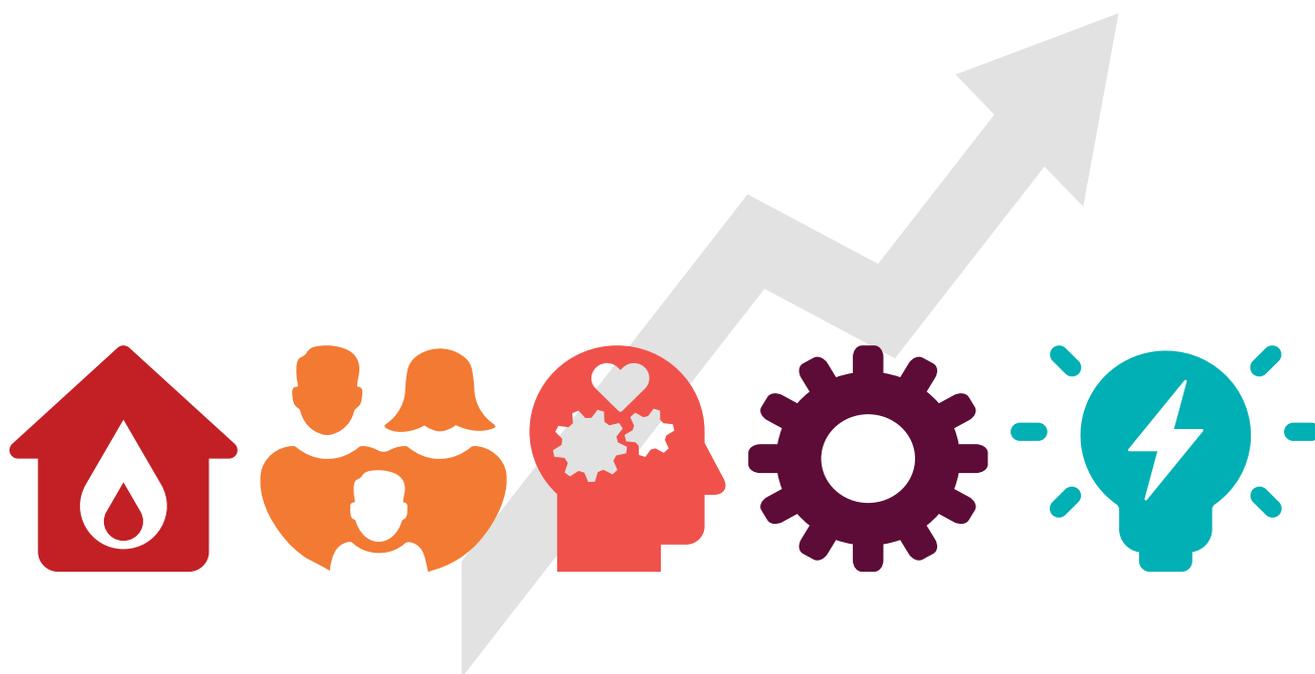




University of
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SHUSU

SUSTAINABLE HOUSING
& URBAN STUDIES UNIT

Future Directions for Fuel Poverty Research

A Delphi Study

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The Archive and Legacy Project

This study is part of the Archive and Legacy Project. This brought together the 25-year output of Eaga Charitable Trust and looked to the future of research in the field. The centre piece of the project is an online library of fuel poverty research: www.fuelpovertylibrary.info.

About the authors

The Sustainable Housing & Urban Studies Unit (SHUSU) is a dedicated multi-disciplinary research and consultancy unit providing a range of services relating to housing and urban management to public and private sector clients. The Unit brings together researchers drawn from a range of disciplines including: social policy, housing management, urban geography, environmental management, psychology, social care and social work.

