, value-laden dimensions of everyday practices, becomes harder where potential future change, either at the individual or household level or in wider society, were concerned. Some interviewees found it very difficult and indeed discomforting to think about the future, given their experiences of past biographical transitions:

“ At the moment this will sound like a really badly thought out plan but I tend not to think that far ahead because the future does actually scare me (Lucinda, RFH)

“ I didn't know I was going to be out of work and that would have been my choice. You know, really don't know what's around the corner so we don't look into the future as such. (Christine, Ely)

Thinking about changing how energy is used may thus be difficult because of associations made by interviewees with broader disquiet or anxiety about what the future may hold, either related to family circumstances, such as unexpected illnesses, unemployment and so on, or to other social and environmental issues, including climate change (Shirani et al., 2015).

Our use of video extracts in the third interview with our sub-sample of participants was intended to address such issues by opening up reflections on the future, and to counteract difficulties associated with a focus on the biographical past. This allowed people to inhabit a different 'space' to that defined by their attachments

and commitments, and the forms of ethical justification implicit in their talk about them. Moving from a sometimes difficult-to-articulate personal future to visions of the collective future that were focused on changes to technological infrastructure, allowed people the opportunity to explore the relationship between visual representations of technological promises and the practices woven into their own everyday lives.

In many interviews, people expressed a pronounced ambivalence with regard to the effects of future technological change. Interviewees were often surprised by their perception that the practices and technologies depicted in the 1950s *Monsanto House of the Future* and 2012 Channel 4 films bore strong resemblances to each other. This was widely seen as a creeping 'technologisation' of everyday life, in the sense of advanced (generally information technology-based) devices, sometimes automated, becoming necessary components of more and more everyday practices. Some, particularly from Lammas, saw these future visions as representing 'business as usual', a collective failure to respond to present or imminent ecological and resource crises, like climate change and peak oil, by building adaptive capabilities into collective arrangements for living.

“ Yeah I mean it's hilarious [...] It's like you know [laughs] you're starving and the electricity is broken and you can't get into the bloody fridge or into the cupboard! [...] even the fact that the whole house was raised off the ground you know it's like that disconnect from you know the earth, it's like this is future and it's kind of better... (Vanessa, Lammas, commenting on *House of the Future*)

It's [2012 vision] just like the 1950's one! In fact, the 1950's one has an excuse because they didn't know. I would have probably been a lot more informed nowadays. They were just high on the new technology and the new materials. What else were they to think? How could you predict global warming in the 1950's? You never would have done. I don't think, well you just wouldn't, yeah it would have to take some extraordinary visionary to predict that in the 1950's. So these people have got no excuse! What are they doing? ... It's like that thing, no one is thinking like me! Are they? No one is thinking like that! (Graham, Lammas)

Others saw in both films clear evidence of a better future, in which the promises of convenience they associated with the earlier film might be borne out, should the future more closely resemble the second film.

## Convenience was seen as necessary, but only so far as the pursuit of it made possible varieties of material comfort that could enrich human beings' appreciation of a life worth living

“ And then did I say, yeah, everything is really easy and convenient I mean you want the TV on you hit a button and it's on and you've got like 500 channels at your fingertips should you want to watch them and then you've got all your music players and you've got not just one but maybe one in each room these days so you've got like five in a house and then you've got, you've got Wi-Fi and internet and stuff and everything is just really easily amenable and cheap and available for pretty much anyone who can pay for it. **(Monica, RFH)**

“ Well you have more time for your career and less time in the kitchen, everything is more automatic in the kitchen you know you don't have to spend so much time washing and cleaning. Certainly you can see people, families that spend over and over again they wash and the amount of times they have to wash the dishes and they have to clean the kitchen, it's a monotonous thing to do over and over again its time-consuming. **(Marie, RFH)**

Interviewees who saw the futures represented in the films broadly in a positive light thus identified with socially-privileged values of convenience, cleanliness, hygiene and comfort (Shove, 2003). Often, attachments to these values were echoed elsewhere in their interviews, suggesting that participants had strong positive associations with hygiene or convenience more generally, and expressed strong and emotional reactions to visible waste, as when Marie describes elsewhere in her interviews taps left on in the toilets at work or wasted paper in the office as 'disgusting'.

Other interviewees associated convenience or comfort with technological advances in a more nuanced and often ambivalent way throughout their interviews. For these interviewees, convenience was seen as necessary, but only so far as the pursuit of it made possible varieties of material comfort that could enrich human beings' appreciation of a life worth living. For example, people spoke of technology as labour-saving, as reducing effort in ways that made certain practices less onerous. Such observations were particularly common among the self-builders at Lammas.

“ Having said that, that's the advantages, there are distinct disadvantages as well in terms of you know just sometimes there are power tools which would save wear and tear on my body quite a lot so this was built virtually by hand tools and you know had we had access to you know a circular saw, I mean we did plank it but you know it's just some things like that would have made life a bit easier. **(Peter, Lammas)**

“ And to cook solely on wood, I would find that hard. I know what it's like. I used to bake bread and everything on it so it's not like I haven't done it, it's doable but it's a mission. So the thought of having absolutely no gas to cook on, I would find that probably really hard. And I'm quite attached to my hot water [laughs] I have done hot water, again at [other ecovillage] hot water was on the Stanley so we had a back boiler and so you just had to be aware of it and it's doable. I would be alright with a back boiler but I think having to light a fire every time you wanted to boil a kettle or every time you wanted to cook anything, that's yeah a bit too austere for my taste **(Vanessa, Lammas)**

Elsewhere, others looked back on the recent history (i.e. since WWII) of technological and connected social change which meant that the provision of heat, light and so on no longer involved particular kinds of labour or hardship. The advent of central heating was recalled by many, and particularly by older interviewees as a good example:

“ My grandmother's house still had the coal range, with the oven next to it and that's what they cooked on etc. And I've no doubt her lifestyle changed over her life too and my parents eventually moved to a council flat, which did have storage heaters and it did have a bathroom and a hot water system and so on, which was like fantastic from their point of view. It was like much better facilities and they were up for that, they didn't kind of think, oh this is a lot of energy use **(Jeremy, Peterston)**

Such interviewees tended to talk more ambivalently about the social orientation towards convenience they perceived as affirmed by the films, which they often saw as taking a historically valuable facet of socio-technical progress and making it into an end-in-itself, at the price of other values. The ideal of convenience, it was suggested, was presented within the films in a particular way, which evoked for some interviewees specific everyday experiences of and ideas about technology. Convenience was seen as encouraging the development of technologies that distanced human beings from the external world and from their own concerns, creating a layer of what one commentator has called 'naturalised technologies' (Nordmann, 2005) in the process, which often appear to their users as mysterious 'black boxes'.



