

ETHNOGRAPHIC REPORT

Powering Up

Building capacity for energy
resilience in deprived communities

Dr Bradon Smith



centre for
sustainable
energy



Friends
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UNIVERSITY OF
BATH

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Summary

This research, an ethnographic study forming the first phase of a longer project delivered by the Centre for Sustainable Energy (CSE)*, sought to understand householders' lived experience of energy and their relationship with their local community, in some of the most deprived communities in the South West of England and South Wales. This initial study aimed to establish a basis for further work with these communities, through understanding participants' current knowledge of the energy system, and the potential for community energy activity.

The research involved in-depth interviews with three participants in each of the three communities, and group workshops bringing participants from each community together. The focus of the interviews was on understanding householders' perceptions of energy use in the home, their knowledge of the energy system and their place in it, their sense of the community in which they live, and the capacity of the community to develop its own community energy projects.

In addition, this ethnographic work aimed to develop and pilot methods – particularly via the group workshops – that could be used in these and other deprived communities, to facilitate discussion of energy use, the energy system, and the potential for community energy projects. A separate briefing note discusses the format of these workshops and how they might be developed for further use with communities.

This research found that:

- For many of the participants, energy use is perceived as high on a list of household costs. However, despite this, energy use is taken for granted – 'you flick and switch and it's there'. Energy use reduction behaviour is not widespread, even though householders were aware of possible strategies.
- Energy literacy, especially of the wider energy system, was initially found to be low; though there is more latent knowledge of how the system works than this first impression. Nonetheless, participants showed considerable uncertainty about systems for energy generation and supply.
- Householders expressed a strong sense of disempowerment and disengagement from the energy system. Their only sense of control was seen as the option to switch supplier, and this was

* For further information on this Friends Provident Foundation-funded project, please visit CSE's website: <https://www.cse.org.uk/projects/view/1338>

understood to be a fairly insignificant form of influence. There was considerable scepticism about the fairness of the energy system.

- Renewable sources of electricity – especially solar and wind power – were prominent in participants' descriptions of the energy system. In most cases renewable sources were mentioned before and more often than fossil fuelled electricity-generation. Renewables, or 'green' or 'eco' energy sources, were viewed very favourably; roof-top solar in particular was seen as desirable by participants, and some had actively looked at getting PV panels installed. The barrier was always financial.
- Climate change and carbon emissions were not mentioned by any participant; these are not salient issues for any of these participants. Although almost all participants expressed support for environmental awareness in relation to energy, this research suggests climate change as an issue would not be a motivating factor for any of these communities to engage with a community energy project.
- Participants spoke positively about their communities; but also recognised that there was generally little community activity or co-operation. Examples of community activity were often in the past, or events that no longer happened.
- Participants had difficulty imagining useful community energy projects or activity; energy was not seen as an area that the community could help each other with, or work together on. When presented with examples of community energy projects, however, they were easily understood and responded to positively.

This research suggests some significant challenges for these communities in initiating community energy projects, and for organisations seeking to support them. The lack of existing community organisations, structures or activity in these communities (at least in the eyes of these participants), means that community activity would need to start from scratch. There also does not seem to be a pre-existing idea of communities co-operating on activity around energy.

However, set against these challenges are the positive attitudes towards renewable energy (especially solar), and the recognition of environmental or 'green' ideas about energy and waste. There, research also suggests that the process of participating with this research has provoked interest among participants (they were not aware this was a project focussing on energy before participating). Participants have indicated that they have been thinking about their energy use as a result, or even doing their own research; others have noted that they would appreciate more information on energy use. This indicates that participation in such a project has its own benefits in increasing awareness and engagement.

This present study establishes a base for working with these communities; it is hoped that this research can be the basis for follow-up research with these communities as the wider *Building Capacity for Energy Resilience* project progresses.

1 Introduction

This paper gives an overview of the key themes that have emerged from the interviews & workshops undertaken in the three communities. These themes reveal the ways in which these householders think about the energy that they use, their knowledge of the energy system and their place in it, and their attitudes towards different modes of energy generation.

The overarching purpose of this research was to try to understand what might be the key barriers for these communities in initiating community energy projects, and to provide the groundwork for the following phase of the *Building Resilience* project within these three communities. A secondary aim of the research was to develop methods that can be used to initiate community thinking around energy, and community energy projects specifically.

Four key research questions were established before proceeding with the community ethnographic research: two questions relate to the individual and their relationship with energy; two further questions relate to the participant's community.

Q1 What do participants know about energy?

Q2 What power or influence do participants feel they have in relation to energy?

Q3 What kinds of collective action happen in their community?

Q4 What kinds of community energy actions would be appropriate in this community?

Q1 addresses participants' energy literacy, relating both to their individual energy use, to the system of institutions that supplies their energy, and to wider questions around energy efficiency, energy generation, and related issues of carbon emissions, renewable energy generation, climate change and so on. An important starting point for this project was to establish what participants do know about energy and its related issues, since this might be

Q2 looks at participants' sense of their place within the energy system, and is especially concerned with issues of power and justice. It asks whether participants feel they have any 'say' in the system, and power to change it, or any points of intervention in the energy system. Implicitly it asks whether participants feel that the system is fair, and how it might be different.

Q3 addresses what activity currently takes place in participants' communities, or has taken place in the past. It is intended to discover what kind of actions work in this community, and what participants would like to see happen. Related questions are why more activity doesn't take place, and what the community would benefit from. This is not, at this stage, a question of community energy projects or activity.

Q4 tackles the question of community energy directly, and considers what participants themselves think are appropriate energy actions or projects for their own community.

2 Methodology

This section outlines the methodology used for the ethnographic research with the three communities. The methodology for this study was submitted to the University of Bath research ethics committee for approval, revised according to their recommendations and subsequently approved.

2.1 Identifying communities

The three communities were identified by CSE using a combination of Experian's Mosaic data and the Indices of Multiple Deprivation (IMD).

Mosaic divides the UK population into 15 'groups' and 66 more detailed 'types' using 400 data variables that classify UK households based on their demographic characteristics, lifestyles and behaviour. Experian has a 'Mosaic Audience' tool, which allows users to build up a profile of any subset of the population by picking from a comprehensive list of characteristics, and then converting this to the Mosaic Types which correlate most strongly with those characteristics.

CSE used this Mosaic Audience tool to determine the series of Mosaic types commonly found in communities which have been 'left behind' by changing economic and political conditions – communities where there is, for example, low social mobility, higher share of people earning less than the living wage, low levels of education and skills, and families relying on precarious employment and the welfare system. These MOSAIC types were found to be:

Mosaic group	Mosaic type	
I: Family basics	I37: Budget generations	Families supporting both adult and younger children where expenditure can exceed income
	I38: Childcare squeeze	Younger families with children who own a budget home and are striving to cover all expenses
	I39: Families with needs	Families with many children living in areas of high deprivation and who need support
J: Transient renters	J40: Make do and move on	Yet to settle younger singles and couples making interim homes in low cost properties
K: Municipal challenge	K44: Inner city stalwarts	Long-term renters of inner city social flats who have witnessed many changes
	K45: Crowded Kaleidoscope	Multi-cultural households with children renting social flats in over-crowded conditions
	K46: High rise residents	Renters of social flats in high rise blocks where levels of need are significant
	K48: Low income workers	Older social renters settled in low value homes in communities where employment is harder to find
L: Vintage value	L49: Dependent greys	Ageing social renters with high levels of need in centrally located developments of small units
	L50: Pocket pensions	Penny-wise elderly singles renting in developments of compact social homes
	L52: Estate veterans	Long-standing elderly renters of social homes who have seen neighbours change to a mix of owners and renters
	L53: Seasoned survivors	Deep-rooted single elderly owners of low value properties whose modest home equity provides some security

Lower Layer Super Output Areas (LSOAs) were then mapped which:

- had 50% or more households falling within these identified MOSAIC types;
- were within the bottom three income deciles of the Income Deprivation Domain of the IMD[†]; and
- were within one-hour drive of Bristol[‡];

This first stage of mapping revealed 120 relevant LSOAs. A ‘human’ analysis was then conducted on 11 areas with clusters of these relevant LSOAs – a cluster of LSOAs was deemed an appropriate scale of community for the project – and where there is not an active community energy group within the broader MLSOA. This human analysis involved determining the accurate boundaries of the communities (recognising that LSOA boundaries may not fit neatly onto the real community boundaries), building a picture of existing institutions and activities, and identifying potential on-the-ground partners.

The three chosen communities were:

- Duffryn – a community in the south of Newport, Wales. Duffryn is a large housing estate of 2-tiered terraced housing, completed in 1978. The estate is heated through a district heating system (initially oil-based but now biomass). The community has a family centre, a primary school and two neighbouring secondary schools. 16% of the housing is owner-occupied, with the rest being social and local authority housing.
- Penhill – a community in the north of Swindon. Penhill consists of a mixture of terraced and semi-detached housing, and high-rise blocks. The community has a primary and secondary school, a children’s centre, and a community hall. 27% of the housing is owner-occupied, with most of the rest being local authority housing.
- Hamp – a community in the south of Bridgwater, Somerset. 49% of the housing is owner-occupied, 14% is privately-rented, and the remaining is a mix of social and local authority housing. Hamp has a primary school, two secondary schools, and a YMCA.

2.2 Recruitment

A slightly different approach to recruiting participants was taken in each of the three communities.

- In Duffryn, a community representative, previously employed as part of the Communities First programme, was identified. After an initial meeting with him, he was briefed to identify households willing to participate who would represent a range of living situations and ages.
- In Penhill, initial research into the community found an active ‘Street Reps’ project. A meeting was set up and the project discussed with the Reps. The Reps were asked to suggest possible participants, and the leader of that project advertised the call for participants through a Facebook post.
- In Hamp, a local Neighbourhood officer from the housing provider showed the team around the community. A call for participants was made at a local community group meeting, and in a Facebook post, posted by a local councillor.