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1. Introduction

1.1 An overview

This report documents a Delphi study conducted with a view to better understanding fuel poverty as a field of research and identifying themes for the future development of this field. Before discussing the findings, we provide a broad context and describe the methodology of our study. One of the earliest mentions of the term 'fuel poverty' was by Isherwood and Hancock (1979) in a publication for the United Kingdom (UK) government, and the term has come to greater prominence over subsequent years. Notable amongst the scholars responsible for drawing attention to fuel poverty was Brenda Boardman, who arguably helped define and promote the concept in several publications throughout the 1980s and over the subsequent decades (see, for example, Boardman, 1981, 1991 and 2010). Fuel poverty has been described as a social problem that affects the poor but is also intimately related to both the quality of the residential building stock and the cost of fuel (Boardman, 2010). It refers primarily to financial challenges related to achieving comfortable levels of warmth at home. Over recent years there has been an increased interest in the concept of fuel poverty in the UK and internationally within academic, practitioner and policy circles. It is extremely challenging to obtain accurate data on the global prevalence of fuel poverty, but in England it has been estimated that some 2.53 million households live in fuel poverty (Department for Business, Energy & Industrial Strategy, 2019). This equates to approximately 10% of all households in England.

Since its introduction the concept of fuel poverty has inevitably evolved, and scholarship and practical applications have challenged some of the early conceptual foundations, as well as bringing into focus areas within fuel poverty research that require further development (see Boardman, 2012). Within the UK and Northern European context, fuel poverty is widely recognised to be the consequence of three determinants – energy-inefficient housing, low incomes and high energy costs – whilst increasingly research has highlighted wider contextual factors that can deepen fuel poverty. For example, mental health issues can affect confidence and readiness to manage bills and to negotiate with utility companies (Sherriff, 2016), and living in the private rented sector can severely limit a householder's level of control regarding the quality of the building fabric and heating system (Ambrose, 2015). There is now a well-established connection between cold homes and physical and mental health conditions, particularly physical health impacts where much research attention has been focused. The Marmot

Review Team (Marmot, 2010) collated evidence on the effect of fuel poverty on health, identifying a range of direct impacts including: increased mortality rates during the winter months as a result of respiratory, circulatory and cardiovascular diseases; and mental health conditions such as depression and anxiety. They also identified indirect impacts: an increased prevalence of psychological symptoms in children; implied increased malnutrition; and increased social isolation, a cause for concern given that approximately 10% of children and young people now experience mental ill health (House of Commons Health Committee, 2014). These health impacts mean that cold homes present an economic challenge and opportunity to the National Health Service (NHS). It has been estimated that the annual cost to the NHS of poor housing is £1.4 billion (BRE, 2015).

Recent work to move the debate on from one focused on the climatic and building stock contexts of the UK and the Republic of Ireland, where fuel poverty research has been most prevalent, has contributed to re-conceptualisations and new terminology such as 'energy vulnerability' and 'energy poverty'. Bouzarovski (2018) describes the broader term 'energy poverty' as when a household is unable to secure a level of quality of domestic energy services including space cooling and heating, cooking appliances and information technology, moving from a focus on heating and thermal comfort to a broader consideration of 'essential energy services' (Simcock, Walker and Day, 2016). In hotter climates, particularly outside Northern Europe, this concept can therefore be extended to relate to air conditioning and the ability to keep homes cool (Nicholls et al., 2017; Sherriff et al., 2019). Research has revealed a European energy justice landscape that evidences disparities not only within but also between countries: examples being sociohistorical factors such as the rise in energy prices following the fall of communism (Bouzarovski, 2018) and differences in housing stock and regulations. If energy poverty is understood in this broader sense as 'energy poverty', in a global context, it is estimated that more than one billion people across the world experience this condition (Bouzarovski, 2018). A climate justice framing (Walker and Day, 2012) of fuel poverty has also taken root within this context. In a changing climate, inequalities connected to heating and cooling may deepen: for example, the intensification of heatwaves may increase the demand for air conditioning (Nicholls et al., 2017), and changes in energy prices that seek to reduce energy use may have an impact on the fuel poor (Vase and Tindale, 2011). Fuel poverty can therefore be understood as a multifaceted issue that is shaped

by costs, income, housing and personal and social circumstances (Butler and Sherriff, 2017), and these factors can be understood in the context of the political milieu, climate change and energy markets.