“ It just seems like becoming obsessed with technology and not being able to do things for ourselves. So like I think we were saying about the log fire, it's rewarding when you sit back and see the log fire whereas if you just flick a switch and it's there it's not as rewarding so who knows you know on how it effects our happiness in the long run things like that, don't know. **(Sarah, RFH)**

Interestingly, interviewees across our case sites (and across a range of age categories) commented at length on this aspect of convenience-driven technological innovation. Potential future combinations of mobile computing, wireless communications, and other enabling technologies to support a wide range of everyday practices, from communication to shopping, are seen as at once attractive and undesirable because of the convenience they appear to offer. In attempting to specify what is less desirable about the kinds of technologies depicted in the films, interviewees drew a contrast between what they had seen and practices or objects which, instead of offering convenience, as generally understood, required active and engaged care. Here Ben reflects on differences between the tabletop hydroponic 'garden' (Aerogarden™) shown in the Ch4 film, and the experience of gardening outside.

“ Yeah I've got mixed opinions on the aero garden I think, I think a lot of people love gardening [interruption] like gardening and like feeling the soil, like getting involved and being out in the outside, especially in the summer I know that my parents love gardening, I don't know what it is I'm not really a big gardener but maybe when I get to 40 or something then I'll start gardening a lot. I mean I do like growing your own veg and things like that and I like the idea of that but yeah I think, I think it's very clever ... but you couldn't just if you had children or something they couldn't just go and play in the garden, if this for people in flats and stuff that haven't got a garden anyway then it's a good idea you're getting food out of it but if it's replacing a garden or something like that I don't know if it would appeal to people. **(Ben, RFH)**

Here, the activity of gardening is seen as involving experiences which are imagined to be intrinsically valuable, and as integrating these experiences through bodily and emotional engagement. To replace these experiences with a technology that provides food but more 'conveniently' is seen as involving an important loss. The ambivalence of older interviewees towards ideals of convenience was sometimes expressed in biographical narratives which featured strongly similar themes of loss, related to the dying-out of specific practices, together with the skills and social relationships associated with them.

“ But with the open fire your groceries used to, you used to have a potato bag, which you went to the shops with and that was an old canvas bag, much of what they're trying to do today, to put your potatoes, yer carrots and everything else in, no packaging, that went straight in, off the scale, so you didn't have that. Now any paper, apples or whatever if they came in a brown bag they were used to light your fire, so you didn't bury them, so much so that you burnt most of your packages cos that was for your fuel lighting to get your fire going. Anything around the house, dust or whatever, that would have got thrown on the fire. So you burnt more than you ever threw out. Your pig bin for your swills and that, that we now put out in a different bag, which is a bag to put the rubbish, the food and the waste in, that was in an old tin bucket and you washed it around with disinfectant once a week or whatever, that cost nothing and then a man with an old electric cart used to come from the farm. So all that used to feed the farm animals, so you didn't have that either. **(Pat, Ely)**

The loss of such practices comes with gradually increasing reliance on socio-technical systems, like rubbish collections and landfill management, which promised convenience but also redefined waste. The idea of waste as 'landfill', as something to be ejected from the home and managed by abstract administrative and technical systems for the sake of public health, led in Pat's narrative to the erosion of certain social relationships as well as the loss of what some commentators have called 'focal' practices (Borgmann, 1993).

From this point of view, tending an open fire or composting represent practices which require physical effort and take time, and which may therefore not be convenient, in the sense of providing a service or good as quickly as possible and so hopefully 'freeing up' time for other things. At the same time, such activities are characterized by a quality of connectedness. On the one hand, they involve sustained sensory and emotional engagement with the world, and link together individuals in mutually-supporting practices (as in Pat's example above). On the other, they involve actively taking care of needs - either one's own or those of others. Interviewees often drew attention to the perceived lack of such characteristics in the practices depicted in the films.

“ Yeah well it's all plastic isn't it? You know so there's no sensory change there at all is there? You know it's just bland basically. **(Brian, RFH)**

Through such care-focused relationships, people are called to engage in practices that challenge them to attentively take care of the needs of others (human and non-human), which involves cognitive, physical and emotional effort

“ I find it pleasurable to see things happening. I always found it really wonderful when I see anything growing and just planting a seed and seeing it growing on my windowsill, I've always enjoyed, I like birds singing and sunrises and sunsets and the stars and not having so much light pollution that I can't see the stars. So I like the visual world and the sound world and things like that around me. I find the fact that I can design my plot and my own life in the way that I can without having to have the lifestyle of going to work every morning and earning money in that way and stuff like that; that is pleasurable but it's a challenge as well. **(Anna, Lammas)**

The 'focal' quality of such practices, and also of the utensils, devices and technologies employed in them (like gardening tools or open fires) stems from the active, attentive involvement needed to carry them out, and also from the social aspects of the activities they involve, as with an open fire that is the focal point of the living room and for a family's everyday activities.

These experiences may be said to involve effortful engagement that is not simply onerous, back-breaking toil. This might be characterized as a kind of 'friction' that is felt to be intrinsically-valuable, soliciting effort, attention and skill from the participant (Groves et al, under review). The extract from an interview with Anna (Lammas) above typifies the positive assessment of such experiences given by a wide range of people from different sites. Anna makes a link between focal experiences and the physical but also emotional friction and embodied feedback they involve, and the care for people, valued objects, or valued places (like the home or local community) they express. Through such care-focused relationships, people are called to engage in practices that challenge them to attentively look after the needs of others (human and non-human), which involves cognitive, physical and emotional effort, often in concert with others as part of a shared project. Such engagement tends to require technologies that both need human input and connect people to the consequences of using them. Particularly rich descriptions of this kind of engagement and its value were provided by participants at Lammas, but interviewees from other sites concurred. Participants often noted that engaging in practices and with technologies that promoted focal experiences enabled individuals, but also groups, to experience their own contribution to maintaining or improving both the fabric of the world around them, and the resources within it which sustain everyday life.