During recruitment, participants were not told that this was a project about energy or community energy, but were given a short blurb asking for participants for a ‘study to compare the way people

[†] The Income Deprivation Domain measures the proportion of the population experiencing deprivation relating to low income. The definition of low income used includes both those people that are out-of-work, and those that are in work but who have low earnings (and who satisfy the respective means tests).

[‡] This was determined using an online resource available at: www.drivetimemaps.co.uk

live their daily lives in [participants' community] with two other small communities in the South West of England and South Wales'.

Participants who expressed an interest in being part of the research project were asked to answer a few questions, giving the research team enough information to select a sufficiently diverse range of participants. Participants were asked to commit to 3 interviews of approximately one hour. All participants were given a brief description of the project in advance of the first interview ([Appendix A – Participant information sheet](#)).

Participants were recompensed for their time, with supermarket vouchers (for their chosen shop) of £25 per session.

2.3 Interviews

Interviews were held in the participants' homes, normally in the living room. The interviews were audio recorded and followed a semi-structured protocol of interview questions. The interview protocol which formed the basis for these interviews is included in [Appendix C – Interview protocol](#).

Other than the interview questions, one further device was used to encourage participants to 'think aloud' about their energy use in the home. With the participants' permission, the interviewer asked them to take the interviewer on a tour of their home, talking about how they used energy in each of the rooms, which ones might use the most energy and when.

2.4 Workshops

As the project developed, it was decided that a group workshop involving all the participants in each community might stimulate interesting discussion and produce additional material. Some of the questions which had been planned for the third interview informed the design of two group activities. These workshops eventually replaced the planned third interviews.

The workshops activities were:

- An energy network mapping exercise
- A photograph flashcards exercise

In the network mapping exercise, the participants were seated around a table, on which was a large sheet of paper. Participants were given marker pens and pieces of coloured card and scissors. It was explained to them that they were to collaborate on trying to map the energy system: where energy comes from, where it goes, how it is generated, and where, how it is used and where. It was impressed on the participants that this was a difficult exercise, and that they were not expected to get it 'right'. A certain amount of facilitation was given – they were encouraged to draw and label any element that they mentioned, to arrange them on the sheet of paper, and gradually to try to link the parts together to form the network.

Once it was felt that the group had 'completed' their network map (or were not going to add any more detail) the group was asked to take a pen and to make all of the parts of the map where they felt either that they had some involvement, or some power or 'say' in the system. This question was useful in generating discussion of the participants' sense of their own role within the energy system, and the relative power of other actants.

This activity was based on previous research activities used to generate discussion and facilitate learning about energy networks with groups of young people (18-25) in London. These previous iterations used plasticine or lego to model the parts of the energy system. It was felt for this project that these materials might seem slightly childish, and that participants might feel more uncomfortable with these media, and so drawing was preferred. Photographs were taken of the network map as it progressed and in its final form. All discussion was recorded.

The second activity used 8 photograph flashcards of past CSE community energy projects (these photographs can be found in Appendix D). The participants were shown these photographs, and for each one they were asked to describe what they saw in the photograph, and in what way the photographs could be said to be about energy. Finally, the participants were asked if any of the activities they had identified in the photographs already took place in their community, which activities they thought *could* take place in their community, and which ones they would *like* to see in their community. This activity, the culmination of the two interviews and the workshop, was the most direct approach that this research took to identifying participants' opinions regarding possible energy projects for their community.

3 Discussion

In this Discussion section, the key themes that emerged from the interview and workshop data are examined. These discussion sections broadly map onto the four initial research questions. The possible implications for the next stages of the project are considered where appropriate.

3.1 Energy literacy and the energy system

One of the key questions for this ethnographic phase of the project was to understand the level of *energy literacy* of participants in these communities. This interest is reflected in the first of the four research questions detailed in Section 1: What do participants know about energy?

The interview data suggests a low level of literacy when it comes to national/regional energy infrastructure. A major qualification is discussed below, but participants often readily admitted having little idea how energy was generated, or from what sources.

CASE: Duffryn 3RO interview 2 transcript

I: And what about, so beyond your home do you know where your energy comes from?

R: I don't actually know where, I know it's on the other side of the estate but I don't know where to, I've never seen it.

I: And what about does your electricity come from there too?

R: As far as I know, I'm not sure to be honest.

CASE: Penhill 4FK interview 2 transcript

How it's supplied? Yeah, I don't really know. I'm not sure. I don't really know a lot about how it is supplied. All I know is that, I think I also said last time, there is a national grid and they provide all the energy to the suppliers who for each area decide... not decide but... yeah I suppose they decide, how much each area needs. Yeah, I'm not sure really how it all works, to be honest, but I just know that there's metering of your electric meters and they monitor how much you use and then that's how they decide how much they're going to charge you, I think.

CASE: Penhill 4FK interview 2 transcript

I: What about how the energy is actually produced?

R: In different ways... Obviously there's a lot of eco ways now to do it, isn't there. So they can do the wind farms and you get the solar panel farms. I don't know if they get their energy from them or whether they just get it from... I don't actually know the ins and outs of where they get electricity from...generators and things like that. I'm not sure.

In Hamp, local awareness of the Hinkley Point nuclear power station probably meant a slightly higher level of literacy in terms of electricity generation (see [4.1 Differences between communities](#)), but participants still revealed some confusion over how this related to the national picture, and also over other sources of energy.

CASE: Hamp 3SH interview 2

OK, so my husband works at Hinkley Point Power Station <chuckles> near Cannington, so I know that that's providing all the electricity for whatever massive amount of area that it

does, and they're having to build a new one because obviously the old one's not sufficient enough for whatever it needs. So all the electricity in this house, that's where that would come from that we use and pay for. And then also the gas 'cause we use the gas as well. I've never really thought about that, but it's piped in from somewhere <laughs> so I have no idea where that comes from! No, I don't really know where the gas comes from.

Duffryn also provides an interesting variation on this theme. Although the literacy at the level of the national picture was probably no higher among Duffryn participants, all the participants were aware of the district heating biomass plant, which was mentioned by all participants (including those not on the system). Although there was still some confusion about how it worked exactly, this was a greater level of energy literacy than for the wider energy system. The following quotations come from each of the three Duffryn participants.

CASE: Duffryn 1RO interview 1 transcript

Well the cost of heating is quite expensive but that's because it's a district system. It's not just pertinent to me, it's other people that live on the estate as well, families and stuff, you know, the kilowatt rate is quite dear, you know, that's my major grudge about it.

CASE: Duffryn 3RO interview 1 transcript

I: Well tell me about the woodchip thing [...] what is that?

R: They heat the woodchip and that's what creates the energy or something that goes through the pipes to the centre of the estate, to the housing estate.

I: So that's like communal...

R: Yeah, they've tried to make it more economic.

I: Okay. Is that for heating do you know or for...?

R: I think it's for the heating because you hear the boiler turn on every morning and then the cisterns and then when you're in bed six o'clock every morning you hear it firing up and it goes throughout the day and then it goes quiet in the night. You see the big lorries delivering the hundreds and hundreds of kilos of woodchip there.

I: And did you say your dad, you think your dad's heating is from that?

R: Yes. Yes.

I: Okay, that's quite interesting but you're not connected to that?

R: No, no. We seem to be on a different system.

CASE: Duffryn 2DM interview 1 transcript

I: So what was the system before that?

R: People had a card to pay to the Council, but since they've had these meters people just obviously pay their own. Some people're complaining about it. I'm finding it okay so I'm not worried about anybody else [...]

I: So how does it work? Do you know how the system works? Everybody's heating comes from the same place?

R: Yes. They're changing it over to wood based. It was gas but it was always...over Henry Morgan, which is over the other side of the estate. But there's only apparently two in the UK, housing estates like it and that's Duffryn and somewhere up country. When we were on everybody paid it with their rent, people could have their radiators on 24/7, summer or winter. Windows wide open, they'd just leave their radiators on. Now, obviously, they've all cut back, they won't use the radiators so much. It's better because everybody got their own

bill now that they've gotta make sure they pay, 'cause if you don't pay you don't get no hot water.

This contrast was particularly clear in the case of participant 3RO, who was able to describe in some detail the working of the district heating system which powered the rest of the estate, but admitted they knew little about the system that supplied their own energy. The visibility of the energy infrastructure associated with the district heating system appears to be significant in terms of energy literacy in this community.

CASE: Duffryn 3RO interview 1 transcript

They've built the new system just down here and they use the woodchips now to fuel the oil, the heat around the estate but that's not...that's the one that's always breaking down so we can't be on that system. I don't know where we're at to be honest. I haven't got a clue. But they're on that system which is the one that keeps cutting out all the time and having problems and issues with the water and the electrics but in this area we don't seem to be affected so that's the only view. I think our system is on the other side of the estate that we're actually on.

CASE: Duffryn 3RO interview 2 transcript

I: [...] do you know where most of our energy comes from for everyone else's houses? [...] what about the rest of Newport for example?

R: No. I have no idea to be honest.

It will be interesting in the full project to see whether the presence of this local energy infrastructure has an effect on the response to the project in Duffryn. Although this district heating is not a community-owned energy project, it is an example of local energy generation which may make the idea of local community energy projects more imaginable to participants. On the other hand, the response to the biomass plant appears to be mixed, with two participants indicating problems with it and high costs.

The apparently low level of energy literacy found in the interviews can be tempered or qualified by the evidence from the workshops. In a more facilitated environment, and pooling their knowledge of the energy system, all three workshop groups were able, with time and encouragement, to network map the UK energy system to a fairly high degree of accuracy and detail (see Figure 1, Figure 2 and Figure 3).