1.2 The contribution of the Eaga Charitable Trust to the field

The output of the Eaga Charitable Trust spans the wide fuel poverty field and touches on both UK and international dimensions. Health has been an ongoing issue of importance from Roger Critchley's work with the Health and Housing Group in 1997 through toolkits for primary care trusts (Lincoln, 2003) and frontline health professionals (Davison, 2003) to a study of the cost-effectiveness and success of health-related fuel poverty schemes (Fletcher and Warren, 2017). The Trust has recognised the importance of understanding the fuel poverty experiences of specific groups, including the effect of housing on the living standards of children (Barnes, Butt and Tomaszewski, 2008), understanding fuel poverty and energy vulnerability for adults with learning disabilities (Tod, 2018), understanding the thermal behaviour of older people (Goodwin, Fenby and Howe, 2003) and providing resources on fuel poverty for people with learning difficulties (Wragg, 2008). Funded research has also looked at specific approaches to alleviating fuel poverty, including the Green Deal (Wade and Jones, 2012) and Energy Company Obligation (ECO) funding (Croft, 2011) and solid wall insulation (Sefton, 2004). The Trust has engaged with debates around low carbon, such as the relationship between low-carbon heating and rural fuel poverty (Hannam and Jones, 2017), the impacts of renewables targets on fuel poor households (Preston, 2010) and their relationship with heritage buildings (Barnham, 2008). Recently, there has been a stronger emphasis on international work, including a toolkit for best practice in measuring fuel poverty in Europe (Thomson, 2014) and comparisons between the UK and Germany (Schneller, 2015). In 2019 the Trust created an online library, www.fuelpovertylibrary.info, that made available its entire output.

1.3 This report

Work has been carried out in the last few years to collate what we know about fuel poverty research specifically (Boardman, 2012 and Ambrose and Marchand, 2017), and also energy research more generally (Sovacool, 2014), and to propose priorities for the future. Boardman (2012) derived an assessment based on her extensive experience and engagement to produce an informed

analysis of the field. Sovacool (2014) undertook a comprehensive analysis of published works on energy research (and the social science components of these) to look at what we know. He proposed several areas for further inquiry, some of which included fuel poverty. Such reviews are crucial because the multidisciplinary and multisectoral nature of fuel poverty means that there is a risk that fuel poverty may be marginalised or neglected in favour of broader work on welfare, poverty, energy efficiency, housing conditions and so on. Fuel poverty research has increased in breadth over the last three decades, but a common agenda for taking research forward, grounded in the experience of key actors, has not yet been articulated. This study takes inspiration from the work of Boardman (2012), Sovacool (2014) and Ambrose and Marchand (2017) and seeks to contribute to the literature by engaging with key actors from the field of fuel poverty research from academic, research, policy and practitioner perspectives. In so doing, this study aims to provide a state-of-the-art assessment in order to identify and explore current directions of fuel poverty research, evidence gaps, areas of disagreement and challenges for the future. It should be noted that the very term 'fuel poverty' was one of the areas subject to investigation in this study, and we recognise that other terms are in use by particular actors and in different contexts. In order to establish a common frame of reference we have chosen to use the term 'fuel poverty' throughout this report, whilst acknowledging that terminology is an important area of inquiry in itself. The goal of this study was to help provide an informed evidence-based agenda for fuel poverty research to support scholarship over the next decade. In doing so, we chose to employ the Delphi approach in order to provide a structured method for capturing new ideas in a 'safe' space and consolidating them. This approach is typically used in emerging fields of research. Although this does not apply to fuel poverty per se, as discussed above, we witness movements to begin to re-conceptualise the issue as a global challenge and one that pertains not only to heating, but also to cooling and energy uses not directly related to comfort. This has led to a lively discussion about parameters, boundaries and terminology.

