

Arbed recipient's views and experiences of living in hard-to-heat, hard-to-treat houses in Wales: results from three focus groups conducted in South Wales

Charlotte Grey, Shiyu Jiang and Wouter Poortinga

First published in February 2015 by the Welsh School of Architecture

Welsh School of Architecture, Cardiff University
Bute Building, King Edward VII Avenue
Cardiff CF10 3NB, Wales, United Kingdom

Tel: +44 (0)29 2087 6097

Fax: +44 (0)29 2097 4623

Email: PoortingaW@cardiff.ac.uk

Web: http://www.cardiff.ac.uk/archi/working_papers.php

WSA Working Paper Series ISSN 2050-8522

Paper Number: 01-2015

Arbed recipient's views and experiences of living in hard-to-heat, hard-to-treat houses in Wales: results from three focus groups conducted in South Wales

Charlotte Grey, Shiyu Jiang and Wouter Poortinga

Email: GreyC2@cardiff.ac.uk

Disclaimer

This project is funded by the National Institute for Health Research PHR programme (project number 11/3020/05).

The views and opinions expressed in this report are those of the authors and do not necessarily reflect those of the PHR programme, NIHR, NHS or the Department of Health.

All opinions expressed in this working paper are those of the author(s) alone and should not be regarded as the views of the Welsh School of Architecture or of Cardiff University. The copyright is retained by the author(s).

Contents

Contents	3
Abstract.....	4
Introduction	5
Cold Homes, Fuel Poverty and Health.....	5
The Arbed Programme	6
Aims of the Study	7
Methodology	8
Results.....	10
Health and Wellbeing	10
Thermal Comfort	13
Staying Warm.....	15
Use of Living Space and Social Interactions	16
Fuel Poverty	18
The ‘Heat-or-Eat’ Dilemma.....	18
Financial Stress	20
Experiences with the Arbed Programme.....	21
Discussion	25
References	27
 Appendix A: Focus Group Protocol – Round 1 (2013/14 Heating Season).....	 29

Abstract

This report presents the results of qualitative research carried out as part of a project examining the public health impacts of structural energy performance investments in Wales under the Arbed programme. Three focus groups were conducted in March 2014 (total n=28) to explore how residents of three communities in South Wales (Caerau, Brynamman and Hollybush) experience living in their 'hard-to-heat, hard-to-treat' houses, and in what way the Arbed programme may improve those experiences. Topics discussed included health and wellbeing, thermal comfort, staying warm, use of living space and social interactions, fuel poverty, and experiences with the Arbed programme. Focus group participants felt that living in a cold and hard-to-heat home had a negative impact on their wellbeing, finances and comfort. They welcomed the Arbed programme improving the energy-efficiency of their homes, and – where improvements had been made – felt that it had made a positive impact on their lives. However, participants also felt that the delivery and communication of the Arbed could be improved, and that the programme would benefit from greater resident engagement to select the most beneficial measures.

Key Words: Arbed; Energy-efficiency; Thermal Comfort; Fuel Poverty; Health & Wellbeing.

Acknowledgements:

We would like to thank the Welsh Government and the two scheme managers of the Arbed 2 programme – Melin Homes and Willmott Dixon – for their continued support throughout the project. We also would also like to thank the Local Authorities involved in the selection of Arbed schemes for their valuable input and support, as well as the Communities First groups in South Wales that have provided advice. Last but not least we would like to thank the focus group participant for sharing their views with us.

Introduction

Cold Homes, Fuel Poverty and Health

It is widely acknowledged that living in cold conditions and in fuel poor homes poses severe health risks (Marmot et al 2011). Cold homes have been implicated in an increase in mortality and morbidity, and therefore a demand on health services (Hills 2012). Countries with the lowest thermal efficient standards tend to have the highest levels of excess winter mortality (Healy 2003); and people living in the least energy-efficient housing are at higher risk of death than those living in more energy-efficient homes (Wilkinson et al 2001). Studies have shown that living in cold conditions is association with an increased risk of stroke, heart disease, respiratory disease, influenza, and arthritis and an increased risk of falls and injuries in the home (Marmot 2011, Public Health England 2014a). Damp and mould are more likely to occur in cold, poorly insulated homes, and may trigger or worsen asthma episodes and contribute to other respiratory conditions (Public Health Wales 2014). Furthermore, a number of studies have shown an indirect effect link of living in cold homes, poor housing conditions and common mental disorders (CMDs), such as anxiety and depression (Harris et al 2010, Public Health England 2014).

The World Health Organization (WHO) recommends that indoor temperatures should be maintained at a minimum of 20°C for vulnerable groups and between 18-24°C for the healthy, sedentary occupant, as a general guideline to maintain good health (World Health Organization 1990; Ormandy and Ezratty 2012). This advice was updated in 2014 following a systematic review, which recommended heating homes to at least 18°C for all sedentary people wearing suitable clothing (Public Health England 2014b). However, not all households may be able to afford the energy needed to heat their home to that level. In particular lower income groups living in poor quality housing may find it difficult to maintain a state of thermal comfort within the dwelling.

Fuel poverty is the situation where a household cannot heat their home at a reasonable cost, which in Wales is defined as having to spend 10% or more of their disposable income on energy costs to keep warm (Welsh Government 2014b). A household is said to be in severe poverty when they have to spend 20% or more of their income on energy costs (ibid). Fuel poverty is caused by a combination of poor energy efficiency in homes, low household incomes, high costs of fuel, and under-occupation of homes (Hills 2012), resulting in many low-income households not heating the home adequately (DECC 2013).

Households in fuel poverty often face the dilemma whether to spend their disposable income on basic necessities, such as food and clothing, or to heat their home to a comfortable temperature (the “heat or eat” dilemma). This means that fuel poverty may negatively affect health and mental wellbeing through low indoor temperatures and thermal comfort, reduced dietary opportunities, strains associated with reduced choice and opportunities, and financial worries (Marmot et al 2011). Strategies employed to reduce household spending on fuel, for example by only heating a limited number of rooms, can result in other social problems,

including a lack of privacy, which can lead to reduced educational attainment and social conflict within the household (ibid). Living in a cold home can further exacerbate social isolation, as high fuel bills may prevent people from going out and make them reluctant to invite others into their house (Hills 2012).

Reducing fuel poverty would therefore provide multiple health gains, both directly through delivering healthier living conditions and indirectly through improved home finances (Dear and McMichael 2011). Tackling fuel poverty through energy performance investments is often seen as the only permanent solution, as that would effectively 'fuel poverty proof' houses. If a house is sufficiently energy-efficient, then there is a low probability of fuel poverty regardless of who occupies the property (DTI 2006). Improving the energy-efficiency of the existing housing stock in the UK not only provides better living standards and conditions for people with low incomes, but may also help to reduce morbidity and mortality and thus the financial burden to the NHS (Hills 2012).