“ And then also just in terms of human, that's on a macro scale, on a micro scale I don't think there's any other way forward other than actually directly reconnecting people with their resource base because its only through doing that that you actually get people to care. You know people here at Lammas/Tir-y-Gafel care what goes down their sink because it comes out 10, 20, 30 yards away somewhere on their land and they'll be able to witness the impacts of that directly. **(Peter, Lammas)**

“ [...]We have wind up radios, wind up torches. They are not really, yes they're wind up but the action is different. And I think he [son] actually likes that aspect, I think he gets very sort of excited that he can actually create the kind of energy to use that. **(Dennis, RFH)**

By contrast, interviewees tended to associate broader societal shifts towards convenience with a decrease in the possibility of such focal experiences within the fabric of everyday life, thanks to an increasing reliance on complex socio-technical infrastructures that fade more and more into the background. In such contexts, the only options left for recreating focal experiences are often either buying consumer products designed to foster them, like wind-up torches, or actively seeking such opportunities as part of an intentional programme of change within an individual's life, within family life or at the level of community life, such as was undertaken at Lammas. To create changes of this latter kind requires a degree of agency that may be obstructed by a variety of life circumstances, such as caring for dependents with changing needs, a low income, living in rented accommodation or reduced involvement in community initiatives due to a lack of time, perhaps because of work-life balance or other factors.

In addition, an increasing dependence on background infrastructures brings with it, for some, moral problems of responsibility and accountability for the practices in which we engage. When convenience becomes gradually enshrined as an end-in-itself, this has consequences for our capacity to understand what it might mean to use energy responsibly. The Channel 4 film was seen as a vision of a future in which, despite energy production being decoupled from climate change through a wholesale decarbonisation of the energy system, the intensification of energy consumption linked to new and diverse technological devices and infrastructures manifested, for some, a morally-troubling way of being.

Using a wood burner requires very different infrastructure to central heating, and is not a simplified affair of pushing buttons; it's more localized, taking the form of a communally-managed coppiced woodland, for example, and thus falls within the sphere of influence of the community

“ Even if all the electricity was coming from renewable, Green sources I think it would still bug me a little bit because it's the heedlessness of it and the lack of mindfulness and the just a kind of there's a word I can't remember what it is but yeah just that, that kind of carelessness of it all. (Jonathan, Peterston)

Here Jonathan points to a link between the convenience of being able to access the goods and services sustained by complex infrastructures, and a carelessness or 'heedlessness' about the wider impacts our relationships with each other and upon the natural world that come from our dependence on these infrastructures.

Using the films as stimuli, then, was methodologically important. It provided interviewees with opportunities to talk about the future – and its connection with the social past – in ways that displaced anxieties about personal futures (Shirani et al, 2015). Participants discussed how what one sees as a life worth living changes historically, and how technological innovations are part of such processes of change. Many suggested, however, that their own experiences made them view some of the kinds of practices and devices depicted in the films as unattractive and troubling due to lacking what we have (above) referred to as the friction associated with focal practices, which involves emotional engagement and embodied feedback. These participants were very clear that they did not want to 'go back' by doing without certain key technologies that they saw as essential contributions to a valued quality of life.

“ So when I couldn't afford to use energy and when I couldn't afford to drive I didn't and when I could afford to use it and you've got the option to be nice and warm with central heating or, it's a temptation isn't it, it's a different thing. I wouldn't want to go back to no central heating and one calor gas; it would be difficult to go back. I suppose it's always difficult to go back. (Kelly, Ely)

At the same time they were ambivalent about particular representations of what it might mean to 'go forward'. The films allowed interviewees to enlarge on elements that they saw as generally constitutive of a 'life worth living' – as ethically valuable in the sense of things that are judged not to be simply subjectively preferable, but objectively necessary for a good life (O'Neill, 1993). By articulating biographical experiences of focal practices, people were even able to reflect on the meaning of shared values like comfort, controllability and convenience, and to find in their experiences ways of re-imagining these values. Here, Emmanuelle (Lammas) considers the difference between central heating controlled by a switch, and a wood burning stove:

“ Yeah but I don't like that. I look back and I think actually I see for me how I had no connection with it, no connection you know, whereas when the wood's there and you see the fire going you think maybe I'll just turn the fire down cos the pile of wood is shrinking. Yeah I think it's very easy if you have no connection with it and the bills just go out by direct debit and there's no connection with the fuel that is actually being burned to produce this heat (Emmanuelle, Lammas)

Controllability and convenience here are re-imagined through focal practices (cf. Vannini and Taggart, 2014). Using a wood burner requires very different infrastructure to central heating, and is not a simplified affair of pushing buttons. But this infrastructure is more localized, taking the form of a communally-managed coppiced woodland, and thus falls within the sphere of influence of the community to which Emmanuelle belongs. It therefore brings convenience and control in a very different, non-mainstream sense.

As in some participants' narratives about biographical transitions (see above, pp. 31-35), discussion of the films contained tensions between specific values. Here, however, shifting the focus away from biographical meanings to shared social visions of the future allowed these values to be isolated and discussed on their own terms. At Lammas/Tir-y-Gafel, interviewees often described their way of life as representing a potential future that reawakened elements of past, focal practices within new contexts, and sought to create new ones. In particular, households' electricity meters were seen as focal objects, primarily because they represented the household's connections to communal and private energy-producing infrastructure.

“ [...]we're just so used to checking the readouts we kind of know now and it makes a massive difference whether it's sunny or not so we know that if it's sunny Harry can play his music full blast and you know it's not a problem he can play his music all day and into the evening and if it's been gloomy like today for three or four days we know that we'll probably need to check before turning on the computer for a film you know, or whether we watch a film on Faye's little small laptop or whether we use Harry's big LCD screen [...] (Peter, Lammas)

This suggests a difference between how 'smart' meters may be experienced within a context of revived focal activities that is shaped by communal forms of agency, and how such meters are often experienced in more mainstream homes, where they register the aggregate demand embodied in a plethora of privately-owned 'convenient' devices, without any tangible link to how energy is

A balance needs to be struck through technological change between a materially-higher standard of living (including the ‘convenience’ brought by labour-saving technologies) and connectedness, which the concepts of ‘friction’ and ‘focal’ experiences can help us understand

being produced. Some research in mainstream homes suggests that such devices may therefore fade back into the ‘background’ of infrastructure over time, and any tangible effects they may have had on consumption may be reduced as a result (Vine et al, 2013).