2. Methodology

Selecting the Delphi approach Developed in the 1950s, Delphi is established across diverse research fields and accepted as a method for seeking a convergence of opinion and envisioning future developments (Hsu and Sandford, 2007). Relevant examples include: bringing together expert views on climate policy in Finland (Wilenius and Tirkkonen, 1997); evaluating options for climate change adaptation in Ontario (Lemieux and Scott, 2011); investigating drivers of and barriers to urban energy systems (Sherriff, 2014; and envisioning futures for small-scale renewable energy in Finland (Varho, Rikkonen and Rasi, 2016).

Delphi is distinguished by an iterative process comprising two or more rounds of data collection, with analysis and feedback being applied at the end of each round and informing the design of the subsequent round(s). The first round generally consists of open questions, whilst subsequent stages use relatively closed questions to consolidate the findings, prioritise points or establish areas of disagreement.

This approach affords the study a degree of interaction without the challenges of a conventional workshop, therefore reducing the extent of financial and geographical exclusion. Although computer technology has its own exclusionary elements (Robison and Crenshaw, 2010), it can enable the inclusion of a greater range of people and viewpoints than a more conventional format, especially when a diverse and international audience is sought. Participants can contribute in their own time and can consider their responses, which presents advantages in particular for those for whom English is not the primary language. The anonymity of an Internet survey offers the possibility of detaching the views of participants from the organisations they represent or might be seen to represent, enabling people therefore to criticise the institutional structures within which they work. In a physical workshop, even under the Chatham House rule, it is difficult to avoid an implied relationship between participants and their organisations.

2.1 Our study

A three-stage Delphi study was conducted. This comprised two online surveys and a set of expert interviews. In the first stage, a closed list of individuals active in fuel poverty research and policy was drawn up

by the project committee and project advisory group. This group was invited to take part in an online survey with the following set of questions:

- How would you define the field of fuel poverty research?
- What are the most significant conceptual or theoretical discussions in the field currently?
- What do you think should be the priorities for fuel poverty research over the next 5 years?
- What should researchers prioritise in order to maximise their impact on policy?
- What do you foresee to be the most significant challenges facing the field of fuel poverty research in the next 5 years?
- Which pieces of research over the past 5 years have had the greatest impact on your thinking on this topic?

A total of 49 people responded to this survey: 32 were academics and 10 were from a Non-Governmental Organisation (NGO, broadly defined) or consultancy, with the remainder from a combination of the energy industry, government and other businesses. We made particular efforts to ensure many of the known 'key actors' in fuel poverty work were invited to participate at this stage. Following this stage, an analysis was carried out by reading and considering the full range of responses and devising a list of prominent and overarching themes. It was important to make this list manageable for the second stage, and hence a level of prioritisation was necessary:

- the relationship between fuel poverty and other forms of poverty;
- the relationship between fuel poverty and climate change mitigation;
- structural factors that lead to fuel poverty Fuel poverty in rural and remote areas;
- fuel poverty as a component of energy justice;
- the international dimensions of fuel poverty;
- non-heating energy services as components of fuel poverty;
- the impact of energy markets on levels of fuel poverty;
- behaviour as a driver of fuel poverty;
- the impact of smart devices on fuel poverty;
- the lived experience of fuel poverty.

Respondents were then asked to respond to a set of questions about this list and invited to provide any additional comments:

- To what extent do you consider each of the following to be well understood by the fuel poverty research community?
- In terms of improving the lives of those living in or at risk of fuel poverty, which of the following should be prioritised over the next 3 years? The list is the same as in the previous question. (Please select up to 3.)
- In terms of having the greatest impact on the design and delivery of fuel poverty policy, which of the following should fuel poverty research prioritise over the next 3 years? (Please select up to 3.)
- In terms of the ways in which fuel poverty is discussed and conceptualised, which of the following should fuel poverty research prioritise over the next 3 years? (Please select up to 3.)