The Arbed Programme

The Fuel Poverty Strategy for Wales, published in 2010, set out the actions that Welsh Government would take to tackle fuel poverty in Wales (Welsh Assembly Government 2010). Following the strategy, the Welsh Government planned two major schemes NEST and Arbed (meaning 'save in Welsh'), that both aim to improve the energy performance of homes in Wales and reduce the impact of fuel bills.

The main objectives of the five year fuel poverty programme NEST are to provide advice and help to households reduce their energy bills, and to offer free energy efficiency improvement to eligible low-income householders living in housing with a low EPC rating. Improvements include measures such as loft insulation, cavity or solid wall insulation, a new boiler, central heating, and renewable technologies.

Arbed is Welsh Government's investment programme designed to improve the energy efficiency of existing homes in low-income neighbourhoods. Arbed has three key aims: (1) to reduce the number of fuel poor households in Wales, (2) to create local jobs and regeneration, and (3) to reduce household energy use thereby supporting climate change objectives. The programme has been delivered in two phases across Wales. The first phase (Arbed 1) took place in 2010 and 2011. The second phase (Arbed 2) is currently ongoing, and will improve a further 4,800 houses between 2012 and 2015. All houses that are selected for the Arbed improvement work will be offered multiple energy efficiency measures, free of charge, and without means-testing (Welsh Government 2014a).

The Arbed 2 programme targets mixed tenure, low-income neighbourhoods, mostly Strategic Regeneration Areas that have a high number of 'hard-to-heat, hard-to-treat' homes, and where people as a result are at a higher risk of living in fuel poverty. Typical energy efficiency measures include solid wall insulation (internal or external), roof insulation, heating system upgrades (including bringing the gas network to a community and converting domestic heating systems to gas, and upgrading old inefficient boilers and central heating

systems), and renewable energy technologies (photovoltaics, solar hot water, voltage optimisers). As an area-based programme, Arbed 2 looks to provide measures on a street-by-street or community basis rather than tailored to individual households (Welsh Government 2014a).

Aims of the Study

In this paper we describe the findings of the first round of three focus groups that took place in March 2014. The focus groups were conducted as part of a project that examines the health impacts of structural energy performance investments in Wales under the Arbed programme. The focus groups are part of the community engagement of the project, to allow residents to express their personal experiences both before and after the improvements have taken place. The aim of the focus groups study was to get a better understanding of the experiences of low-income households living in energy-inefficient ('hard-to-heat, hard-to-treat') houses, and in what way the Arbed programme may improve those experiences. Topics included health and wellbeing, thermal comfort, staying warm, use of living space and social interactions, fuel poverty, and experiences with the Arbed programme. The qualitative approach used in the research allow the residents to express these experiences in their own words and in greater detail than is possible in a quantitative survey. The same three groups will be reconvened after all the Arbed 2 energy-efficiency upgrade work has been completed in these areas, to show whether the Arbed 2 improvements may have changed the experiences and views of the residents.

Methodology

Three focus groups were conducted in three communities in South Wales that were selected for Arbed 2 energy performance investment programme, and where improvement work had not started or had not been fully completed yet (i.e. Brynamman in Carmarthenshire, Caerau in Cardiff, and Hollybush in Caerphilly).¹ The three communities represent geographically distinct areas in South Wales, each with their own specific challenges contributing to fuel poverty. Box 1 provides details of the communities where the focus group was held, as well as specific of the Arbed schemes.

The focus groups were held in March 2014 and all lasted just under 1.5 hours. In total, 28 people took part in the study (8 in Caerau, 9 in Brynamman, and 11 in Hollybush). Participants were selected from 30 households whose homes are being monitored as part of the overall project examining the health impacts of structural energy performance investments. Participants were offered a £30 shopping voucher as compensation for their time and travel costs. The focus groups were held at a convenient location, and took place either at lunchtime (Brynamman and Hollybush) or in the early evening (Caerau).

Topics for the focus group protocol (see Appendix A) were based on the household survey used for the community-based field study. All focus group discussions were recorded and fully transcribed. The focus group discussions were analysed thematically, using the identified themes as organising concepts. Ethical approval was received from the Welsh School of Architecture's Research Ethics Committee on 15 March 2014 (EC1403.184).

¹ In Cardiff three of the households had already had Arbed funded work undertaken on their properties, and in Brynamman three households had recently had external wall insulation (EWI) work done, but not through the Arbed programme.

Box 1. The Three Focus Group Locations

Caerau is a suburb located three miles to the west of Cardiff city centre. Housing is a mixture of housing association flats, bricked terraced houses, traditionally built semi-detached houses, and semi-detached BISF (steel framed) houses. The Arbed work that will take place here is external wall insulation (EWI) and boiler/heating system upgrades. Caerau has a Welsh Index of Mass Deprivation (WIMD) rank of 170 and is part of the Cardiff West Communities First regeneration cluster.

Brynamman is a village located on the south facing side of the Black Mountain, in an old coal mining area within the Brecon Beacons National Park boundaries. The area is currently off the mains gas network and contains mainly small stone terraced houses. The Arbed work will extend the mains gas network to homes in the village, and provide boiler upgrades. The area has a WIMD score of 651.

Hollybush is an old coal mining village situated between Blackwood and Tredegar, above the Sirhowy Valley. The area is currently off the mains gas network, and contains a combination of older small stone terraced houses (pre-1919) and post 1965 and 1980s detached homes. The Arbed work will extend the mains gas network to homes in the village and provide EWI and boiler upgrades. The area has a WIMD score of 565, and located within the Mid Valleys East Communities First regeneration cluster.

Results

The main findings of the focus groups are presented here under the key themes investigated: *health and wellbeing, thermal comfort, staying warm, use of living space and social interactions, fuel poverty, and experiences with the Arbed programme.*

Health and Wellbeing

There was a strong consensus in all three focus groups that living in a cold home is depressing and may prolong and exacerbate physical illness, in particular where people already have pre-existing conditions. Many described how living in the cold affected their respiratory health. It was felt that living in a cold home exacerbated a range of conditions, including diabetes, arthritis, and circulatory problems. A cold home also was thought to increase the severity of illness and the length of time it would take to recover. One participant mentioned that being on medication for cardiovascular disease affects a person's ability to feel warm, and as a result the home needs to be heated to a higher temperature in order to feel any effect.

One householder described how living in a cold home both contributes to becoming ill and prevents people from recovering quickly from chronic illnesses and infectious disease. The householder felt frustrated that vulnerable people were being forced to live in cold homes because they were unable to afford to heat them to an adequate level, and that this vicious cycle was making and keeping people ill.