#### 4.6.3 Summary

- The data shows that the ways in which we use energy are not simply instrumentally useful, but also shape our sense of identity and of what constitutes a ‘worthwhile life’.
- The contribution practices can make to identity may encourage emotional attachments to them. However these may be either inherently unsustainable (e.g. driving high performance cars), or more sustainable (e.g. cycling), and individuals may be emotionally invested in practices in both categories.
- Such attachments, together with the commitments people make on the basis of them, can be important parts of how people deal with disruptive lifecourse transitions.
- Such attachments or values may come into conflict as a result of lifecourse transitions. Such conflicts tend to be moral in nature, being about ‘how we should live’, and our data suggests they may take different forms in distinct socio-economic strata. Life circumstances, and the kinds of transitions people undergo, may make different attachments significant in different ways, and thus activate different moral frames through which people make sense of conflicts (e.g. costs and benefits versus ideals of the good life versus duties to others). Such conflicts may be hard to resolve, perhaps because they are emotionally difficult to talk about as well as materially rooted in life circumstances, and so can make durable change to practices difficult.
- Policy and research which do not register these contributions of biography to how and why people participate in practices may not be sufficient to understand why changes in how energy is used occur.
- The effects of technological change on practices may be seen as good or bad depending on how they foster or erode ‘connectedness’ between people, and between people and the natural world. A balance needs to be struck, through technological change, between a materially-higher standard of living (including the ‘convenience’ brought by labour-saving technologies) and connectedness, which the concepts of ‘friction’ and ‘focal’ experiences can help us understand.
- This does not mean there is necessarily a trade-off between convenience and ‘focal’ engagement. Some technologies (like the Channel 4 film’s aero garden, for some interviewees) and the practices they support may enable both in ways that are mutually-reinforcing. Indeed, the capacity to participate in focal practices can change the meaning of values like convenience, comfort and controllability, in ways that (in some cases from our dataset) reduce the perceived need for convenience as commonly understood, with potential implications for how energy is used.

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# Concluding summary

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## 5.1 Key research findings and insights for policy

The *Energy Biographies* project has explored how a biographical lens can help understand the complexities of changes in how energy is used, informing both scholarship on social change and policy interventions intended to address energy demand reduction. Its findings present an understanding of the dynamic, interconnectedness between individuals and groups and the emotional textures of these relationships, thereby offering a novel way of interrogating the dynamics of everyday energy use and demand reduction.

Substantively, the project's findings reflect our interest in, and concern for, everyday lives as they are lived through time. This interest has been developed in multiple ways into an approach that thickens out the sensibilities of more conventional biographical understandings by including both cultural and material dimensions of social reality. As well as investigating emergent and cumulative processes, such as those of attachment to significant others and material objects (people and things that matter), our findings raise questions about the tools that are currently available for building capacities within communities, and for promoting both localised and wider social action through energy demand reduction interventions that involve collective agency and fostering shared future visions.

The methodological tools we have used also help us understand the ways in which people make sense of their world and, in turn, their ways of doing and acting. Ways of doing and acting take on the forms that they do, at least to some extent, because everyday living involves making sense of a world that is at once material, social and cultural – albeit that we are often caught up in making sense of intricate matters and webs of more distant connections that are not routinely brought into view and, moreover, can be emotionally difficult to think about. Our interest in *Energy Biographies* was in investigating such processes of sense making about contemporary ways of living out our typically highly energy dependent lives in a richly interpretive way. This has generated findings which show how people may be more ambivalent than might be expected about commonly taken-for-granted values such as convenience and comfort, and also about any desire to experience effort-free or frictionless living shaped by such values. But the methods we have employed also allowed us to direct our inquiries towards less easily discernable values that are at the heart of everyday life, and the ways in which they may be maintained, in the face of values that are more dominant in a fast changing energy landscape.

The *Energy Biographies* approach thus stands in contrast to understandings of social change which underlie some dominant policy discourses around energy demand, and which view individual choice as the motor of social change, and new demand technologies (such as smart meters) as ways of providing information that will enable individuals to make better choices. Drawing on social science work on practices, lifecourse transitions, and community dynamics, our project has built on work which shows how choices are constrained and also enabled by wider processes of social and socio-technical change. While reflecting these currents of research, the use of a biographical lens has allowed the project to pay particular attention to examining how individual and collective experience and sense-making help to shape identity and agency, and thus feed back into and transform the practices through which everyday life is sustained. In doing so, it makes a place for acting and doing in the explanation of social change, without either reducing agency to the decisions and choices of isolated individuals, or depicting it as wholly circumscribed by social forces. Through its biographical lens, the project's combination of qualitative and multi-modal methods has been designed to render visible and tangible aspects of how we use energy that are often invisible, intangible and hidden. Among these aspects are the complex interdependencies which evolve incrementally over time between infrastructure, appliances and practices, the webs of values and attachments that define how and why the ways in which energy is used matter to people, and the dynamics of change which ripple through communities at different scales.

The picture which emerges of why and how people use energy in their everyday lives, and how this changes over time, is one in which individual biographical experiences can shed light on the complex emotional dimensions of everyday practices and interactions with appliances or devices, and how even mundane practices can have significant implications for identity amid disruptive biographical transitions. It is also one that reveals how many of perhaps the most significant changes happen gradually in the background, often without being planned, and how energy demand reduction initiatives engage communities and policymakers in a complex and sometimes badly choreographed dance. These findings detail how individuals, as actors and doers, are constrained by processes of individual transition, community transformations and wider social and socio-technical change which create various forms of path dependence. From these arise challenges for policy initiatives that are intended to help people reduce the amounts of energy they use, and for other efforts at planned intervention.

People can become as invested in unsustainable practices, like driving high-performance cars, as others can be in sustainable ones like cycling



We have seen how, for example, growing dependence on particular devices and technologies can become apparent to interviewees through a biographical lens, although dependence on interconnected practices, devices and infrastructure may be harder to trace – particularly in workplaces, where complex organization of activities and infrastructures makes them even less visible. At Lammas/Tir-y-Gafel, the extent to which everyday practices were subjected to revision as a result of the goal of off-grid, low-impact living led to these kinds of dependencies becoming more visible. Elsewhere, people often associated actively managing energy use with switching things off although, for some, limitations on their agency arising from biographical transitions (such as moving in to rented accommodation) brought into the foreground the extent to which their capacity for changing how they used energy was constrained by the devices on which they relied.