The analysis of this dataset involved coding the qualitative answers in NVivo, a qualitative data analysis computer software package, and calculating summary statistics for the quantitative questions. This second-stage survey was sent to all the initial invitees as well as being broadcast on social media, primarily Twitter and LinkedIn, and branded as the 'Fuel Poverty Temperature Take', in order to solicit a wide range of opinions. This is a modification of the Delphi technique, in which the

respondents to a stage would conventionally be a subset of those responding to the previous stage. A total of 170 individuals responded to this stage, and the sectoral breakdown was as follows: 68 involved in academic research and teaching; 13 in the energy industry; 34 in health, housing or government; and 55 in the NGO or community sector. 19% of these respondents were based outside of the United Kingdom. From this stage we also drew on qualitative comments provided by the respondents in which they expanded on the issues raised by the closed questions. The third stage of the study comprised a set of interviews with nine of the second-stage respondents. The selection of interviewees was based on their responses to the second stage, as well as the researchers' knowledge of their involvement in fuel poverty. The interviewees were invited to talk anonymously about key issues in the field, and the interviews were focused around the list of issues presented above. The approach to the analysis involved a detailed read-through and discussion in order to create a set of preliminary NVivo codes. Robust coding was then carried out, during which additional codes were added and incorporated into the analysis. The result of the analysis was the creation of a set of the key issues discussed in the body of this report.



Figure 1 - Promotional image used on social media.

3. Findings

3.1 The survey of respondents

A quantitative summary of the responses to the closed questions in Stage 2 of the Delphi study is provided in Appendix A. Whilst our study was primarily qualitative, these closed questions enabled us to validate our inferences from the contributions to the first stage. The charts show that across the set of respondents there was interest in prioritising these areas of research but that interest in them varied.

It is worth noting that, in order to force a degree of prioritisation, respondents were asked to each identify three issues from the list. Given the nature of the questionnaire, it can be inferred that those issues that appear in the 'top 3' across the three questions relating to improving the lives of those in fuel poverty, impacting on the design and delivery of fuel poverty policy, and the ways in which fuel poverty is discussed and conceptualised (Figures 1, 2 and 3 in the Appendix), should, in the collective opinion of our respondents, be given prominence in research activity.

The relationship between fuel poverty and other forms of poverty is one of the issues in the 'top 3' across the three questions and across the three sector groups. Structural factors that lead to fuel poverty are also given prominence across the sectors. Whilst these charts are a useful indication of opinions across our sample, we do not take these as an absolute guide to prioritisation. Whilst non-heating energy services and the international dimensions of fuel poverty are low in these rankings, for example, we make the case below that these represent nascent concerns in the field that have implications across the other aspects.

Figure 4 gives responses to the question about barriers, with respondents again being able to select up to three answers. One respondent commented that these barriers presuppose particular attitudes, to government in particular. We accept this concern but would place this in the context of the Delphi study as a whole: this list of barriers was distilled from and therefore reflects comments submitted to the first round of the study. The charts suggest agreement across the sectors that availability of funding is the most significant challenge. One concern that was reflected in some comments received during Stage 1 -, namely that a focus on climate change rather than fuel poverty could be problematic - was not validated by the Stage 2 responses.

Figure 5 shows answers to the question relating to how well understood each of the areas of the themes were. It shows some variations. In particular, behaviour, the relationship with other forms of poverty and the lived experience of fuel poverty are more frequently seen not to have been well understood. There is some variation between respondents from the UK and those from elsewhere. It is interesting, for example, that those from the UK were more likely to feel that international dimensions of fuel poverty are well understood. Remote and rural areas is also a theme that UK respondents were more confident with than international respondents. There is also a strong difference between the perceived levels of understanding of behaviour as a driver of fuel poverty, with non-UK respondents much less likely to say that they think it is well understood.