It is all to do with what you use anyway, and if you're too scared to use it, that's why people get old, get cold, and get ill. And it is costing much more money than the health service, you know. (C1, Caerau)

I could be better. I think it could be proved. If anyone spoke to my doctor I would be better... you can't tell your doctor I am in this mess and I gotta stay in it. Which is what you gotta do. It would be easy for me to heat my house, and feel better and get well. But I can't. So it does affect people's health. (C1, Caerau)

I mean when you're younger you can handle that flu, you can give it a knock, but when you are older it gives you a bit more of a hiding don't it? Do you know what I mean, you gotta take a bit more of whoof... a bit more of that... and living in the cold you are going to get ill. At some time or other you are gonna get ill. (C1, Caerau)

Participants agreed that living in a cold home affected their respiratory health, making recovery from chronic and acute respiratory conditions more difficult. One participant expressed frustration at the length of time it took to recover from a chest infection, even though the person was physically active and had good general health, which was attributed

to living a cold and damp home. Another participant felt that her spouse's life expectancy would shorten if he had to live in a cold home.

It's a fact that I suffer from a lung disease and I would be better if I were in somewhere warmer. (C1, Caerau)

I've got mild asthma, very mild. But I go running, I eat well and everything, and I found, I was off for nine days with a chest infection, I'm rarely off and it was cold as well, and I found I needed to use the brown as well as the blue inhaler. Um and I had antibiotics and then followed by other steroids – which I never have – and I think it has been down to the cold and the damp. I really do, because all my other factors I am generally fit and healthy. But it was horrible and you're sort of really struggling to breathe, and wheeze – waking up in the night wheezing. And you feel like you've almost got to sleep like an eskimo just to make sure the back of your chest doesn't get cold as well. (B3, Brynamman)

Yes, she's just come off steroids and I think that was due to the cold in the house. Cause you've got the back which was insulated cause it's got cavity wall and the front of it is all stone, you know, and she's usually in the front cause the telly is there and she enjoys watching day break (laughs) and then I think it does, does affect her chest and all that. (B8, Brynamman).

I think with the cold, mind, it gets, like you said, as you get older, you get arthritis and god, you know you really do suffer don't you? And you get coughs and colds, and that's you done then innit with your chest! He couldn't live in a cold house, my husband, he'd die! (C3, Caerau)

It was felt that living with a cardiovascular condition would make the person more vulnerable to feeling the cold temperatures in the home because of medication that was being taken.

Would a person's health condition affect that as well, I was going to say, not just mobility issues but things like heart conditions? My father had a heart condition and he found he couldn't get warm because of the medication that he was on. No matter what we did with dad we could never get him warm. (B7, Brynamman)

Other illnesses mentioned that are worsened by living in a cold home, included diabetes, arthritis, and Raynaud's. One householder described the combination of Raynaud's and arthritis as 'horrendous' for thermal comfort.

Well, I'm afraid I get cold all the time, so the winter is... (talking about diabetes and insulin) yeah. That's when it hits me in the winter the machine it just said high (insulin levels)! I'm sure we'd all feel better if it was warmer. (B9, Brynamman)

I've got Raynaud's Syndrome as well, and arthritis, so for me... yeah, it's horrendous. (H5, Hollybush)

Participants in the focus groups agreed that living in a cold home contributes to poor emotional wellbeing and depression, and may trigger feelings of anxiety when fuel bills arrive in the post (see financial stress section).

I suffer with SAD (seasonal affective disorder) as well, so I must admit I am never at my best in the winter, but when you're cold and damp as well... But when you're cold and damp in the middle of the summer, that, you know. (B7, Brynamman)

It is depressing isn't it (living in a cold home) (H5, Hollybush)

If you feel cold, you feel ill! (H9, Hollybush)

I think if you are sat in a cold house you... [C1 – you get depressed don't you!]... yeah. For god's sake, I'd rather go without and have a tin of soup! To be honest with you, as long as I was warm! You know you know, oohh, I couldn't sit in a cold house! No that would be right miserable! (C3, Caerau)

Some householders mentioned that poor health or disability has meant that they are less active at home and therefore feel the cold more acutely. If health and mobility is poor it is also more difficult to leave the home to escape a cold and uncomfortable environment and go somewhere warmer. This is also likely to be exacerbated by low income and being able to afford to leave the house and go out for food and drink. This leads to feeling both thermally uncomfortable and socially isolated.

I have to say I have had days when if I have been well enough to go out when I have said I am going to go out just because I know if I go somewhere I'll be warm. I can go out and have lunch in a warm comfortable environment rather than be sat in a freezing cold damp house and that – yeah – makes a huge difference to your lifestyle. If like myself or perhaps older people, you're not as mobile and as active as you might otherwise be, sometimes sitting in it is the only option you've got. (B7, Brynamman)

Thermal Comfort

In all three focus groups participants were asked about thermal conditions within their home, and what their homes feel like during the heating season. In particular participants who have had no major energy-efficiency upgrades (via Arbed or any other way) commented on how unpleasantly cold their homes can be during the winter. They used strong words such as 'suffering' and 'horrendous', adverbs such as 'absolutely' to add weight, and mentioned that their home is freezing 'all the time'. The focus group participants indicated that thermal comfort is important and that living in a cold home is of great concern to them.

I just feel at the moment it's just cold, I'm... it is suffering with the house, it is cold. (B9, Brynamman)

(...) for the first six months it was absolutely horrendously cold. So we are really looking forward to the gas coming here. For heating and also economy on fuel bills. (H11, Hollybush)

I'm freezing! Literally in my house all the time. We just ... exactly, it's freezing. It's absolutely freezing. (H5, Hollybush)

Participants continued to discuss how humidity, condensation and damp can worsen problems, and how that contributes to a lack of thermal comfort inside their home. They expressed concerns about the impacts that may have on their health. While their houses are damp, participants are reluctant to open windows so not to lose any heat. Condensation and damp are seen as structural issues that are difficult to address without energy-efficiency upgrades.

I can get my house to perhaps up to 18 degrees and I will still be really, really cold because you are damp. You know, if you go out and you get wet clothes, how cold you can feel, as opposed to being in a wind cheater and dry. (B7, Brynamman)

They are cold, and as you said the condensation is, if you shut all the windows to keep it warm, you're getting damp everywhere you know....Because I got wind howling, I put coving in my house as a decorative thing, but I am glad I did because I felt the wind blowing between... this is in my living room, between my wall and ceiling, the wind's blowing through. (C1, Caerau)

The damp is the main thing in our houses... [C3- oh I think damp is terrible innit... oh bad... bad, it gets on your lungs and...] ...the damp and the mould. People think mould looks terrible, but it's the damage it can do to you, which is worse than what it looks like. (C1, Caerau)

Householders reflected on how their current or previous homes were even less comfortable before they had central heating. Although participants fondly remembered their past homes, and often spoke about them nostalgically, there was a strong sense that such conditions were no longer acceptable.