How do we explain the outcomes of this mapping exercise, given that most of the participants had admitted to knowing little or nothing about the energy system? It seems that participants have more *latent* knowledge of the way the energy system works than they at first realise. The confusion expressed in the interviews may be better described as uncertainty combined with a lack of confidence; the energy system is confusing and complex, and participants felt they didn't have the knowledge explain it.

This connection between knowledge and confidence seems to be suggested by one participant in Penhill who, immediately after expressing concerns about fossil fuels ("I feel like if we keep digging the world's gonna collapse in, that's how I feel, it's like it's gonna... there's nowhere left to go then"), discusses the energy system:

CASE: Penhill 3CN interview 2 transcript

R: I feel like it's not organised but I couldn't explain how I think it's organised, it just seems like nobody really knows, so they have a little bit of an inkling but they don't... they're too scared to go forward with it, I don't know?

Here, the disorganisation in the energy system that this participant senses is linked somehow to 'nobody really know[ing]' and them being 'too scared'.



Figure 1 - Duffryn workshop

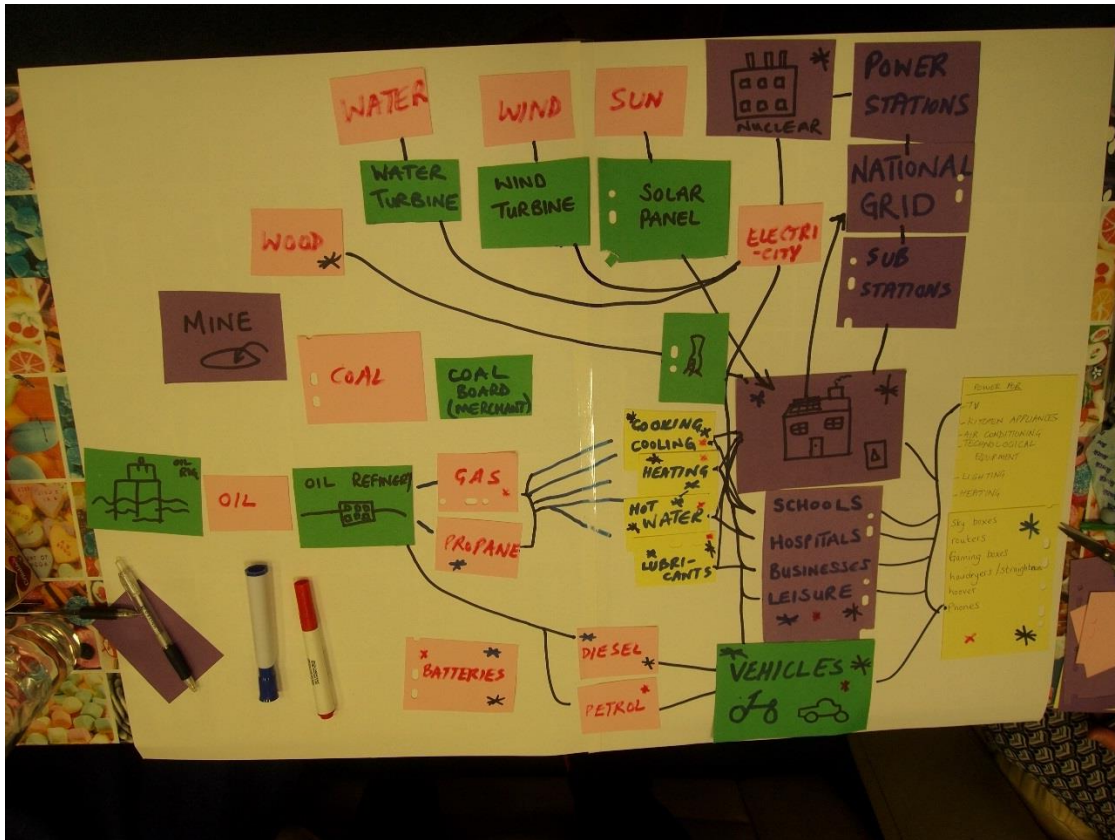


Figure 2 - Hamp workshop

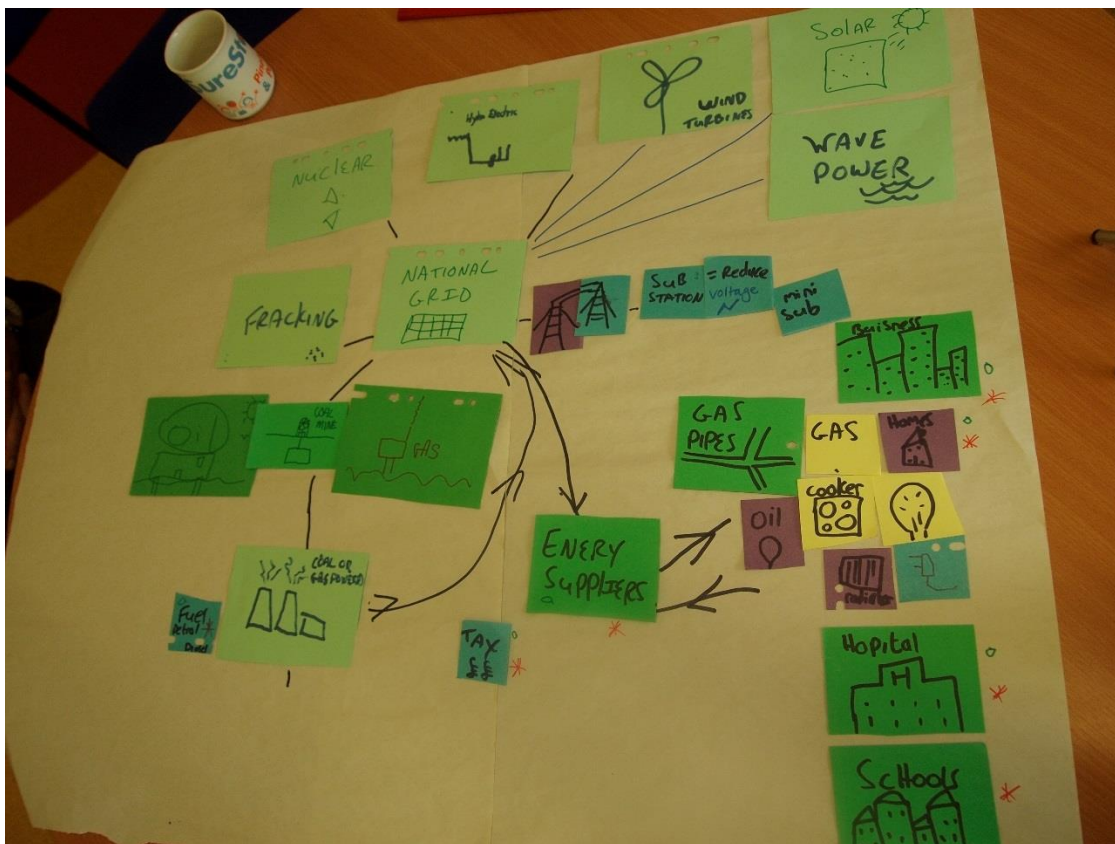


Figure 3 - Penhill workshop

3.2 Salience of energy

One purpose of the interviews was to understand how energy use was seen by participants, and the project sought to reveal the extent to which participants considered energy as an important 'issue' in their day to day lives.

In line with other decisions outlined in the methodology section, the interviewer allowed space for the issue of energy to emerge from the participant, before bringing the topic into the interview. Early questions in the first interview were intended to make discussion of energy a possible response, but without requiring it, or steering the participant in that direction.

For example, the interviewer asked participants to talk about what they considered their principal household bills. In response, some participants immediately included heating and electrical utilities in their account of their bills. In contrast, others did not mention energy, even after the interviewer returned to the question of household expenditure.

We can describe this presence, or visibility, of energy use for participants, as the salience of energy. This salience – including in the relatively narrow sense of the cost of utilities – varied, sometimes dramatically, between participants.

In some cases, it was immediately part of responses to very early questions on bills/costs:

CASE: Hamp 1DE interview 1 transcript

I: I just want to ask you a little bit about your home and the way you manage your home. What would you say are your kind of like big costs in running your home?

R: Ours is electric that's because my husband has got that [fish tank] and that uses a lot of electric.[...] there must be about eight different plugs for it for different things. That's his baby and also I tumble dry most of the stuff and so get big electric bills. But I'd say in general that's the biggest expense sort of in proportion to what comes in.

CASE: Duffryn 2DM interview 1 transcript

I: What are your key costs? What are the big things you have to pay for?

R: Electric, gas, water.

I: Are those the big ones?

R: Heating. Yeah.

I: And is it a struggle to pay for those?

R: Well, I've got the meters for the gas and electric; and the heating because they're put a new system in. I don't find it too bad. I cope quite well to make sure there's electric, gas and the heating for the hot water basically.

I: You said there's a new system, what...?

R: Different on a...everybody's on the same heating system. We haven't got separate...if people want gas they've only got a cooker in the house. All the radiators are run from over the other side of the estate and everybody now have got separate meters for the heating and their water, whereas before it was in with the rent. Everybody paid the same, but now everybody got separate meters.

CASE: Penhill 1PA interview 1 transcript

I: What would you say are the [...] big living costs typically?

R: Gas and electric, particularly in the winter.

In these cases, a question about household costs seems to lead almost inevitably to consideration of 'gas' and 'electric'. In other cases, energy was raised as a positive or negative aspect of the home. Again, these examples are drawn from the first minutes of the first interview:

CASE: Duffryn 1RO interview 1 transcript

I: So what would you improve [about your flat] if you could, just hypothetical?