If the interdependence of the ways in which things get done with particular technologies becomes more pronounced over time, then people's emotional involvement with these elements of everyday life can serve as another source of path dependence. If socio-economic conditions can constrain agency, so can emotional investments in practices or appliances. We saw how practices, even mundane ones, can be bound up with identities, and thus become associated with specific ways of thinking about what constitutes a worthwhile life. People can become as invested in unsustainable practices, like driving high-performance cars, as others can be in sustainable ones like cycling. The role of identity in affecting whether people engage in pro-environmental behaviours has been recognized in policy-oriented research. But in such research the significance of identity has been seen as residing mainly in the need of people to maintain continuity and integrity with largely fixed basic values. These values allow people to be assigned to one of several 'segments' which identify their degree of pro-environmental orientation (Collingwood and Darnton, 2010).

Our research points to a different way of understanding the role of identity. It recognizes the existence of conflicts that are produced by biographical experiences of transition, and also the difficulties these can create for people in reflecting on why they have come to depend on specific practices. Experiences of transition, as we have seen, can lead to commitments to distinct and even clashing values. Behind these values lie distinct kinds of ethical frameworks, i.e. diverse ways of thinking about how the world should be. These help people rationalize why and how they participate in particular practices, but as our research shows, people's attachments to clashing values (like frugality and hospitality, for example) can lead to them relying simultaneously on two or more frameworks that are fundamentally incompatible with each other. In some circumstances, the same person can therefore be as attached to unsustainable, wasteful and costly practices as they are to saving money, taking environmentally-conscious action and avoiding waste. What sustains such divergent attachments can be the ways in which they are bound up with distinct visions of a 'good life', and the identities people associate with these ideas of good living.

We have shown how such attachments to clashing ideals of a good life are often maintained because they can help people manage difficult lifecourse transitions, even though these attachments can then give rise to troubling moral conflicts between commitments which, ultimately, people may prefer to disavow or ignore rather than deal with. Such conflicts, and the commitments that underlie them, may present barriers to changing practices among groups across the socio-economic spectrum but particularly among higher-income groups, as exemplified in the interviews with Jack in Ely and Lucy in Peterston. Among less affluent groups in the study, conflicts emerged between commitments to certain ideals of how domestic life should be and contingent circumstances, as in the interviews with Sarah at RFH or Christine in Ely. In these latter examples, change in how energy is used may become difficult because of the complex relationship between commitments to care for others (dependents for example), the energy requirements of these caring responsibilities, the material fabric of the home (poor insulation and so on) and socio-economic circumstances. This relationship may limit people's capacity to change how they use energy, and as a consequence may also result in feelings of guilt or anxiety about energy use that can be difficult to talk about against the backdrop of social imperatives to use less energy. How energy is used is, once again, about more than pragmatic concerns: viewing it through the lens of individual biographies sheds light on its moral and emotional significance.

## How energy is used is, once again, about more than pragmatic concerns: viewing it through the lens of individual biographies sheds light on its moral and emotional significance

This deeper significance of the use of energy was also apparent in the ambivalent feelings interviewees often expressed about convenience. Our use of films depicting domestic energy use in the future stimulated reflections from many participants on what was felt to be a lack within increasingly technological societies of a balance between convenience and certain kinds of effortful practices that many interviewees affirmed to be valuable and meaning-conferring. Our biographical lens revealed personal memories and shared histories of socio-technical changes that had reduced the need to engage in onerous, back-breaking labour, such as the replacement of coal fires with central heating. At the same time, there was a widespread sense among interviewees that the attractions of convenience had seen it change from a means into an end in itself. This sense was manifest in the responses of the majority of interviewees across all our case sites to the future visions presented in the films. We documented earlier how participants saw in these visions an increasing disengagement and disconnection from forms of activity and agency, such as intimate conversations, growing food, and other examples of what we have earlier called focal activities, which were valued as constitutive parts of a good life.

Here, once again, questions of what kinds of agency people enjoy enter into how they interpret and evaluate the ways in which energy is used and visions of how these practices may change. Moreover, practices are seen to have ‘added value’ – they are not just ways of getting things done and meeting material needs, but also foster a sense of connectedness, along with activities that are only possible through connectedness, which involve care, intimacy, and creativity. This does not mean there is necessarily a trade-off between convenience and these kinds of ‘focal’ activity. Some technologies and the practices they help make possible can foster both in ways that are mutually-reinforcing. Interviewees’ stories about the value they place on particular practices suggest that such mutually-reinforcing relationships can create path-dependencies which do not constrain agency, but rather promote valued forms of it (see section 4.6.2 above on how certain effortful practices can create path-dependent change of this kind). In addition, experiences of such practices encourage interviewees to reflect on what exactly convenience, and other linked concepts, such as controllability, actually mean. Central heating may be controllable at the flick of a switch, but the infrastructure that supports it is hidden and largely outside one’s control. By contrast, at Lammas wood-burners involve more effortful work, but are part of a system (including coppiced woodlands) which is largely localizable within a sphere of influence belonging to households within a community.

If agency is enjoyed in significant ways by people in shaping how they use energy, then it requires particular supporting conditions. By making more visible and tangible the incremental transformations of everyday practices, our interviews also draw attention to the importance of ‘linked lives’ for mundane yet significant change to everyday life. Interactions over time with others, and in particular with trusted others with whom interviewees were emotionally connected, served as conduits for learning about ways of using energy differently. Effective change may occur in ways that are non-linear, involving influences from a variety of sources. Change can therefore take paths that are decoupled from intention and planning. At the same time, attachments and commitments to specific shared values (as at Lammas/Tir-y-Gafel) can provide an important source of continuity through change. These commitments can help to deal with, or at least enable people to live with, the kinds of moral conflicts arising from distinct practices we discussed earlier.

The importance of linked lives was also evident in how community-level dynamics were described by interviewees. In particular, our data shows the importance of networked connections in instigating and sustaining processes of change. People may belong to a number of communities at the same time, including ones rooted in specific places and ones linked to specific practices. Communities of these different kinds can all activate and sustain agency. This is important, given how communities are linked, through their efforts at influencing the environments in which they operate, to processes of change that happen across still larger scales, whether these are broad patterns of social transformation or deliberate policy interventions. Our data from Ely gives a particularly striking example of what can happen to community-based interventions when policy helps to create an unstable environment for action. Data from RFH, on the other hand, demonstrates that within large workplaces, interventions also need to build on connections within the workplace, within teams and departments. Links between lives matter here just as much as in communities like Lammas/Tir-y-Gafel, and addressing interventions to individuals as isolated individuals seems to be largely ineffective.