When we first moved in to these houses, in the winter time you used to have ice on the windows and if you had net curtains they'd stick to it. That didn't alter until we done something and got new central heating ourselves and we paid for it. Had new windows. (C5, Caerau)

You had a glass of water by the bed years ago and that would freeze by the morning. (H4, Hollybush)

There were seven of us and we were fighting about coats, not blankets. I know all about cold, we only had one fire and my father sat in front of that and it was coal, you know what I mean? That was it. So I know all about hardship. But you shouldn't have to have it nowadays should you? (C1, Caerau)

Six of the 28 participants had already received energy-efficiency upgrades to their 'hard-to-heat, hard-to-treat' houses at the time of the focus groups, mostly external wall insulation. They stated that the energy-efficiency upgrades had made a substantial and positive difference to the thermal comfort and warmth of their homes, as well as to their energy bills. The participants who received the upgrades found that their homes stays warm for longer, and noticed that they do not need to use the heating as often as before. It was also noted that the external wall insulation changed the atmosphere of the house, and that the house feels more like a home after the efficiency upgrades.

When my children comes down from the Valleys, they go "good god dad, your house is bloody boiling for god's sake" but it's lovely. Really, really warm; really nice. (C3, Caerau)

I'll tell you another thing I have noticed with it is that my house now doesn't go below 18 °C, heating or no heating. It doesn't go below 18. Now prior to the insulation, if it went down to 18 we were cold. Now at 18 we are not cold. You know it is a different, a different atmosphere altogether in the house you know, whether it is drier or what I don't know. That 18 degrees is a different 18. (B5, Brynamman).

Now, the wife has got to look at the thermostat to see if she is cold or not! I'm not joking. (B5, Brynamman)

We have noticed a difference. The heating stays, actually keeps your house warm much, much longer. We found that instead of just having it coming one twice a day at... say for 4 hours, we cut that down drastically. We found that perhaps 2 hours and the house kept warm. Well obviously depending on how cold it is outside, but it (EWI) did make quite a difference. And I think that would have affected the amount of oil we are burning. (H9, Hollybush)

Staying Warm

When participants discussed how they stay warm during the winter, there was a consensus that you are more likely to feel cold in an energy-inefficient house and waste a lot of money heating it. They mentioned a number of strategies they employ to keep warm, including the use of portable heaters, hot water bottles, throws, and electric blankets. These strategies were often used as a way to stay comfortable and avoid having to turn on the heating. Other strategies employed were to heat only certain rooms in the house, or to use fixed or portable heaters, because the occupants cannot afford to turn on the central heating for longer periods of time. There was a recognition that most of these strategies were unsustainable and that insulation is the only long-term solution to the problem.

And the thing is it's a waste of electric... and gas. Your money is going out through the window innit. (C3, Caerau)

Anyway, to not have a house with a cavity is to have a cold house. End of... [agreement]... you gotta have two brick walls and a cavity. (C1, Caerau)

Insulation really is the key. Until you've got an energy-efficient house, no matter what heating you put in. (B7, Brynamman)

We've had to heat our place with Calor heaters and low-energy electricity fires so we use those when our peak electricity (mumbles) and that is the only time we have heating on because we can't afford to run our central heating, absolute waste of time. We use it one hour a day, just to heat hot water that's all. (H11, Hollybush)

Imagine if you'd come to our house and we were sitting there with throws on, fully dressed and hot water bottles. And during that we'd probably do the hot water bottles twice! Just to sit there and watch television. We were frightened to turn any of the heating on. (H11, Hollybush)

My electric blanket has saved me this winter; that was the best thing I ever bought was my electric blanket! Give everybody an electric blanket! (B7, Brynamman)

In particular participants living in non-traditional housing, e.g. with solid stone walls or BISF² (steel framed) construction, had problems heating their house to a comfortable level. They found these houses difficult to heat and cold to live in.

If you've got a stone house, 2 foot thick stone walls to heat up, especially when they're damp, it is a different kettle of fish altogether. And that's why I went down the night storage route because there is, although a very minimal amount of heat when they're switched off, you've got a tiny bit of heat seeping out all the time, um, if I had central heating on a timer and I turned it off at night I bet you as the house stands now ... I bet overnight it would plummet to – dramatically, because it would seep a lot of heat, and then you would spend all day trying to get it warm again. (B7, Brynamman)

You definitely spend more trying to heat a metal house than a stone one, I tell you that any day. (C1, Caerau)

Use of Living Space and Social Interactions

The focus group participants discussed how living in a 'hard-to-heat, hard-to-treat' house affected their use of 'living space' as well as social interactions within the household, and as a consequence, their enjoyment of their home. They experienced great variations in temperature throughout their homes, and were therefore less likely to use certain parts of the house. Some respondents mentioned only heating a few rooms in their house or not using certain rooms at all during the winter. This may mean that friends and family may be reluctant to come and visit, potentially leading to social isolation. One participant described how a close relative refused to visit her again after a cold experience in June, suggesting that 'hard-to-heat, hard-to-treat' houses not only provide poor thermal comfort during the winter but during the summer as well.

I find it's a lot colder downstairs. But that's because heat rises, there's a big difference. When I come downstairs in the morning, well come out of my bedroom and come out all warm and I go downstairs, it'll be a lot colder [even if you've got the heating on in the house] yeah you see like there's a change in the heat (C6, Caerau)

Kitchens are cold anyway, but in a met(al)... tin houses they are cold. (C1, Caerau)

² British Iron and Steel Federation

No matter how much heat I put into that room I couldn't get it above 16 degrees. No matter what I did to it. I mean I literally had the night storage heater on, it's a big one in a small room, and the fan heater and I couldn't get it above 16 degrees. No matter what I did with it. And it was damp, and draughty. So that room miserable, really miserable. This winter I have just shut that room off effectively. (B7, Brynamman)

I just think it's... I'm really grateful. I've for 2 children in the house and I know when R. was less than 12 months old I would stay in 2 rooms with the rooms heated, because our gas was £140 per month with one wage coming in, we couldn't afford to do anything other than that with 2 babies. (H5, Hollybush)

Living in a house that is cold is miserable. My mum won't come and visit me. Last winter... last summer, she came down in the June, we went to see Strictly Confidential in Cardiff. And it was a treat for her when she was down for the weekend, when you come down mum we'll go and see the show and have a nice weekend for you. And she went back and she said, you ever invite me again... I have never been so ruddy cold in all my life! (laughs). And I said I did tell you to bring woollies mum, she said 'it's June!'. (Laughter). So she came in her summer skirt and her t-shirts, and I told her before she came, put some woollies in mum! (laughs). (B7, Brynamman)

In certain cases this may mean that householders try to avoid being at home as often as possible. Two householders mentioned that they would rather stay in their caravan than in their home, or would sit in their car with the heater on just to warm up. They found that the caravan and car are easier to heat to a comfortable level than their home.