R: Well the cost of heating is quite expensive but that's because it's a district system. It's not just pertinent to me, it's other people that live on the estate as well, families and stuff, you know, the kilowatt rate is quite dear, you know, that's my major grudge about it. Well that's really been the only grudge I've got about it.

CASE: Penhill 1PA interview 1 transcript

I: Are there any things that you don't like about the house itself? [...]

R: When it was constructed in the sixties it's a, sort of, semi prefabricated arrangement and although it doesn't look it, it's not that well insulated, so it's a bit pricey to run. [...] The double glazing's a bit worn, I've complained about it but they haven't got the budget to do much about it. However they have put new heating in fairly recently, which is much more efficient than what was here.

For these participants we can say that energy has a high salience: generally connected to its cost, since it occurs as an immediate response to general questions about household costs, or the participants sense of their home, in an interview (and project) not yet framed as concerned with energy.

But for other participants, energy came much lower down the list:

CASE Penhill 3CN interview 1 transcript

I: So what would you say, if you were listing the key, the big expenses? What are they for your household?

R: Big expense is the rent, but it's actually quite reasonable, because it's Council; and we've got a Very account, so that's quite a high one. But, other than that, it's all...that's probably the two highest things we've got.

[...]

I: Yeah, and what about other things, other than those two? What are the other things that you need to...

R: That we need to pay?

I: ...yeah.

R: Phone bills and internet, gas and electric, council tax, the pet club thing for the cat.

For this participant, energy bills only come to mind after further questions, and form part of a list that includes many other small bills.

Even among participants where we can see a high salience of energy, a recurring theme in many interviews was a recognised inattention to energy supply. This is generally characterised by the image of 'you flick and switch and it's there' or the similar 'we take it for granted'.

CASE: Hamp 1DE interview 1 transcript

But you take it for granted and if you can pay your electric bill, gas bill at the end of the month or the quarter you don't take a lot of notice.

[...]

Because most people just ... it's taken for granted that you just press a switch and you've got electric lights. There's an advert out you can now turn your lights on on a mobile phone.

Why the hell do you want to turn the lights on with a mobile phone, sorry turn your heating on, well why? Why do you want to turn your heating on when you're not there? Yes when you come in it's nippy until the heating takes hold. I don't take that long for heating to take hold and warm a place up. Like I said I think we all take it for granted it is there.

CASE: Duffryn 1RO interview 2 transcript

I: Do you think most people understand how the energy arrives in their homes?

R: No. No, no. I guess all they're interested in is put the switch on, light comes on, bill comes through, pay the bill, you know, and that's it really, isn't it? And then obviously they will think about the cost. We've had a hard winter this year, it's been cold, so we've had to use...the bills will go up and, you know, all that.

I: Do you think it would be good if people understood a bit more?

R: Yes, it would be good in an ideal world, but people have got other things to think of haven't they, it's a small part of their lives really, isn't it?

CASE: Penhill 4FK interview 2 transcript

I suppose you don't really think about it, you just take it for granted that you can just turn on a switch and it's just there. So yeah, no, I don't. I suppose when it's gone, you appreciate it as well or if the electric cover goes high, you're like, "Ah" but no, I don't think you ever think. I personally don't think much about it. It's just there and it's just easy to use and you just get on with it and you just pay the bill *[laughs]*.

CASE: Duffryn 1RO interview 2 transcript

So, I would guess that the majority of people, they're not really bothered where it comes from as long as they've got it, that's all they're bothered about.

CASE: Hamp 3SH interview 2

Not really, I feel quite dumb about it really, it kind of magically appears at the house and you pay the bills and you trust in other people that you're getting the amount that you're paying for, that it's coming in a safe way.

This, the invisibility of energy supply, has implication for the wider Building Resilience project, since it seems to indicate that an important first step will be to encourage individuals and communities to consider the place of energy in their own lives, and by extension the role that they play within the energy system. The evidence of this ethnographic work is that most people do not consider these questions unless prompted. In an unrecorded moment before the beginning of one of the workshops, two participants chatted about how they had looked up more information about the energy system following the previous interview (Interview 2, which focussed on the wider energy system): both an acknowledgement that they had previously been aware of little about how the

energy system worked, but also an indication that the intervention of this project had prompted them to learn more.

One striking observation from the interviews and workshops was the high discursive visibility of renewables: in general participants mentioned solar and wind as energy sources before gas, oil, coal or nuclear. In all the data, there are 133 mentions by participants of the word 'solar', a further 80 mentions of 'wind' (in the context of wind energy), compared with just 54 mentions of coal. References to gas are more difficult to work with, since it can refer to mains gas used in the home or gas-powered electricity generation; however, explicit references to gas power stations or gas fuelled electricity generation are very few. There were 43 references to nuclear power (see below Differences between communities for further discussion of references to nuclear power).

CASE: Penhill 4FK interview 2 transcript

I: What about how the energy is actually produced?

R: In different ways... Obviously there's a lot of eco ways now to do it, isn't there. So they can do the wind farms and you get the solar panel farms. I don't know if they get their energy from them or whether they just get it from... I don't actually know the ins and outs of where they get electricity from...generators and things like that. I'm not sure.

CASE: Duffryn 3RO interview 2 transcript

I: And what about so across the whole country say do you know how we get heating and electricity?

R: It's through the generators on the estates and obviously some of them do the windmills now, don't they, they're quite good and efficient and also solar panels which some of these houses got solar panels.

CASE: Hamp 1DE interview 2 transcript

R: Well there's Hinkley do it because they're producing energy but I don't know what sort of electricity. You've got wind energy and all that.

I: And what other sorts of energy are there? You mentioned wind energy are there others?

R: Solar, solar panels and that that produce energy, you know, electricity and that. And nuclear energy. I think that's it.

CASE: Penhill 3CN interview 2 transcript

I: So I think the easiest place to start is if we're thinking about the energy that we use as an entire country [...] what do you know about where we get our energy from?

R: Lots of different sources aren't they, you've got the ones that are better for the environment, so, like, you say, like your panels from the sun, and then you've got oils and gases, I suppose? Yeah, my knowledge of it.

Coal is mentioned only by two participants; oil is mentioned, but never in the context of national energy infrastructure; nuclear on a par with coal. Gas was very frequently discussed, but in the domestic context, rarely in terms of national energy generation.

3.3 (Dis)empowerment

There is a sense from both the interviews and the workshops of participants' sense of detachment from, and disempowerment within the energy system. Many participants described an inability to intervene in the system other than by switching suppliers, and even this was seen as a fairly ineffectual action.

CASE: Penhill 1PA interview 2 transcript

I: Do you feel like you have any say in the way that you get your energy, for example?

R: Not really. There's several people write to me on a regular basis trynna get me to switch to their company. To be honest my usage is so low, the savings wouldn't be all that good, I don't think.

CASE: Duffryn 1RO interview 2 transcript

I: We talked earlier about the bigger picture, the whole energy system I guess, not just you but the whole country. Do you feel like you have any say in that? I mean, you're involved because you use energy like all of us, do you feel like you have any power, say, in that system?

R: Well, not really as I just said about these smart meters, what say have we got with those: none. We're going to have them whether we want them or not, eventually, is it 2020, everyone's got to have them. So we haven't really had a say in it have we? I've got a say in whether I want one at the moment, but how long that's going to last, you know, not. And if you want to say, like, generating capacity or how you get your hours generated is you've got to be looking at these, so called, green providers. So I suppose you've got a bit of a say there, like, but like I said, mostly it all comes down to money. So, no, sorry, I don't think we've got very much say.

I: Would you like to have more control over that?

R: Yes, I would, yes, of course, yes, but whether I want to spend my energy trying to do anything about it is another matter, these days I've got other things I want to do. So, if I could say I definitely don't want a smart meter, but I know the companies will come along and say, you don't want a smart meter so we're going to make it so you will have one, because we're going to increase the prices by that much it will pay you to have a smart meter, you know, they'll bully you into having one. So there's always ways, yes.

I: It sounds to me like you don't think the system is very fair, is that true?

R: Well, life's not fair is it? You can't have...I've got feelings about lots of things, but I can't always have what I want can I, so I don't like the fact that we've got to have...I don't consciously think of it, I've made my decision, you know. When I'm forced to have one, I'll have one, but that's it. There's lots of things I'd like to change but I can't, so why waste energy on stuff you can't change, use it on something you can.

The power of the energy supply companies was described by some participants, and always related to bills, or suppliers profits.

CASE: Penhill 1PA interview 2 transcript

But certainly as I live I could run this place off a 12 volt battery probably for a week [laughs] if I had the right stuff. If people like me were self-sufficient in electricity, how would the electric companies make their money?

CASE: Hamp 1DE interview 2 transcript

They know they've got you over a barrel, you need electric, same as gas really, nowadays. They put the prices up and you've got no say because there's no other choices out there because I can't put a windmill thing in my garden to produce enough for me to have electric. And solar panels, like I said, they're too expensive. So the only thing you have is your mains, so you don't have a say of how much it costs, you just pay the bill every time it comes in.

CASE: Duffryn 3RO interview 1 transcript

My dad lives in the middle of the estate, on the proper estate and their electric and gas is horrendous. Their bills are really, really bad especially for the gas. He's had a lot of problems where he's had a lot of money whacked on him because they pay different to the way that I do mine.

This power of the suppliers was seen to harm not only customers, but also the environment:

CASE: Penhill 3CN interview 2 transcript

Obviously it's complicated because there's so many people competing for businesses so I think it's more... maybe money-orientated than anything else. Who ... what company can get the most customers with the resources they've got rather than what's actually better for the environment or better for the customers, maybe even?

This disempowerment is related to the issue of ownership: several participants had had an interest in owning solar panels, but had found that it was too expensive (and this was possibly during a period of higher FIT payments).