## Technological solutions and messages about ‘switching things off’ may not penetrate deeply into entanglements between practices and technologies

**From the point of view of the policy concerns outlined at the beginning of this report, these findings offer a range of significant insights for practitioners working within organisations as well as within local, devolved and national governments.**

- Everyday life is composed of practices that are dependent on technological appliances and infrastructures which consume energy. But the relationships between practices (for example, microwave cookery and freezing food) mean they are also often interdependent. These entanglements of multiple practices and devices are a source of important path dependencies over time which constrain how far people will be able to use less energy.
  - If the ways in which people get things done are dependent on devices and infrastructures, people are also dependent on these practices and the technologies which support them for emotional as well as purely pragmatic reasons. People’s identities, together with their ideas about what constitutes a good life, are bound up with practices and technologies. People may be attached to conflicting identities or ideals, and thus to conflicting implicit ethical frameworks that justify behaving in specific ways. Such conflicts can obstruct practice change. As Lucy and Jack’s narratives both suggest, this may be an issue that arises especially in higher-income households.
  - Changing the ways in which energy is used is made easier by looking again at how agency can emerge in different social and place-based contexts, rather than assuming that ‘more information’ is enough. From Lammas/Tir-y-Gafel and the wholesale revision of practices undertaken there, to the observations made by RFH workers on the potential that may exist within teams (as communities of practice) for bringing about change, policy interventions can benefit from learning about the dynamics of agency that characterise different communities.
  - Similarly, technological solutions which reinforce the disconnection from energy-using devices and infrastructures that is reflected in messages about ‘switching things off’ may not penetrate deeply into entanglements between practices and technologies. Smart meters, for example, may provide detailed information in real-time, but this kind of feedback is very different from the kinds of feedback that come from effortful practices which draw on a range of people’s capabilities and that foster attentiveness to things that matter.
- More embodied (sensory and emotional) forms of effortful feedback are often found to be a valued part of some practices that have significant energy-use implications. These forms are often associated with forms of agency (frequently linked to caring for others) that are themselves seen as part of worthwhile lives. By contrast, interviewees often felt ambivalent about, or even suspicious of, the emphasis in the films we showed them on convenience as a central aspect of ‘lives worth living’. This suggests that thinking on energy demand policy needs to be sensitive to the complex reasons why people engage in practices, and how these relate to valued forms of experience that have often been overlooked hitherto.
  - An emphasis on the need to look differently at how to foster bottom-up forms of collective agency continues to be highly relevant for supporting community-level interventions. Of comparable relevance is the need for policy learning at a number of levels, from within organisations to the different institutions of local, devolved and national government, with regard to what happens when policies are actually implemented in particular places, and also to the clashes which may arise between the rhythms of policy development and those which characterize social action taken within communities. Understanding this may represent an important part of the path toward realising ambitions to achieve wider policy aims (i.e. low carbon transitions) through community-led initiatives.



There is a need to understand how people engage in the intellectual and emotional labour of making their everyday experiences, culturally embedded lives, and wider social worlds meaningful

## 5.2 Contributions to scholarship

### 5.2.1 Contributions to theoretical approaches

As well as showing how the approach used on *Energy Biographies* can produce empirical findings relevant to policymakers concerned with energy demand reduction, we set out to show how the combination of methods we employed could enrich theoretical approaches in the areas of scholarship we drew on: values, practices, lifecourse studies and relational approaches to community.

With respect to lifecourse studies, we have built on the increasing popularity of lifecourse transitions as a subject of energy research to make an original contribution, based on our findings about the role of incremental and more mundane transitions in enabling or creating momentum for significant change. This contrasts with the widespread emphasis in this literature on planned transitions that involve clear alterations in role or in status.

With respect to practice theories, our research suggests that individual agency needs to be put back into practice theory in order to understand what motivates people to participate in, change or defect from particular practices. We have recognised the importance of practice change in shaping activities, but as we have suggested in section 4.6 above, there is more to understanding how participation in practices may change – or not change – than examining the elements of practice typically identified by practice theorists. In this respect our analysis has placed a complex, psychosocial conception of the subject at the heart of debates about energy use, reflecting the thoroughgoing influence of a wider, qualitative social psychological literature in this specialised field (Henwood and Parker, 1994). In particular, there is a need to understand how people engage in the intellectual and emotional labour of making their everyday experiences, culturally embedded lives, and wider social worlds meaningful. Through this labour, individuals can develop their capacities for taking contextually meaningful action – a form of agency that is relational in nature, shaped by the qualities of their affective engagements not only with others, but also with technologies and practices.

Accordingly our research suggest that individual agency in this sense is not that of the ‘rational chooser’ which underlies some dominant policy narratives about behaviour change. Instead, the kind of concept of agency developed out of the Energy Biographies data is both complex and relational in nature, shaped by an unfolding past and projecting a particular lived future (Adam and Groves, 2007). It is a concept of agency as conditioned by valued relationships and forms of identity that are bound up with practices and also the technologies on which these practices rely.

This is not, therefore, to return to an overly-individualistic account of how social change occurs. Instead, it draws our attention to other sources of the patterns that characterize how people engage in, avoid or defect from particular practices. These patterns are shaped by biographical histories of social relationships, and traced out in people’s accounts of these histories.

The concept of attachment provides one way of understanding how such patterns emerge. Social relationships condition identity through emotionally-significant experiences over time. These cumulative experiences are associated with identifiable patterns in how people orient towards other people, places, and things that are emotionally-significant to them. What people value in their own identities is conditioned by their engagement, over time, with what and whom matter to them.

Although values rooted in attachment enable action by shaping individual perspectives on the world, they also constrain vision and agency. A constant theme in our interviews when talk turned to the future was that interviewees tended to make sense of the future through the links between their own biographies and those of their loved ones (Shirani et al., 2015). Such views of the future may constrain potential opportunities for changing practices. Continuity of close relationships is generally valued, so a large number of interviewees tend to see the future through a more conservative lens. This is different for people who have been more intimately involved with reviewing and transforming a wider range of everyday practices through their attachments to ideals related to sustainability, such as interviewees at Lammas.