We've got a caravan actually, and I used to just think I am going away I'm going away this weekend, because I've got the heating all the whole time in the caravan. And I used to prefer to go away to the caravan than stay at home, because I could have the heating on in the caravan the whole time! And that's how bad it's been for the heating for us (H5, Hollybush)

I worked from home this morning and I was cold, I didn't put the heating on, I worked at home so I could come here for lunch (laughs). But I am going into work this afternoon and I know the office is going to be really warm, I am going to get into my car to the next appointment and that will be warm. There is something when your car is warmer than your house, isn't it... (B3, Brynamman)

Fuel Poverty

Throughout the focus group discussions, participants mentioned how expensive it is to heat their houses. High fuel bills show how easy it is to fall into fuel poverty when living in energy-inefficient houses. Those living off the gas network are reliant on more expensive fuel types, such as heating oil, LPG gas or electricity. While participants found heating oil generally efficient as a means of heating their homes, they did not always have sufficient space for a fuel tank. This was particularly the case for small stone-terraced cottages, where access to back gardens is difficult. Participants also commented on the high costs of fuel, in particular of heating oil. Participants found it difficult to pay for an oil tank in full, rather than being able to spread the costs using a monthly direct debit. Electricity was also found to be an expensive way of heating the house. One participant mentioned how moving to a house with electric central heating increased their electricity bills and put extra financial strain on their household.

So when we moved up here, electric central heating, we had the open fires but they had been closed in, so we just put it on moderately, it was just the two of us. And the first quarter bill came in and we thought... we've moved in (mumbles) it was £894 for the first quarter. And we had it on moderate heat and only on for a maximum of 8 hours a day. And that was just horrendous. So my wife was in tears, phoned the electricity company whoever (mumbles) and they went through everything and it was the boiler, because it's a 6 kilowatt boiler or something, it is a massive thing just frighteningly horrendous. (H11, Hollybush)

And to be honest whether you have a horrendous oil bill or a horrendous electric bill doesn't make much difference. The only advantage I have with electricity is I can pay monthly, and when you are on a fixed budget not having to fork out £500 in one go makes a big difference, and I think that will be something to note when you have the gas, people who have oil, will find perhaps managing money will be easier. (B7, Brynamman)

The thing is I do the monthly direct debit, oh I mean my sister said oh fill the tank, oh it's £800! You just sort of think, but with direct debit it is kind of absorbed into your every month cost isn't it. So you don't notice it so ... you do notice it, but not as much as if you had to lay out a lump sum. (Mumbles). People are buying oil on credit cards just to keep warm, it is - it is quite sad. (B3, Brynamman)

The 'Heat-or-Eat' Dilemma

The focus group participants discussed how the 'heat-or-eat' dilemma was a reality in their lives or within their community. Some of the participants struggled to pay for their heating bills and have become careful using any electrical equipment, including boiling a kettle. Other participants experienced episodes in their lives in which they wouldn't eat sufficiently

because they had to heat their house. One participant mentioned that having an inadequate diet reinforces feelings of poor wellbeing when living in a cold home. The participants felt that there is a cumulative effect of different stressors on people's comfort, health and wellbeing, where the impact on health and well-being from living in a cold, damp home is compounded by an inadequate diet and being unable to afford to go out.

I wouldn't eat. I wouldn't eat because we had to heat the house. You know you do think about, it sounds, you think people are heroes who do that, they're not they're everyday people who think oh I can't do that today. You know I would stick my hand down a toilet and clean someone's toilet for a fiver for electric. That is so desperate I've been. I don't know about anyone else, but my wife's working! I, I can't, I'm ill, but... it's no... it's hard! I think it is hard for anyone to heat their house in this social climate, no matter how much money you got. You know. But it shouldn't be a luxury to heat your house. You deserve that much you know. (C1, Caerau)

And you've got to not spend this or spend that because you're not sure until you get the next bill. My wife when she did speak to the electricity board after that shocking bill, went through and she now knows exactly what it costs to boil a cup in the kettle. (H11, Hollybush)

Excuse me for being a bit slow, and I know there's a figure for it and I can't remember what it is, I've been trying to delve in my memory now but at what level do you have to spend your income on to be in fuel poverty? So the fact that a quarter of my income goes on utility bills – the electric – a quarter of my income, and I am on a low income anyway, is you know which is like I said what's a holiday. You know. And I struggle to you know deal with the basics – food, you know running a car, or whatever. (B7, Brynamman)

There are a lot of other factors, other than, you know if you are in a cold, damp house and you haven't got adequate food, then obviously the impact of being in that cold, damp house is going to be far worse than if you had, you know, a really good diet or the ability to go out of that house for a few hours and have a meal in a warm, comfortable environment you know things like that. So I think it is more than just the way you heat your house, I think there is a broader – a broader brush to wellbeing and feelings of wellbeing. (B7, Brynamman)

There is a lot of people that say it's heat-or-eat isn't it now, I don't think we've had that, been that bad in the village you know. (H1, Hollybush) (Here the participant discusses the realities of 'heat or eat' and whether anyone within their village might have experienced this).

Financial Stress

Participants discussed extensively how high fuel bills are stressful and may trigger feelings of anxiety. Many participants mentioned that they just cannot afford to heat their houses properly when it is cold and wintry outside. Many of the participants felt that the worry they have about household finances, including fuel bills, impacts negatively on their quality of life and wellbeing.

Participants of the focus groups mentioned that they frequently had to make compromises on how to spend their household budget, so that they could afford their fuel bills. Some attempted to reduce their household spending by going without adequate heating or food, or limit their spending in other ways, such as doing without leisure activities or transport. Others would switch off all lighting and electrical equipment when not in use, which they felt made a big difference to their electricity bills. Several participants had contacted their energy supplier in order to try to reduce their bills, for example by switching tariff or payment method. One householder switched to a prepayment meter, because that allowed her to budget their energy bills more carefully. She found this less stressful than dealing with unpredictable monthly or quarterly bills, even if prepay meters are an expensive way of paying for fuel.

So I had to go and buy an electric fire. Now they're talking about the cost of heating your house here. I don't have it on. I don't have it on, I go without. I go without meals. So people in my house can eat. (C1, Caerau)

It is a constant fight to keep the bailiffs from the door. (C1, Caerau)

It's a horrible feeling when you've got the gas bill... and you think oh my God, how much is this going to be? (C7, Caerau)

I was so anxious... I'm glad I had my meter taken away years ago. (C8, Caerau)³

Everything else has gone up but your wages. So how can you afford you know when they put 10% or whatever it is on fuel. (B8, Brynamman)

I have literally phoned oil companies and haggled and got it down 3p a litre less, but they really got you, they know you need it. And that's what gets me. I know the gas is rising, but it's, you've got more freedom of choosing then haven't you. (B3, Brynamman)

³ This participant had a prepaid meter installed

But trying to get information is very difficult, if you want to make an informed choice at the moment, I went to a couple of comparison websites, I phoned up Energy Savings Trust, I went on the Which? website, and I did the utility companies themselves. And the amount of conflicting information I got as to what the running costs would be for a two-bed, end-terraced, stone built house, for an all-electric house was, I mean it was as long as a bit of string, the difference was unbelievable, and none of them were right and they all under-estimated. (B7, Brynamman)