CASE: Hamp 1DE interview 2 transcript

I: You looked into solar panels?

R: Yes.

I: But you haven't got them. You haven't got them because... why was that?

R: Well the first time because of where they wanted to put the wiring, they wanted to put it straight down the middle of a bedroom wall and we said no, it's got to be brought in, not just having cables running down the bedroom wall. And then it was just the price because they're so expensive and you're so many years to get that much back off the electricity you save in the long run. So it's more the price. Yes, they say you'll save all this money and you'll make all this money but in truth it takes a few years, quite a few years, to get your money back on them. That's why we didn't go for it.

During the workshops, after completing the network map of the energy system, participants were asked to make a mark on each of the pieces of card, or parts of the map, that they saw as a part that they had an involvement in, or some say or power over. It was striking that participants felt that their involvement in the energy system was entirely confined to the domestic (and to a limited extent non-domestic) use of energy. Participants felt, perhaps unsurprisingly, that they had no involvement in other parts of the system (generation, transmission), but also that aside from switching supplier that they also had no power or say in the way that the energy system works. This observation resulted in discussion of the of the system that was characterised by a sense of powerlessness, and that the system was mainly for big companies to make profits. The idea of community energy did not emerge in these discussions.

3.4 Energy reduction behaviour

One way in which participants did show agency and empowerment in the energy system is a level of control over how much energy a household uses. There is a split in participants in terms of energy reduction behaviours. Many were very open about the fact that they do little to try to reduce their energy use; often these responses are accompanied by examples of things that they 'know they should be doing'.

CASE: Duffryn 2DM interview 1 transcript

I: You were talking about the way that you keep the water hot and stuff, are there things you do around the home to try and keep your costs down?

R: No [laughter], basically. I know some people will make sure everything's turned off except for fridge. Everything almost. I know it's not cost effective but it's just all left on and I just leave it like it. As long as there's electric here I think, "Well, I'm paying for it."

CASE: Hamp 1DE interview 1 transcript

I: I just want to come back to talking about your bills. Are there any things that you do as a household to try and keep your utility bills lower?

R: I know we could but we don't. You know things like don't leave things on standby, switch them off, turn off lights when you leave a room, don't leave them, like me I used to always leave a light on all night so the dogs could go out in the garden, while the dogs could see enough to go out in the garden without the lights on to show them where the dog flap is sort of thing. Do you know what I mean? But not wasteful, I want it to be comfortable. [...]

I: Are there any other things that ... you were saying ... things that you know that you could do, are there any other things that you do or could do?

R: Not use the tumble drier as much as I do. I would say washing all of us have clean clothes every single day so I do seem to [unclear 00:37:24] so you end up, you know there's only three of us and I must do six/seven loads of washing a week which is quite a bit.

In the following excerpt, the participant describes how even the design of appliances works to reduce user control over their own energy use:

CASE: Hamp 1DE interview 1 transcript

You switch everything off and don't keep it on standby, quite a lot of stuff. You do that but when you want to use it it takes a while for everything to get going and more hassle, whereas if it's you know, like your TVs and what have you, you just press a button and it's on, if you switch it all off by the mains okay so that and nowadays main TV sets to find the on and off electric button they aren't that easy. They are made to be just plonked on to standby.

However, in other cases, participants do describe engaging in energy reduction behaviour.

CASE: Hamp 2SC interview 1 transcript

I: You were saying your electricity bill was less as well.

R: My electricity bill, yes, but then my son and I had [interruption], yes my son and I made a definite decision that we would be... because when I first came I didn't have a job, within six months I did. We were kind of living on the proceeds of the difference between selling a

house there and selling [buying?] a house here after my ex-husband had his cut. So we could live, you know, I could live for a few months without finding a job but it was one of those things that just said anything unnecessary we just turn it off. The bills were, yeah, they were definitely less. Our usage was less, but we weren't excessive users anyway. No lights left on overnight.

CASE: Penhill 1PA interview 1 transcript

I: [...] how about your house, electricity and gas, is there anything you try and do to limit that cost?

R: Wear more clothes, I've got all the windows open now, the temperature's quite acceptable, but I do dreadfully feel the cold. But yeah, I tend to wrap up sometimes. Yeah, can't think of anything else.

CASE: Penhill 1PA interview 1 transcript

I don't really use as much, I mean, if it's cold out I'm in watching that thing all the time, so the telly's on. That lamps on, I've normally got a laptop here, that lamps got the only energy bulb in the house, 'cause I don't like them, but I begrudgingly use it.

One interesting case is from Participant Duffryn 3RO, who at different points described how they don't turn off lights and so on, but at another point describes having previously done several things to improve the thermal efficiency of their home. This may be an interesting indication of thinking of electrical and heating energy as completely divorced: in this case, 'saving energy' might be equated only to 'saving electricity' (classically, turning off lights); whereas 'keeping the heat in' is not seen as 'saving energy'.

CASE: Duffryn 3RO interview 2 transcript

Like upstairs we still have the [unclear 03:07] light on all night. So obviously that's taking up energy that don't really need to be taken up it's just more of a comfortable thing that we're just in a routine that we always had a bath and we leave the bathroom light on in the night. [...] It's a little bit like when those things when you know you should turn the tap off while you're brushing your teeth but you just don't and then you're just wasting water.

CASE: Duffryn 3RO interview 1 transcript

Keeping the heating in where before years ago when we had the old windows I constantly had the heating on and it wouldn't...just wouldn't warm up because the windows were really, really bad. They were all rotting and there was nothing you could do like I'd bought the things, the door gaps to put on there with the fluffy things to try and stop it. I put cellophane on there and nothing made a difference so the new ones were very, very...everyone was happy about it [the new windows].

The idea of energy reduction is mostly seen to be an issue of reducing cost (though this may be a response to the way in which this issue was raised by the interviewer); but it also often characterised as about 'waste'. This idea of waste appears in general to be a more salient category than 'green' or 'eco' or 'environmental' when it comes to energy reduction.

The following reference to turning appliances off as a environmental behaviour was the exception rather than the norm, and makes clear that this sort of behaviour is what other people ('those people') might do:

CASE: Hamp 1DE interview 1 transcript

You know very few people that go round switch off lights constantly, stop putting things on standby, only having the bare minimum on, only people that are into the environment big time, but even I think sometimes even those people that are into doing it you can't always do it because society has made it that nowadays you cannot watch TV without having a BT box, a Sky box, a Freeview box.

3.5 Community

Participants' views on their own community are difficult to summarise. They exhibit conflicts and contradictions internally and between participants. For example, participants indicated a liking for their area, and a certain pride in their community; at the same time as naming individual problems and bemoaning a lack of community spirit. Similarly, participants indicated that community activities had stopped, or that there were few activities, but also appreciated the community events and activities that there were.

CASE: Hamp 3SH interview 2

As I say I think the community is kind of lost a little bit around here now.

CASE: Duffryn 3RO interview 1 transcript

But the estate is pretty up and down. When Duffryn Community Link first started they had loads and loads of money given to them by the Welsh Assembly Government and they did loads with the estate. There were courses left, right and centre. [...] But the estate has really gone downhill because all that money was ploughed in and the estate got better and there was lots for children to do, they were growing up with ambitions but then the money got taken, the money stopped and all the activities stopped for the children and things have just slowly gone downhill since then.

CASE Penhill 3CN interview 1 transcript

I: Like what sort of events?

Quite recently they've started to do Penhill free-shop, where we just take stuff there and we sort of swap, which is quite nice. Normally, there's an event in the summer, as well, where they've got stuff for kids to do, like, a bouncy castle and a barbeque and stuff, which is quite nice. A couple of years ago they brought back the Penhill Carnival, which is quite cool. They closed off the whole of Penhill Drive and they just walked round the parade and then they had barbeques and stuff after, which was nice. I wish they'd bring that back, because that would be quite nice.

I: Has that stopped?

R: Yeah it's stopped, but I think it's just that the person who brought it back left Penhill or left Swindon or the UK, maybe. It's a bit of shame, but get something like that back up.

Sometimes the lack of community activity is also seen as a failure of the community itself.

CASE: Duffryn 2DM interview 1 transcript

I: Are there ways that you can think of where you feel like the community comes together in any way to work together on something? Are there things like that?

R: No.

I: Do you have any idea why not?

R: I don't think people like to engage like they used to years ago. They'd rather keep themselves to themselves. [...]

I: Do you think that's a pity?

R: Yeah. It's nice to be engaged with people. If they don't wanna do it they don't do it.

I: There's not a sense that people might pull together?

R: No, because there's nothing to pull people together now. The school, they try to get people to go and engage with them. We've got the Forest Family Centre that do courses, but it's only the parents that seem to know about the courses and it's word of mouth, but some people just don't wanna do them. Don't wanna go.

CASE: Hamp 3SH interview 1 transcript

I: are there things that are organised in the community?

R: Not very good actually. There is a, just over on the corner up the road, there is a little centre called Recreation which is for the children, but what you tend to find with that is sort of kids from about eight to thirteen where parents just kind of put them in there as a babysitting thing and it runs a bit wild. [...] There's not a lot in the community. Myself and my husband used to be part of the community association for the whole estate. He was chairman and I was treasurer, and we did put on some events in the field. Put on a football fun day and, yeah, just a few fun days and events. Everyone loved it. But it was so stressful because nobody wanted to help. People like to come along and enjoy the day but people weren't there to help us prepare it, clear up afterwards and it was a lot of stress which actually made us quite ill. So we did give that up, which is a bit sad, but it wasn't worth our health or relationship, so we didn't continue with that.