Although individual values arise from individual experiences, at the same time, they are not entirely idiosyncratic. They reflect ‘structures of feeling’ (Hoggett & Thompson, 2012), positive or negative evaluations of particular forms of identity, that may be shared within and across social groups – including socio-economically distinct groups. This links our psychosocial approach to energy use with the concern with relational community that forms another key pillar of the project’s theoretical approach. The kinds of identity that people find valuable may be manifested across a study sample (as was the case with ours) in distinct, contrasting and even opposed forms, such as solidaristic, connected, autonomous, or inward-looking. The forms of engagement with the world that they value, e.g. practices which encourage friction and require focal objects, shape how they participate in and value different kinds of practices through time and through transitions. The desirability of such forms of identity and engagement may reflect broader shared attachments which may be widely characteristic of a given society at a particular time (cf. Marris, 1996).

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## *Energy Biographies* made it possible for participants to reflect on the desirability and value of widely accepted priorities like convenience and comfort

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### 5.2.2 Methodological contributions

We set out to show how the combination of biographical and multimodal methods could render visible to people overlooked aspects of how they use energy every day, why and how their everyday practices are sustained, and how key lifecourse transitions have shaped their current lifestyles and energy practices.

Our methods were successful in bringing to the surface and exploring a variety of complex interdependencies and hidden, invisible or intangible forms of path-dependence in which practices and technologies are implicated: emotional investments in particular practices, the entanglements of valued identities and practices, the domination of particular values (like convenience) and the erosion of valued forms of agency, the incremental accretion of moments of change that may go unnoticed, and the relationships between community agency and policy.

Our combination of methods has also allowed us to investigate links between individual biographies with, on the one hand, incremental and perhaps largely unnoticed transformations, and on the other, wider processes of social change. At the level of individual sense-making, we have shown how broader concerns that implicate different spatial or temporal scales and associated processes of change, increase uncertainty in ways that may be troubling (particularly where the future is concerned). When issues of this kind (like climate change, for example) enter the foreground of awareness, many interviewees move focus in their reflections on the future to the futures of others for whom they care (Shirani et al., 2015), a finding which reflects earlier research by team members (Shirani et al., 2013).

To broaden the focus on the future and deal with the anxieties thinking about this may evoke, we found that the use of visual materials such as the 'house of the future' films was highly productive. This allowed interviewees to reflect on broader processes of techno-social change, and their implications for everyday life. It also drew out the significance of the emotional and psycho-social aspects of the ways in which people engage with technologies for understanding why and how people become participants in particular practices. These aspects were made tangible thanks to the rich biographical reflections on the meaning and also on the materiality of practices the *Energy Biographies* approach elicited from interviewees, which brought out the sensory and emotional aspects of how and why people use energy in particular ways. By adding a multimodal component that invited interviewees to reflect on imagined energy futures of increased convenience, *Energy Biographies* also made it possible for participants to reflect on the desirability and value of widely accepted priorities like convenience and comfort. For example, interviewees often contrasted the value of familiar practices that involve friction and embodied feedback (such as tending a woodburner) to the perceived disvalue of 'convenience for its own sake'. The methodology we employed thus potentially has value for participatory approaches to technology assessment such as those promoted under the rubric of 'responsible innovation', providing a way of linking reflection on potential future technologies to the everyday complexities of how people live with technologies in the present (Groves et al, under review).

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# Appendix 1: Sample/recruitment details<sup>4</sup>

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<sup>4</sup> Interview pseudonyms are given in italics in the text.



Lammas/Tir-y-Gafel and the Royal Free Hospital (RFH) were confirmed case sites at the start of the project. Lammas/Tir-y-Gafel was a Low Carbon Communities Challenge (LCCC) winner and RFH was an institution with carbon reduction and energy saving targets. On 5th August 2011 we had a meeting with Sam Froud-Powell, Pathfinder officer for South East Wales, to try and identify potential Cardiff case sites. Sam suggested Futurespace as a potential inner-city case site where a large number of people had expressed an interest in solar photo-voltaics. Karen Parkhill (KP) began involvement with this group in September 2011 by volunteering. KP, Catherine Butler (CB) and Fiona Shirani (FS) then met with community representatives on 5th October 2011 to discuss their involvement). In the 5th August meeting we also discussed groups in more affluent areas as a potential contrast and Sam suggested Cysllt Peterston Connect (CPC) in Peterston, amongst others. We chose the two case sites as both had interventions around solar photo-voltaics but had very different approaches based on the socioeconomic make up of each community.

## 6.1 Ely and Caerau

A large inner-city ward, Ely and Caerau incorporates one of the largest housing estates in Wales with a population of around 28,000 people. The Futurespace scheme related to solar panels was part of the wider ACE (Action for Caerau and Ely) programme, which subsequently took on some Communities First roles. In the first instance, only owner-occupiers were eligible to be involved in the Futurespace scheme (a ‘rent a roof’ approach where money generated through tariffs would go back into the local community). Initially 150 people had signed up to be involved, although changes to the feed-in tariff or FIT scheme meant the scheme became unviable.

Initial recruitment for this case site involved putting together information about the project and designing a brief tick box form to capture some demographic information. This was circulated by Dave Horton (our case site contact) in November 2011 to the list of people who had expressed interest in the solar PV (he circulated it on our behalf rather than giving us the list, for confidentiality reasons) and they were asked to contact us (FS) if interested in participating. We were initially contacted by approx. 10 people, who we began interviewing in December 2011. To try and get a wider demographic spread we asked Dave to particularly target some younger people, as well as circulating via the list again. The only person we did not recruit via Dave was *Lauren*, who was recruited

via her mother *Christine* (also a participant) when she knew we were looking for younger people to be interviewed. *Lauren* was eligible to participate as the home she lived in (owned by Christine) had been one of those initially registered for potential solar panels.

### 6.1.1. Selecting the sub-sample:

Most of our initial interviewees said they would potentially be interested in QL participation. We wanted to ensure a spread of demographic characteristics, life experiences and involvement with Futurespace, as well as include those who had been some of the most interesting interviewees in wave 1. We opted to include *Jack* (40s, living alone, self-employed home worker); *Christine* (50s, large family, recent lifecourse changes – unemployment and caring responsibility); *Steve* (30s, living with wife and young children, involvement with Futurespace, active in the community through work and personal interest); *Lauren* (20s, living alone and initially unemployed) and *Jeffery* (70s, living with wife, impending retirement and operation, some involvement with Futurespace).

## 6.2 Peterston-super-Ely

A village on Cardiff’s city’s outskirts with a population of around 1,000 people, Peterston has been described as a particularly affluent area. The village is divided into two distinct parts – on one side, an area of ex-social housing and 1970s detached homes along with a couple of bungalows. The other part of the village is larger, semi/detached houses – a mixture of 1930s properties from an initial design for the village to be a garden village, 1970s homes, a ‘Moroccan terrace’ and a road of extremely large gated houses. Several of our participants drew a distinction between the two parts of the village.