But the thing is the gas and electric, these firms they put their things up so high, they know you need it (C3, had prepayment meter installed)

When we had that first bill, it was a year's supply gone. But that's in 3 months. Well that just meant that I didn't become a member of the golf club which I wanted to do, because I'm retired you know, but that money we had spare that's all gone, we haven't had a holiday – not a big holiday but just a week away to Malaga or somewhere, but we had to cancel it. Changing the car, we've only got the one car at the moment; did have two. (H11, Hollybush)

But on the plus side my electric is only £34 a month. All plugs go off when we're not using it, all lights off. It does make a difference. Huge difference. Huge difference. (B3, Brynamman)

Experiences with the Arbed Programme

Those who already received efficiency upgrades through Arbed were generally positive about the programme, and felt grateful for the upgrades; not only because the measures were provided for free, but also because it made a difference to their quality of life. It was felt that the work has had a positive impact on their comfort, finances and general wellbeing.

I'm actually quite grateful, it is nice to have something when you are working, it really is. It is not just because it is for free, but it is like something that will make a difference. (B3, Brynamman)

Look at the plus side, where else you got deal where they put central heating brand new, and we've been lobbying for quite some time to put gas into this village, years, when they started building these houses here. They were going to put it in when they started building these houses. I talked to the contractor and the gas promised to bring the pipeline up. So now after all this time it's here, and we're having a new central heating system, boiler, radiators, absolutely fantastic! I can't fault that. You're having what £5-6,000 worth of work, for nothing! (H4, Hollybush)

Well I must be honest, what Arbed are doing on our estate, I think it is fabulous. I know you got a bit of a mess and whatever but it's gonna look lovely when it's all done. And like I said we're really lucky, because we're not paying for it. The only thing I'm a little bit disappointed in, is we gotta pay for our windows where we are because we bought our house. But apart from that I can't fault them. They're even gonna do the roof now as well. So we've had a new boiler, new central heating, and it's... we haven't paid for it and it's lovely. I must be honest... I'm really over the moon because whenever we've asked for anything, because we've got pension, they say you're not entitled to it. So having this now is a real big and massive bonus. I'm really so appreciative of the boiler more than anything, and the central heating is lovely. Really lovely. (C3, Caerau)

While the focus group participants were generally positive about the Arbed programme and the provided energy-efficiency upgrades, they were more critical about the communication with residents. They thought that too many different organisations are involved in the programme which can lead to conflicting information. In some cases residents received information that they would receive certain measures, only to be told at a later stage that that would not happen. Residents were also not universally positive about the contractors. Inexperienced contractors caused concern in all three communities, with delays in the work being done, and in a few cases poor quality work delivered by the contractors.

Apart from anything else, no offense to anybody, but you've got all sorts of contactors coming in, some of them haven't got a clue what they're doing, cos I've listened to some of their conversations. And I actually heard one... says 'we've done all that wrong' and he said well I... (interrupted) (C7, Caerau)

I'm in limbo though, because I don't know whether they are doing it or not doing it. Although they've started to do it. And telling everyone that they're not doing it. (C1, Caerau)

So I am grateful for it coming in, but I do think communication-wise, if they take anything from it, is to learn, that they need to work more cohesively as a unit. All the different agencies need to come together. (H5, Hollybush)

The whole communication has been, is dreadful... (H6, Hollybush)

When they come to you and says oh you're gonna have this done and this done, and then they come back to you and say it's been stopped. You know that puts you down as well, you know. (B8, Brynamman)

You were saying about the person that came round (surveyor) was barely out of... was it I think um somebody over there said, he was barely out of primary school, and

he must have been that person that knocked on my neighbour's door. And (name) being (name), and quite savvy asked a few questions, and he couldn't answer them. So said if you can't answer questions, simple questions like that I won't bother. (B7, Brynamman)

The complaints about a lack of communication and coordination, however, have to be put in context. Communities often find it difficult to distinguish between the Arbed programme and other initiatives in the area. Poor access to energy advice and experiences with other initiatives were often discussed in conjunction with experiences with the Arbed programme. For example, a few participants found it difficult to source information on the available energy-efficiency grants. It was felt that there is a need for a more coordinated approach and a clear 'one stop shop' for energy-efficiency advice and information. Participants also expressed distrust in commercial providers who do 'a lot of shoddy work'. Concerns were also expressed about vulnerable people not knowing what they are getting themselves into or which company to choose to undertake energy efficiency improvements.

So I think again we need a more inclusive and coordinated effort. So that people can access all the grants there needs to be a... I've always said it all along, there needs to be a one stop shop which the Energy Savings Trust really should be but even if you phone them nowadays, they will direct you to somebody else. You end up going round and round the houses, they don't have access to all the information like they used to have. And I think just being the same reason, there's just too many of them going. (B7, Brynamman)

For somebody who isn't knowledgeable or doesn't know where to start it is an un-navigable maze of different grants, different companies and it really is totally unsuitable for purpose. (B7, Brynamman)

I mean I am fairly astute and I understand that side of things fairly well, and where to go and get information. And I know what I want done and you know, and for the pitfalls and what to look out for. And even I find it difficult to negotiate. But somebody who hasn't got a clue would not stand a chance really. I mean they are vulnerable, really, really vulnerable. (B7, Brynamman)

(Talking about energy-efficiency work in general) There is a lot of shoddy work being done in Brynamman at the moment, a lot of shoddy work being done. (B7, Brynamman)

J. and D. are paying for the work next door, the boards, the quality of the boards, is unreal. It's like ... that tissue. It's terrible. It just drops everywhere (H5, Hollybush).

Participants of the focus groups expressed frustration about a lack of involvement. They felt that they were not part of the decision-making process to select the most beneficial measures under the Arbed programme. The 'one size fits all' approach of the programme was generally disliked. It was felt that the efficiency upgrades were selected for the convenience of the contractor rather than for the residents' benefit.