CASE: Hamp 2SC interview 2 transcript

I don't think people in England, perhaps – very, very generally – but I don't think people will look at the more global view. It's gone from being communities working together to people with similar interests, interest groups, if you like, to the street, the household; it's become very contracted and I think it's sad, very sad.

But still, the responsibility for this kind of community action is still seen as the responsibility of the community itself.

CASE: Hamp 1DE interview 1 transcript

I: Who do you think should be responsible for sort of organising stuff in the community?

R: The community.

I: You mean the people that live here.

R: Yes. Because they know what people want, like down at the centre I'm pretty sure they do dinners like once a week for older generation and after school club for children so parents can work and it's what the community want not what people think the community want which I think can be a totally different thing. You know we've got a say in what goes on more I think.

3.6 Community energy

The idea of community energy projects – either for energy use reduction or generation – was not brought up by any of the participants, with one interesting exception. Even quite direct and prompting questions did not result in these ideas being raised. For example, in Duffryn, where there is already a district biomass power plant the idea of a connection between community and energy use was confusing to one participant.

CASE: Duffryn 1RO interview 2 transcript

I: so we've talked a bit about how [people] could use energy better or [...] be more efficient and things like that [...] do you think there's anything that the community could do together that would help with that at all?

R: Sorry, I'm not sure of the question there.

His answer to the question when clarified wandered off to a slightly different topic:

I: Sure. So, do you think there's anything that, as a community, Duffryn could do that would be helpful for people's energy use or their energy efficiency?

R: I don't know because...I've raised a concern, I told you, with Newport City Homes back last year about the unit cost, why it was so high in relation to British Gas and I haven't, unfortunately... I've missed...I had that flu bug and they gave the information out to a couple of people but I didn't get a...

In another example, one participant came close to describing community owned renewable energy generation projects. They had previously been speaking about a perception of unfairness in the energy system, and were asked whether that could be changed.

CASE: Hamp 3SH interview 2

I: And can you see any way, any alternative to that, can you see any way that you, we, could change that [unfairness]?

R: It'd be nice to think that we could but I don't think it will, I think power and money will always control and could even get worse and out of hand really, as people get greedier and want more. The only way is maybe if people were to take themselves off of the grid, if there was land or something, where communities could live their own rules and provide their own renewable energy with solar panels and things like that, if that could be possible to do that in the future it would be nice! <Laughs> Farm off the land, get renewable energy, wind farm, solar panels and then govern themselves, I don't know! <Chuckles>

Her idea shifts from “the only way *is*” to the more speculative “were to” and “could live” and then to the even more equivocal “if that could be possible to do that in the future”. The inclusion of farming “off the land” and references to self-governance reveal that this idea is perceived as an unlikely utopia more than a genuine possibility. The tone is one of describing an amusing and idealistic – but essentially implausible – idea. This, the implausibility and even absurdity of a community owning and controlling their own energy supply, revealingly links back to the disempowerment in the energy system that most participants revealed.

However, the potential for community energy projects in these communities is suggested by isolated responses from participants. Asked directly about what the community could do collectively around

energy, this same participant produced the only description of a community energy project, remembering a community occasion some years ago at which there was a pedal-powered cinema.

CASE: Hamp 3SH interview 2

I: Do you think there are any ways in which as a community you could sort of, I don't know, help each other out around energy?

R: <Pause> I remember once over at the Fairfield, they done a cinema and it was cycled by the power of bikes, so they were cycling these bikes, made the power and watched a film by that. I thought that was amazing and that was four, five years' ago, it's happened once that I know of within this town. Things like that happening more. There's a great big field here, we're living on a field, somebody could come and do something like that to get the communities together and taking it in turns on pedalling the bikes. It was great, the kids were taking it in turns, the parents were taking turns with these bikes and I just thought that was really good, if they're bringing community together and I thought that was amazing.

The enthusiasm for this past event was striking:

CASE: Hamp 3SH interview 2

R: I think it's gotta be fun, you've got to do... whatever you do it's got to be fun, so it's like with the cinema thing or a fun day type thing, because when it's just information nobody really wants to know [...] *but* if you do things in fun, because that's stuck in my head, that cinema thing with the bike...

I: Why was that good, what was good about that?

R: Because it was just amazing, it weren't even about watching the film, people were coming together, they were having a laugh and all the while you were watching this film which we're doing all the time, watching things, and it didn't cost money, it just cost energy from my legs and you're keeping fit at the same time.

During the workshop in Penhill, one participant responded to the photograph of a slow-cooker demonstration by with a strong sense of identification:

CASE: Penhill workshop transcript

P1: A cooking class in a community centre, they're showing something, they've got boards.
[...]

P2: They're us, a meeting like this somewhere else.

This participant also immediately understood the significance of this activity for energy use:

CASE: Penhill workshop transcript

I: What is the energy link here?

R: What are they using? That looks like a slow cooker pot so that looks like they're going to cook with electricity in a group building, public building ...

3.7 Green, 'eco' or environmental ideas

In terms of energy use reduction, environmental or 'green' motivations appear to have low salience, for most participants. For most participants, the idea of energy reduction for environmental reasons was not raised, with cost and not 'wasting' energy more significant.

However, once environmental concerns entered the conversation, there may be some indications of social desirability in people's answers (i.e. that people *should* be 'green'). One participant initially indicates a preference for nuclear, and suspicion of renewables:

CASE: Penhill 1PA interview 2 transcript

There's several types of power stations, some have, I think there's still some coal ones left, which has apparently been knocked down. I'm all in favour of nuclear energy, I think that's by far the most efficient way of going about it. Wind farms and solar stuff, all well and good, but it takes something like 30 years for a wind generator to go into profit. So...many years ago, it was sold to a company that made the blades and polished them up. While they were subsidised by the government, it made it cheaper, I guess, but those government subsidies could have gone into nuclear power stations and save the Horizon for [laughs] trees and things

But later suggests a (qualified) preference for renewables.

Because it's a cleaner source, it doesn't involve digging holes in the ground and pulling out gasses and coal and things. And it's a clean source. But then how much emissions were involved in manufacturing solar panels and wind turbines in the first place, has got to be taken in account. If I lived by a stream I'd have a wheel, I think, run it all off of that.

Similarly, participant 1RO indicates a preference for coal power, and complains of unsightly solar panels, but then later suggests if the cost was equal they would prefer a 'green' energy tariff. This in turn indicates a divorce between infrastructure and consumption.

CASE: Duffryn 1RO interview 2 transcript

I think we've got plenty of coal, we're not really using it. ... I think with solar in Britain, you know, you get the sun in the summer and you generate in the summer, but in the winter time we've got shortened days and that's not really...I don't think it's a really viable way of generating energy. The same with windmills, it's all been documented in papers and on telly, windmills, when we've got high pressure zone you haven't got the wind and that's usually when it's colder and where do you get the energy then. So I still think there's a case for burning coal because we've got it, we've got plenty of it.

[...]

Well, mostly it's people don't want a power plant on their doorstep do they, unless it's...because you can see it with wind turbines can't you, they don't want them because (a) it's the visual aspect and (b) it's perhaps the noise of the blades whooshing around and stuff. And then, if you've got...say, if I looked over there now and there's a bank of solar panels, oh Christ they're ugly aren't they. If they were built into the roof like some places fair enough, but when they're, sort of, sticking out of a roof, Christ, it's horrible.

CASE: Duffryn 1RO interview 2 transcript

Well, I suppose if people look at packaging they can usually see where food comes from, which country and stuff like that. And the energy, they know who their provider is but they don't know how that provider make up all their generating capacity, unless you've got someone who's a green person and they actually choose to go with a green company that's either solar, wind or whatever. So, I would guess that the majority of people, they're not

really bothered where it comes from as long as they've got it, that's all they're bothered about.

CASE: Duffryn 1RO interview 2 transcript

I: Do you think there are good reasons for choosing green energy for example, you said some people would choose to have just that?

R: I suppose some people are prepared to pay a bit more if they knew that the energy comes from, like, sustainable, that's the buzz word isn't it, sustainable resources. I still...I looked, I did tentatively look a couple of weeks ago at some of the green companies, but I'm still looking at cost, that's my main criteria is cost, that's [unclear 0:22:06]. If I'd got more money in my pocket I can use that money to do what I want to do, so it primarily comes down to cost, that's it.

I: If you took that out of the equation, if you had two energy providers, same cost?

R: Oh, well I'd go green wouldn't I?

Participant 1RO here reveals that choosing where your energy comes from is something that "someone who's a green person" would do, and that "some people" might be prepared to pay more for this; but by implication they aren't one of these people. The reference to the "buzz word... sustainable resources" also indicates a scepticism of renewable energy, in line with previous comments about wind turbines and solar panels.

Even given this possibility of social desirability, on the whole renewables are seen in a positive light. As already discussed, renewable energy generation (especially solar and wind power) were very discursively visible in participants responses.

CASE: Hamp 2SC interview 1 transcript

I really would love to be able to afford solar panels because I just think, you know, I actually think that every house should have them. Apart from the fact that you're giving back into the grid, it just strikes me as being a natural resource, we don't use it enough, we don't use the wind.

CASE: Penhill 4FK interview 2 transcript

I: Is there anything about the way that you get your energy that you would change if you could?

R: Would I change the way that I could get it? Yeah, maybe if I thought about it, I could say I'd like to get or receive electricity from a natural source rather than some sources that are not good for the planet. I've never thought about it or looked into it, to be honest. Maybe if it was more obvious, I might think about choosing a supplier like that as long as it was in keeping with our budget as well 'because I'd have to take that into account. I wouldn't just go for one if it was naturally sourced but it was more expensive, then I probably wouldn't chose that option.

While positive, and often desirable, renewables are also consistently described as expensive:

CASE: Duffryn 3RO interview 2 transcript

Unless you've got all the money to build the windmills and the solar panels. And again it just all runs down to money.