**1,000** Population of Peterston-super-Ely on Cardiff’s outskirts

In October 2011 we met with John Drysdale and 3 other members of CPC to tell them about the project and they were interested in being involved – the secretary also requested we make all recruitment information available in Welsh as well as English, which we did. In November, participant information was circulated by one member to others on CPC’s membership list (although FS was copied in). We had some initial interest via this list and recruited our first few participants; however we were finding it difficult to get women to be involved, so some people participated as couples. We also wanted to attract some younger people – *Phoebe* was recruited after her parents participated, and *Dean* was recruited in the local pub where he worked after FS had asked to leave some

information about the project there. The remaining participants were recruited after responding to a leaflet drop FS did in the area in January – based on responses to this we prioritised those who were younger/had young families in contrast to the predominantly retired sample we had recruited via our initial contact list.

### 6.2.1 Selecting the sub-sample:

Again, most people expressed a potential interest in participating in the qualitative longitudinal (QL) element of the project and it was very difficult to decide/agree on who we wanted to include as we felt so many participants here were interesting. Again, we wanted a spread of demographics etc. and opted to include; *Jeremy* (60s, living with wife and older children, active in local community and committed environmentalist); *Mary* (50s, widowed, retired with travel/caring responsibilities); *Jonathan* (40s, living alone, environmentally engaged, active in local community); *Phoebe* (teenager, just about to leave home for University) and *Lucy* (30s, recently moved to the village, young children, initially not working).

## 6.3 Lammas

Lammas was made possible by the particular policy environment developing in Wales under devolved government. The Welsh Government's 'One Planet' planning guidance on sustainable rural communities (Welsh Assembly Government 2010: 24) and the publication by Pembrokeshire County Council of its Low Impact Development planning guidance (Pembrokeshire County Council 2006) made room for communities like Lammas to be established on low-value ex-agricultural land, with first work at Lammas being undertaken in 2009. In September 2011 we met with three Lammas/Tir-y-Gafel residents to discuss procedures for recruitment and participation, as Lammas/Tir-y-Gafel were already committed to being involved in the project. We discussed recruiting all those (adults) who lived in the village and were interested, long-term volunteers, others from the local community and some of those who had signed up to the planned second ecovillage 'Tir Teg'. One resident was going to speak to everyone and pass on information on our behalf – he would then pass on their contact details for us to arrange the individual interviews. Of the 17 adult permanent residents, 15 initially agreed to participate and a 16th later opted in. We also interviewed two long-term volunteers (*Jada* and *Greg*). These interviews were undertaken in February 2012.

### 6.3.1 Selecting the sub-sample:

Initially we had intended to include only a small number of residents in the QL sub-sample for rounds two and three. However, once we had done the first interviews, which were generally very extensive,

we felt it would be preferable to include all the residents. In addition, the money for participating was quite a significant amount to them so we didn't feel able to pick and choose once everyone had indicated that they would like to participate in the QL element. We opted not to include the volunteers, who had felt less able to comment on what was going on in the ecovillage because they did not have such central involvement. We did initially try to recruit others from the local area via our case site representative but did not garner much interest. The 'Tir Teg' project also folded during this time. As the QL sample was involving a larger number of people than we had anticipated (16 rather than 10, so an additional 12 QL interviews), we opted not to push for wider recruitment and focus instead more closely on the ecovillage residents.

## 6.4 Royal Free Hospital

RFH is a large teaching hospital in north London that employs around 10,000 staff, employees live in a range of areas across London and beyond. An initial scoping interview (KP and CB) with Martyn Jeffery, Estates Manager, took place in September 2011 to discuss recruitment and participation as RFH already agreed involvement. Delays with the hospital's ethical approval process postponed recruitment until April 2012. This was probably the most difficult case site in terms of recruitment/generating interest. We provided information about the project that we understood would be circulated to all employees via email. Once they had expressed initial interest, we then asked them to complete a form to collect demographic information. We later found out that the project information had been displayed on the hospital's intranet site, which only staff with regular computer access would be likely to see – because of this, not all areas of the hospital's workforce were represented.

**10,000** staff employed at this target teaching hospital in London

12 participants responded to the initial information and were interviewed in May 2012. From initial responses we found that some areas of the hospital were not represented (senior medical or organisational staff, cleaners and porters, and carbon champions) so we asked for specific recruitment in these areas if possible. It was not possible to send project information via an all staff email list so we were reliant on our case site representatives' targeted recruitment. We received another 8 responses (although not from our target areas) and these interviews were conducted in May/June. We did not receive any further interest, despite repeated information circulation, so the sample remained at 20.

We later found out that the project information had been displayed on the hospital's intranet site, which only staff with regular computer access would be likely to see – because of this, not all areas of the hospital's workforce were represented

#### 6.4.1 Selecting the sub-sample:

This was the first case site where some people were not interested in further participation. We made an initial shortlist but after getting in contact with some participants found they were unsuitable for the longer-term aspect (e.g. *Karolina* was moving to Poland before the end of the study) or did not reply to our attempts to contact them. With the 10 we eventually selected, we were aiming for a range of demographics, and to follow up some of those who gave more detailed responses in wave 1.

	Sep 11	Oct 11	Nov 11	Dec 11	Jan 12	Feb 12	Mar 12	Apr 12	May 12	Jun 12	Jul 12	Aug 12	Sep 12	Oct 12	Nov 12	Dec 12	Jan 13	Feb 13	Mar 13	Apr 13	
Lammas/ Tir-y-Gafel scoping	█																				
RFH scoping		█																			
Ely wave 1				█	█	█															
Peterston wave 1					█	█															
Lammas/ Tir-y-Gafel wave 1						█															
RFH wave 1									█												
Activity 1 (participant photos)									█	█						█					
Ely wave 2											█										
Peterston wave 2											█										
Lammas/ Tir-y-Gafel wave 2											█										
RFH wave 2															█						
Activity 2 (text prompted)												█	█	█	█						
Ely wave 3																			█		
Peterston wave 3																			█		
Lammas/ Tir-y-Gafel wave 3																				█	
RFH wave 3																					█

\*RFH participants did the interviews/activities in a different order to the other three case sites (doing the text-prompted task between interviews 1&2 and then their own photos task between interviews 2&3. Also, their wave 2 interviews used the round 3 interview schedule and vice versa)

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