I can't complain about that (free Arbed work). I recommend they could have... I want it to be fine-tuned to suit you. It can't just be this is the way we'll do it, and if you don't like it well then you either have it or don't have it. (H11, Hollybush)

A lot of the grant schemes have a one size fits all policy and I don't think that is always the best use of money. I think some properties need to be looked at on an individual case by case basis. So that you are getting the best fit for your property, not a misfit one size fits all policy. (B7, Brynamman)

One item that they've put down - voltage optimiser and what they do is reduce your voltage from 240 down to 220. Which in my opinion is a load of rubbish. Ok because if you reduce your voltage by 10% then everything becomes 10% less efficient. So it defeats the object doesn't it? (B5, Brynamman)

I think it is one of those things if you put the word green or eco in front of it then it is wonderful you know (laughter) well you know it is fact these days isn't it (agreement). And not all of it is right either, there has been a lot of misinformation around over the years. (B5, Brynamman)

Maybe Arbed should have put a bit more thought into this. As somebody said earlier they've sort of generalised everybody. Maybe if they'd looked into it and said well ok your insulation is ok, all you need is gas. And somebody else would say well you can have insulation or gas, the cost would be the same. Why don't they do that? Because the insulation really is fantastic. (B5, Brynamman)

I don't understand why they can't go straight up, up the wall and then go through the bedroom – straight across. And then they won't put the meter in there you see, so wherever the pipe comes inside, they want to attach the meter to it there. And they said the easiest place for them, rather the best place for them would be in the lounge behind the television. Which I thought was a bit strange. (H11, Hollybush)

Discussion

This paper described the findings of three focus groups that were conducted in March 2014 as part of a project examining the health impacts of structural energy performance investments in Wales under the Arbed programme. The aim of the focus groups were to get a better understanding of the experiences of low-income households living in energy-inefficient ('hard-to-heat, hard-to-treat') houses, and in what way the Arbed programme may improve those experiences. Only a small number of qualitative studies have been conducted to date to examine psycho-social aspects of warmth and energy efficiency improvements (e.g. Harrington et al 2005, Gilbertson et al 2006, Shortt and Rugkåsa 2007). The results of this study add to the evidence of residents' experiences of living in cold homes, the stresses and consequences of living in fuel poverty, as well as possible psycho-social processes linking housing quality, fuel poverty and health.

There was a strong consensus that living in a cold home is depressing and detrimental to both mental and physical health. In line with Harrington et al (2005), this study found that participants think that living in a cold home exacerbates ill health rather than causing it. In particular, it may make it more difficult to live with or recover from pre-existing chronic conditions. In addition, the study shows that living in a cold home contributes to poor emotional wellbeing, and may trigger feelings of depression and anxiety. It was generally felt that a warmer home environment would contribute to better mental and physical health.

The respondents in the study commented on how unpleasingly cold their homes are during the winter, and expressed concerns about the lack of thermal comfort and the consequences that may have for their health. They described how difficult it is to stay warm in an energy-inefficient house, in particular those living in non-traditional housing (e.g. steel-framed construction). Respondents used a number of strategies to stay warm and avoid having to turn on the heating, including the use of heaters, hot water bottles and blankets, or only heating a limited number of rooms. Similar 'keeping warm' strategies were reported in Harrington et al (2005), Gilbertson et al (2006) and Shortt and Rugkåsa (2007). These strategies were however seen as temporary stopgaps and as unsustainable in the longer term. The lack of thermal comfort and living space was thought to put a strain on social interactions within the households, and as a result participants' enjoyment of their home. This also meant that some householders tried to avoid being at home.

Respondent's repeatedly mentioned how expensive it is to heat their homes, showing how easy it is for low-income households to fall into fuel poverty when living in an energy-inefficient house. High fuel bills are not only stressful, they also force householders to make difficult choices. Participants frequently had to make compromises on how to spend their limited household budget. Just as reported by Harrington et al (2005), households either economised on fuel or refrained from other activities or expenditures in order to stay warm. Many considered the 'heat-or-eat' dilemma a reality in their own lives and community, with some reporting episodes in which they would not eat because they had to heat their house. Our findings support the conclusions of Harrington et al (2005) that the health impacts of fuel poverty involves more than the direct physical effects of exposure to cold. The cumulative

stresses associated with fuel poverty were found to be particularly damaging. Living in a cold, damp house is more depressing when you are not able to eat properly or to go out. An inadequate diet may not only lead to problems associated with 'food poverty' (FPH 2005), but can also worsen feelings of poor wellbeing of living in a cold home. Furthermore, the discussions showed how socially isolating fuel poverty can be. Some of the participants described how friends and family were reluctant to come and visit them in their homes because of the cold, even in summer.

All participants of the focus group welcomed the energy-efficiency measures they would receive through the Arbed programme. The participants who had already received efficiency upgrades felt grateful for them, not only because they were provided for free, but also because they made a noticeable difference for their comfort, finances and overall quality of life. These results are in line with the findings of previous qualitative studies. Gilbertson et al (2006) reported that recipients of Warm Front energy-efficiency work were generally positive about the upgrades, and felt they improved thermal comfort, use of living space and feelings of well-being. Gilbertson et al (2006) also found that greater warmth and comfort further enhanced emotional security, social relations within the home, and eased symptoms of chronic illness. Although homes were found to be easier to heat, limited evidence was found that the efficiency works lowered heating bills. Shortt and Rugkåsa (2005) found that energy efficiency measures helped to improve the warmth of households living in fuel poverty, even if some remained in fuel poverty after the improvements. Overall, recipients reported better health and wellbeing, as well feeling more comfortable in their own homes

While the focus group participants were generally positive about the Arbed programme and the provided energy-efficiency upgrades, they felt that the communication with the recipients could be improved and households themselves should have a greater say in the delivery of the programme. The 'one size fits all' approach was generally disliked, and many questioned the motives for taking this approach and the usefulness of some of the measures. Gilbertson et al (2006) similarly found that recipients of Warm Front grants expressed frustration about the delivery of the programme. Some found the process of installation disempowering and stressful, which could undermine the wellbeing of an already vulnerable population. A greater emphasis on partnership with the community could help address individual concerns, improve feelings of control, and as a result alleviate stress associated with the delivery of a housing improvement programme (Allen 2000). Marmot (2010) argued in his review that it is important for programmes to create opportunities for individuals and communities to set the agenda for change and identify out local solutions. Indeed, participants who already received the energy-efficiency measures felt that the benefits of the programme would have been greater if they had been more closely involved in the decision making process.

This study produced qualitative evidence regarding experiences of low-income households living in energy-inefficient houses. The focus groups were conducted in a number of communities where energy-efficiency work under the Arbed programme had not started or been fully completed yet. It will be attempted to reconvene the focus groups after the improvements have been made to see how Arbed programme may improve those experiences. This will support the wider research project examining the health impacts of the Arbed energy performance investments in Wales.