Renewables are, in one case, associated with a “ridiculous, posh” house. This ties in with a sense of an aspirational, but unattainable, quality.

CASE: Duffryn 3RO interview 2 transcript

'Cause I know my sister owns her house and she bought the solar panels and it cost her thousands of pounds. [...] But the new house they got is ridiculous it's so posh it's a three storey house it's got five showers.

Despite the positive response from most participants to renewable energy, the environmental role of renewables was not always apparent, or was confused. In other words, it was not always clear why renewables are ‘green’.

It is also worth noting that the terms ‘climate change’ or ‘global warming’ were not raised by any participant. This topic has not surfaced even when conversation turned explicitly to renewables and the relative merits of different energy sources. During the interviews, care was taken not to introduce the issue of climate change, or any related environmental issues – the focus of the interviews was understood to be energy, but not the environmental implications.

- ‘Carbon dioxide’ has come up once, in the context of trees capturing carbon.
- ‘Pollution’ was mentioned on four occasions: twice in the context of China, once in the context of light pollution; once as a slightly vague reference to “so much pollutant” in the air.
- The word ‘emissions’ occurs twice (same participant), once in the context of diesel cars, the other already quoted above (“But then how much emissions were involved in manufacturing solar panels and wind turbines in the first place, has got to be taken in account”).

It is important to consider the implications of the two lines of questioning around energy used in this study. The first revolves around household energy costs, and personal energy reduction behaviours; the second around energy infrastructure and generation, the relative merits of different forms of generation and possible community energy projects. These two strands are clearly linked; but the particular connection between energy use reduction and renewable energy generation, is perhaps only obvious for those with connection either to the energy sector or with ideological commitments to low-carbon energy. These two ideas do not appear to be naturally or necessarily linked in the minds of the participants in this study.

A couple of ‘almost-exceptions’ may clarify this point:

CASE: Hamp 1DE interview 2 transcript

Yes we've got Hinkley Point being built and that is energy so children don't understand that we have to keep building different things to produce energy because we use it and I think most of society doesn't care about how much energy they use.

CASE: Duffryn 1RO interview 2 transcript

I: [...] why do you think smart meters are part of a green tariff, what's green about them?

R: Well, I think they're trying to get people to use less. I think ultimately if enough people do use less, we won't need power stations and all that sort of stuff to produce the power, but that's idealistic isn't it, I don't think it's going to happen.

In both these instances, there is a recognition that energy use reduction may be connected to a reduced need for power stations; the energy use reduction has a social (and perhaps – but this is not explicit – environmental) benefit. But no participant indicated at any point that reducing energy use and renewable as opposed to fossil fuel energy generation were part of the same debate. Both renewable energy generation and – to a lesser extent – energy use reduction were seen by participants as potentially 'green', but independently or separately so.

The complete absence of carbon or climate from discussion can help to explain this: the two are only really part of the same discourse if the 'problem' with energy is carbon/ GHG, rather than the more generic 'waste'. (Realising this points to a sometimes overlooked issue in environmental discourse, which is that you can still 'waste' renewably generated energy – i.e. it is not good-in-itself.)

At the beginning of the group workshops, Ellie Stevens of CSE introduced herself to the group as from a charity with "two aims; one is to try and reduce the impact of climate change and the other one is to help people to escape fuel poverty or cold homes, so to help people with those issues in their lives". The connection is again assumed, that improving energy efficiency in the home can help with both climate change and fuel poverty; but this may not be an obvious connection for these participants. Even after this link was made between energy and climate change by one of the facilitators, climate change (or any of its cognates) was not mentioned in any of the group workshops.

This has important implications for the wider project: despite the high visibility of renewable sources for participants, and their presumed significance in the energy system, the importance of them as *low-carbon* sources is not present; it can be presumed that individual and community actions on energy will not then be successfully motivated by appeals to climate change or global warming.

There is also confusion over a distinction between 'renewable', 'green', and 'natural' energy sources. In some group workshops, nuclear and/or gas and/or coal were grouped with renewable energy sources on the basis that they were 'natural' sources. This varied depending on the community. It cannot be presumed that participants understand what is 'green' about renewable energy generation.

As an aside, it is interesting – given the current political climate that and the apparent support for wind energy among participants (in line, it should be said, with national polling data) – that no distinction was made by any participant between onshore and offshore wind. Where images were drawn for wind energy in the mapping exercise, for example, they depict a standard turbine with no indication of water or land beneath (for comparison, oil platforms were depicted with waves beneath). When wind power was discussed, it is assumed that this referred to turbines onshore.

4 Other observations

In addition to the themes relating to the research questions, a number of other observations are worth raising here.

4.1 Differences between communities

In most of the themes already discussed here, differences between the participants in different communities were no more than that between different participants within a community. However, in a few cases, communities exhibited a consistency on a particular issue.

In the case of Hamp, the local presence of Hinkley Point nuclear power station meant that nuclear power was mentioned far more than in the other communities, and its importance within the energy system was perceived to be considerable. Of the 43 references to nuclear energy across all communities, 26 were in Hamp (compared to 8 in Duffryn, 9 in Penhill).

At times Hamp participants seemed to imply that nuclear generation was almost synonymous with electricity, as in this moment for the workshop in Hamp:

CASE: Hamp workshop

2SC: It's all part of the National Grid, isn't it?

I: Ah, so you might want the Grid.

3SH: Oh.

2SC: Oh, dear <laughs>.

3SH: So that's off of the nuclear.

Or it was the first example of electricity generation that came to mind, as in this interview:

CASE: Hamp 1DE interview 2 transcript

I: And what about before the electricity gets to the substation? Where does it come from?

R: From the main place. I don't know.

P2: Where do they produce electricity?[§]

R: At the electricity station.

I: And is that near? Is there one nearby, or...?

1DE: Well there's Hinkley do it because they're producing energy but I don't know what sort of electricity. You've got wind energy and all that.

In Duffryn the presence of the district biomass heating system was noted by all participants (even those not on the system).

Duffryn food co-op indicates that there is capacity for community collective action, but this did not translate for any of the participants in to the idea of collective action on energy. The intangible nature of energy (as opposed to the very tangible nature of collective purchase of food, and then collecting a physical bag of food) may be a part of this.

4.2 Meters / Smart meters

Meters, and especially smart meters, divide opinion. Certainly, the push for smart meters does not seem to have yet succeeded.

CASE: Duffryn 3RO interview 1 transcript

I: Do you find that useful?

[§] P2 here is the participant's husband.

R: I find it very, very useful yes 'cause I found it useful obviously before teenager daughters she leaves the lights on everywhere, it's like Buckingham Palace everywhere and I'm like, "Turn the lights off please." So I have found it useful as in I know which rooms, obviously this room being the main living room is going to use more electrics. The TV is on 99% of the time and obviously in my daughter's room there is going to be more usage there because she's always in there listening to her music or watching her TV while doing a hundred million things at the same time.

CASE: Duffryn 3RO interview 1 transcript

I: Was it mainly the cost that was the reason to change or did you have any other...?

R: It was the meter. It was having a little box that tells me what I use and being able to use the App that made me change.

CASE: Duffryn 1RO interview 2 transcript

I: Why don't you want one?

R: Well, I don't agree with them to start with. That's the main thing, I don't agree with them so why should I help them along. It's not going to make any difference to the way I have the telly on or anything like that because it's not going to.

I: But what do you mean when you say you don't agree with them?

R: Well, I think it's more a tool of...it's (a) the government, they look green, they wanted them in, (b) they've most probably had a lobby from the energy companies and the energy companies want more profits and they're always looking to screw you for a couple of extra bob, and it's not going to make a difference to my lifestyle. That's it really.

4.3 Energy policies and subsidies

The issue of subsidies for particular types of energy generation, or other energy policy frameworks, were raised by two of the participants:

CASE: Duffryn 1RO interview 2 transcript

Well, the way it's changed is that we're not using so much coal to generate, we're...nuclear I'm not 100% happy with, but neither am I happy with the subsidies that we're giving to solar and wind power. I'm not that happy because it's really...it's reflected in our bills and it's not necessarily the most efficient way of generating power.

CASE: Penhill 1PA interview 2 transcript

Wind farms and solar stuff, all well and good, but it takes something like 30 years for a wind generator to go into profit. [...] While they were subsidised by the government, it made it cheaper, I guess, but those government subsidies could have gone into nuclear power stations and save the Horizon for [unclear 2:15] [laughs] trees and things.

CASE: Duffryn 1RO interview 2 transcript

I've got a daughter in Cornwall, they used to have up to about a year ago there was, not sure if they called it a green deal or something like that, where you would get energy, like double glazing, boilers, all through some sort of...and there was some...I'm not sure if there was a subsidy because I didn't look into it, but I think people paid for it over a number of years, I'm

not really sure about that part of it. But I know there was something out there where people could upgrade certain aspect of the home and stuff.

5 Conclusions

This research highlights some of the challenges which face communities, and organisations keen to support communities, in building community energy activities.

For the most part, householders in this study indicated that they considered their energy use in terms of their energy bills, and these were for most a significant, or at least salient, cost in the running of their household. Most participants were aware that there were actions that they could take, on the level of the individual or of the household, to reduce their energy use, and therefore their bills. However, this awareness does not necessarily translate into actions: many participants admit that they take their energy use for granted, and that provided they can afford the energy bills, they do not otherwise think too much about it.

Connected to this is that participants certainly feel disempowered within the energy system – participants see their only possible ‘say’ in the system as via consumer choice, in choosing their energy supplier. But they also perceive this as an insignificant level of power: some felt like their energy use was already very low and switching would change little; others had switched in order to make small financial savings.