References

- Allen, T. 2000. *Housing renewal - Doesn't it make you sick?* Housing Studies, 15(3), pp. 443-461
- Dear, K. and McMichael, AJ. 2011. *Editorial: The health impacts of cold homes and fuel poverty.* British Medical Journal. 342, d2807.
- DECC. 2013. *Fuel Poverty: a framework for future action.* Department of Energy & Climate Change, London.
- DTI. 2006. *Energy - Its Impact on the Environment and Society.* Department of Transport and Industry, London (2006)
- FPH. 2005. *Food poverty and health. Briefing statement.* Faculty for Public Health. [http://www.fph.org.uk/uploads/bs_food_poverty.pdf] [Accessed January 2015].
- Gilbertson, J. Stevens, M. Stiell, B. and Thorogood, N. (For the Warm Front Study Group). 2006. *Home is where the hearth is. Grant recipients views of the Warm Front Scheme.* Social Science and Medicine, 63, pp. 946-956.
- Harrington, B. Heyma, B. Merleau-Ponty, N. Stockton, H. Ritchie, N. and Heyman, A. 2005. *Keeping warm and staying well: findings from the qualitative arm of the Warm Homes Project.* Health and Social Care in the Community 13 (3), pp. 259-267
- Harris, J. Hall, J. Meltzer, H. Jenkins, R. Oreszczy, T. and McManus, S. 2010. *Health, mental health and housing conditions in England.* National Centre for Social Research: London.
- Healy, J. D. 2003. *Excess winter mortality in Europe: a cross country analysis identifying key risk factors.* Journal of Epidemiology and Community Health, 57 (10), pp. 784-789.
- Hills, J. 2012. *Getting the measure of fuel poverty. Final report of the fuel poverty strategy.* CASE report 72, ISSN 1465-3001
- Marmot, M. 2010. *Fair Society, Healthy Lives: A Strategic Review of Health Inequalities in England Post-2010.* The Marmot Review
- Marmot, M. Geddes, I. Bloomer, E. Allen, J. and Goldblatt, P. 2011. *The health impacts of cold homes and fuel poverty.* Friends of the Earth/Marmot Review Team.
- Ormandy, D. and Ezratty, V. 2012. *Health and thermal comfort: From WHO guidance to housing strategies.* Energy Policy 49, pp. 116–121

Public Health England. 2014a. *Cold weather Plan for England. Making the case: why long-term strategic planning for cold weather is essential to health and wellbeing*. Crown Copyright.

Public Health England. 2014b. *Minimum home temperature thresholds for health in winter – a systematic literature review*. Crown Copyright.

Public Health Wales. 2014. *Fuel poverty: what are the impacts?* <http://www.wales.nhs.uk/sitesplus/888/page/43768> [Last updated 2010, accessed May 2014].

Shortt, N. and Rugkåsa, J. 2007. “*The walls were so damp and cold*” *Fuel Poverty and Ill Health in Northern Ireland: Results from a housing intervention*. *Health and Place*. 13 (1) pp. 99-110.

Welsh Government. 2014a. *Arbed - Strategic energy performance investment programme: Background* <http://wales.gov.uk/topics/environmentcountryside/energy/efficiency/arbed/background/?lang=en> [Accessed May 2014]

Welsh Government. 2014b. *Fuel Poverty*. <http://wales.gov.uk/topics/environmentcountryside/energy/fuelpoverty/?lang=en> [Accessed May 2014]

Welsh Assembly Government. 2010. *Fuel Poverty Strategy 2010*. <http://wales.gov.uk/docs/desh/publications/100723fuelpovertystrategyen.pdf> [Accessed May 2014]

Wilkinson, P. Landon, M. Armstrong, B. Stevenson, S. Pattenden, S. McKee, M. and Fletcher, T. 2001. *Cold Comfort: The social and environmental determinants of Excess Winter Deaths in England, 1986–96*. Bristol: The Policy Press.

World Health Organization. 1990. *Environmental Health in Rural and Urban Development and Housing Unit. Indoor Environment: Health Aspects of Air Quality, Thermal Environment, Light and Noise*. Geneva

Appendix A: Focus Group Protocol – Round 1 (2013/14 Heating Season)

This resident engagement aims to get a better understanding of experiences of low-income households living in energy-inefficient houses; and show how the Arbed 2 improvements may have changed these experiences. Topics include perceived changes in health and wellbeing, thermal comfort, use of living space, financial position, and social interactions

- Do Arbed investments provide health benefits to low-income households?
- What are the social and economic processes at the household level that contribute to better mental/physical health? (Thermal comfort, use of living space, financial position, social interactions)

Introduction (moderator): thank people for coming, introduce self, briefly outline goals for research, reasons for recording the session given, “rules”: only one person to talk at a time, all data is treated confidentially and anonymised, the session is open and everyone’s views are important, amount of time that will be taken up. Aim of for people to talk to each other, not moderator.

End (moderator): thank everyone for their participation, explain what will happen to the data they have given, tell them about further session next year.

Introduction (ice breaker):

- Tell me a little bit about how long you have lived in this area, and what are the good and bad things about living here.
- What are the good and bad things about living in your home?
- Tell me a little bit about your home – do you have any problems with it, e.g. condensation/mould?

1) THERMAL COMFORT

I'd like to talk to you about what conditions are like in your home (**before any** Arbed measures were installed). Would you tell me what a typical winter's day is like in your home?

Probe differences between household members (especially very young and very old): what was it like getting up in the morning, washing/bathing, doing housework, going to bed, use of rooms/house space, draughty/cold parts of the house, warmth and comfort. What would you like your home to be like? What changes would you make if you had the resources?

2) KEEPING YOUR HOUSE WARM

How adequate is the heating system that you use to warm your house (before Arbed)? How did you use it? What would you have changed about your home in order for you to be comfortable in winter? What were the factors stopping you from doing this?

Probe: timing, warmth, cost/affordability, convenience, efficiency, ease of use. Have you put up with feeling cold because of cost? Are there any rooms you don't heat?

3) USE OF LIVING SPACE/SOCIAL INTERACTIONS

Before Arbed, how did your ability to keep your house warm enough affect your use of different rooms in your house. Did it ever stop you going out or inviting people home during the coldest days in the winter?

4) FUEL POVERTY

Do you feel that paying for heating your home in winter was difficult? What would you have spent this money on if fuel was less expensive? What is more important eating well or warmth?

Prompt (written on board): Rent/mortgage; repairs to home; telephone bill; food and other necessities; going out/treats; credit payments; occasional bills e.g. insurance. Stress, heat or eat.

5) HEALTH & WELL BEING (generic)

Generally – how do you think that living in a home that is not warm enough in winter would affect a person's feeling of health and well-being?

How do you think it affects different people – elderly, children, people with pre-existing health problems, fit adults?

*Probe: effects on mood, state of mind, overall well-being, physical health?
Respiratory health – colds/flu?*

Alt: if you are cold in your home what effect has that on your life in general? AND do you think being warm is connected to your health?

6) ARBED - EXPECTATIONS

What did you think the benefits of Arbed might be? Do you think it will have a particularly big effect for any particular family member?

Probe: physical health and mental/well-being issues for self and other family members, use of home e.g. increase in living space, social interactions, effects of cold home as age, financial benefits

7) WHAT ARE YOUR EXPERIENCES OF THE ARBED SCHEME UP TO DATE?

8) Lastly, I'd like you to imagine that this Arbed Scheme never existed and just imagine that one month / one year ago the government sent you a cheque for £2500 for you to spend on absolutely anything you would like. How would you have spent it? Just say the first thing that comes into your mind. Why that?

Probe: The money or having the work done: which do you think would benefit you more and why? If you had to spend it on improving your home, what would you spend it on?