This research suggests that energy literacy – that is, knowledge of the wider energy system of electricity generation, of transmission, of the national grid and its stakeholders, and of the supply of other fuels such as natural gas – is low. When asked to describe this wider system, participants admitted to knowing little of it.

However, these two issues – disempowerment in the energy system and low energy literacy – appear to be mutually interconnected. It might seem natural that a sense of disempowerment stems from a lack of knowledge or understanding of the energy system in which energy users are entangled, but over which they have no control – i.e. how do you influence a system which you do not fully understand? But there appears to be evidence in this research of the inverse relationship too: the feeling of disempowerment actually leads to the participants’ sense that they do not understand the system. The workshops, in which each group demonstrated the ability to produce a fairly comprehensive and accurate map of the energy system, suggest that these participants know far more about the energy system than they reveal in the interviews. Participants felt a lack of confidence in asserting what they know of the energy system, perhaps because they feel disconnected from it. Further research would be needed to show if this was the case, but a greater understanding of the energy system, and their place within it might lead to an increased confidence, and to a greater sense of empowerment.

Turning to perceptions of the system of energy supply, householders participating in this study indicate the perceived importance of renewable sources of energy. Participants’ responses indicated that they saw renewables as central to energy system, especially solar and wind power; they have a greater visibility in participants’ responses than fossil-fuelled electricity generation, for example. Consistent with repeated UK polling, this study also found that renewables were seen very favourably, with roof-top solar in particular seen as very desirable, even aspirational. The initial capital cost, however, was an insurmountable barrier.

One of the major challenges within these communities to initiating community energy activity is that existing community activity or co-operation is limited or absent entirely. Participants tended to express some pride in or affection for their communities, sometime defending their apparently bad reputation. But at the same time, householders also pointed out specific problems in the community, and could rarely point to examples of community activity. When they did, these were

activities or events that had happened in the past. Albeit with some exceptions, householders were pessimistic about the possibility of initiating community activity. Where community co-operative activity did exist – as in an example of a co-operative food bag scheme – participants did not translate this into the possibility of extending activity of this kind.

When it comes to community energy activity, participants in this study did not demonstrate a sense of how community energy projects would work. When asked quite directly, participants could not imagine ways in which the community could work together on energy. However, when presented with images of examples of community energy projects as part of one of the activities for the group workshops, participants expressed interest and saw these as positive. The image of a solar farm was one image that elicited a very positive response, but although it was seen as something that was desirable, it wasn't seen as something possible in their communities.

The purpose of this phase of research was not to establish what community energy activities would be most successful in each community; but rather to lay the groundwork for working with these communities. Similarly, this workshop activity conducted with a small number of householders, cannot give an accurate image of attitudes towards different community energy activities; but it does suggest that this or a similar activity could be used to gather opinions from a larger group in a community to understand what activities might work locally.

6 Opportunities for future study

Further research could compare the attitudes towards renewable energy – in particular the absence of climate change from the debate – in the present study, with similar studies in other communities. This comparison could be with more affluent urban communities; or with more rural deprived communities.

Similarly, it would be interesting to compare the complete absence of climate change and carbon from these interviews with a similar study in other communities.

The workshops developed for this research would, I believe, scale very effectively as an initial engagement exercise with communities. This is discussed in more detail in the accompanying methodology paper.

Finally, follow-up interviews or group workshops with these communities as the project continues could examine changing attitudes towards community energy activity within these communities, using this initial study as a baseline.

Appendix A – Participant information sheet

Project introduction for participants

Researchers from the University of Bath are interested in talking to households in [Penhill/Hamp/Duffryn], as part of a study to compare the way people live their daily lives in [Penhill/Hamp/Duffryn] with two other small communities in the South West of England, and South Wales.

Taking part in this study would involve 3 interviews with researchers. These interviews would all take place in your home, at times convenient for you. During the interviews the researchers would like to ask you some questions about your day-to-day living, your daily routines and how you manage your home. Each session would last about an hour, but it might be a little shorter or a little longer.

You will need to be happy for the interviews to take place in your home. Because the researchers would also like to talk about how you use different parts of your home, you would also need to be happy to show the researchers around your home during the interviews.

The interviews would be recorded on a digital voice recorder, so that the researchers can listen back to them. This will only be used for the purposes of this research, and wherever we use this information it will not be associated with any information that could identify you. All of the data that is collected during the study is strictly anonymous and will remain confidential.

It is entirely up to you whether or not you want to take part in this research study. To be a part of this project, we ask that you commit to participate in all 3 sessions. However, if you agree to take part in this study but feel at any stage that you would like to stop you are free to do so at any time. No questions will be asked if you decide to withdraw from the study. If you do withdraw before the end of the study the researcher will ask you if it is OK for the data that has already been collected to be kept and used in the research. If you request it, the data from your participation will be destroyed.

If at any time during the interviews, there are any questions that you do not want to answer you are not required to do so.

After the three interviews have been completed you will receive information about the purposes of the study.

In recognition of your time spent helping us with this project we will recompense you with supermarket vouchers.

If you are interested in taking part in the project, or would like more information please be in touch with us. You can get in touch with the researcher Bradon Smith (Bradon.smith@gmail.com), or the research supervisor Ian Walker (i.walker@bath.ac.uk).

Appendix B – Participant consent form

Consent Form:

This study is part of a research project run by the University of Bath, which is comparing the way people live their daily lives in three small communities in the South West of England, and South Wales.

Please review the following points, and tick the box (☐) to confirm you have read and understood each one. If you have questions about any point, please ask the researcher to clarify.

- Taking part in the study will involve three interviews lasting approximately 1 hour each ☐
- The interviews will take place in your home, and will address questions about your daily routines, and how you run your household, and what it is like to live in your area ☐
- During the first interview you will be asked to show the researcher around your home. Please tick to confirm you are happy to do this. ☐
- If you wish to have a community representative present for the interviews, you can tell the researcher, and they will organise for someone to be present ☐
- All of the data that is collected during the study is strictly anonymous and will remain confidential. We will not share your personal information with anybody. ☐
- If you agree to take part in this study but feel at any stage that you would like to stop you are free to do so at any time there will be no consequences. ☐
- Any questions during the interviews that you do not want to answer can be skipped. ☐
- Participation in the study is entirely voluntary ☐
- After the three interviews have been completed you will receive detailed information about the purposes of the study, and what we are doing in our bigger project. ☐
- I agree to the sharing of the interview for purposes of transcription only. ☐

If you (or anyone else) have any questions about this project, then feel free to contact the researcher Bradon Smith: Bradon.smith@bath.ac.uk

If you have any questions or concerns about the ethics of this research you can contact Nathalia Gjersoe: [<N.Gjersoe@bath.ac.uk>](mailto:N.Gjersoe@bath.ac.uk)

I agree to take part in the experiment under the conditions described above

Signed..... Date.....

Are you: Male? Age.....

(Please tick one) Female?.....

I have received in supermarket vouchers.

Signed

Appendix C – Interview protocol

Powering Up interview protocol

Two higher-level questions:

- How do people think about energy generation and use?
- How do they see their community?

Leading to:

- How can thinking about (and reducing) energy use be supported at a community level?

Interview 1

Put at ease:

- No wrong answers
- Not a test, just a conversation
- If there's anything you don't want to answer you don't have to.

Info sheet and Consent

- Give info sheet and go through
- Give consent form and go through all bullet points
- Explain audio recording
- Sign form

I want to start with some general questions about your home, where we're sitting.

Can you describe your home for me?

What do you like about your home? What don't you like?

Does anyone else live here, either all the time or some of the time, apart from you?

Do you think of yourself as a member of the community of [Penhill/Hamp/Duffryn]?

Do you have an attachment to [Penhill/Hamp/Duffryn]?

Do you take part in any community activities?

What sort of activities would you like to see happen in the community?

Do you know your neighbours? How do you get on with them?

What it is like to live in [Penhill/Hamp/Duffryn]?

What do you like most/least about living here?

Can you talk me through a typical day?
I want to talk a little bit about how you manage your household. Can you talk me through your key costs/ outgoings/ expenses/ what you spend money on – in a normal month?
Are there particular things that you do to try and keep those costs down?
How about your fuel/gas and electricity use. Do you know how much fuel/gas and electricity you use each month?
Are your energy bills something you are really aware of? Can you make a comparison with your other household bills?
In your home what would you say are the things that use the most energy? What activities / objects use the most energy?
Do you know how your home is heated?
Do you struggle to keep your home warm in the winter? Do you do anything to try to keep it warmer?
Do you know your energy supplier? Have you switched energy supplier recently? What would make you switch supplier?

Give supermarket vouchers (or explain that they will be given next session). If given, signed for.

Interview 2

Go through and sign second consent form.

Last time we talked about your daily routines, and we talked a bit about the energy that you use: the gas to heat your home, say, or the electricity to run TVs or keep the lights on.

I want to start by asking you about how the energy that you use is generated. Can you describe what you know about the energy system in the UK? How does it work?
Do you have any opinions about the energy system? Does it seem like a good system? Do you think there are things we could change about it? Does it seem like a fair system? Do you personally feel like you have any power to change it?
I'd like you to take me on a tour of your house, if that's OK with you?
What about some of the objects in the room? Which ones are important to you?
Thinking about different objects and activities in your home – what would you say are things that you do, or things that you have or use that use a lot of energy?
Do you know how the cost of your energy is calculated?
Where would you look for information about reducing your energy use?
Do you do anything to try to keep your energy bills down?
Do you ever think about how much energy you're using, when you're doing something, or using an appliance in your home?
Earlier we talked about whether you felt like there was any way you could change or influence the energy system in this country. How about your community – do you think the community could make changes, or influence things?
Do you think there are any ways that your community could help you reduce your energy bills? Are there any ways that you think the community could work together around energy?

Appendix D - Workshop images