3.2 Expert interviews

The data collected via the survey, coupled with the analysis of interviews with key actors, have suggested a number of areas where future scholarship in fuel poverty research should be focused. We have presented them here in no particular order and do not assert any prioritisation of these thematic areas. Instead, we hope that these represent a useful resource for fuel poverty researchers to take work in the field forward, in order to address some of the emerging concerns against a canvas of 40 years' scholarship. Quotes are provided below in italics, and, to ensure anonymity, the speaker is identified by interviewee (I) and an assigned number.

1. Internationalising fuel poverty research

Although work in the UK and Ireland pioneered scholarship on fuel poverty, there is now a global research interest in the challenges of energy security and affordability and maintaining comfort and health at home. Over time the concept of fuel poverty has been scrutinised and challenged in order to connect with diverse socioeconomic contexts, climates, housing stocks and political milieus. This expansion has been recognised as a significant step in helping to raise awareness of the deleterious effects of fuel poverty on people's lives. In order to move forward with this agenda, it is suggested that there needs to be increased co-operation between researchers from different national contexts. Such co-operation should aim to influence key policy actors in order to draw on evidence and bring about change.

Work in the EU has evidenced both the challenges and the value of seeking common narratives across different nation states. However, it is crucial that there remains an acknowledgement that respect for idiosyncrasies specific to particular contexts in order to avoid counterproductive homogenisation, which hides key differences. These may relate, for example, to cultural expectations, regulatory regimes, climatic variations and standards of building stock and mean that indicators or metrics that are helpful in one country are not as relevant in others.

We could do a lot more just to make it a general, human problem that everybody needs to cook; everyone needs lighting; everyone needs to stay warm or cool as in terms of basic human needs rather than just seeing – I think it's very much focused on cold homes, and that's because we live in a cold country. Then the things about not having electricity to light your home doesn't get much focus because we assume that's not a problem. (13)

So we don't [want] to be creating homogenising rhetoric that reifies, let's say, the south/north divide or treats the whole of the Global South particularly as a monolithic block. (19)

They just applied a ten per cent figure to energy expenditure data within Mexico. Obviously, that just doesn't make sense. Like, it's not in any way adjusted to the very diverse context that you find here and the huge climatic variations by region. (16)

2. Broadening fuel poverty to include cooling and non-comfort energy services

Most of the work in the UK has focused on heating. However, the relevance of cooling is increasingly recognised. This is already the focus of work in warmer (cooling-dominated) climates but may be increasingly pertinent in the UK as we take steps to adapt to the impacts of climate change. Similarly, in an increasingly technological and digitised world there is a greater need to explore the impacts of non-comfort energy uses on a household's experience of fuel poverty. We use the term 'non-comfort' to denote uses of energy, such as communications and entertainment, that do not directly relate to heating and cooling indoor space. Here the evidence needs to move from an emphasis on 'survival' and the immediate implications of cold homes to the intersection between fuel poverty and activities that underpin social inclusion and quality of life.

... we need to kind of really shift away from just thinking [of] energy poverty as being about cold homes, and it's actually this much broader, all-year-round problem. (16)

It's something like half of a fuel bill of a fuel poor household is on the non-regulated uses of energy. You know, electricity for televisions and washing machine and fridge and everything else like that. We're nowhere near good enough at working out what we can do to help people with those. (12)

It's a very visible impact, no heating or hot water, whereas cost of electricity, it's less visible to the household and potentially also to other agencies who might need to support family members, that kind of thing. There is clearly an issue if people can't afford to run their washing machine and their kids have to go to school in dirty clothes, that kind of thing, a massive impact to the quality of life of the household. (11)

3. Spatiality

There has been a shift within fuel poverty research to recognising the diverse spatial contexts in which fuel poverty plays out. Rural areas present particular challenges such as the variety and quality of the housing stock, dispersed services, the level of general poverty and the risk of specific types of poverty such as transport-related exclusion. The context of an island can be particularly stark, with the added costs of carrying out retrofit work meaning that government funding tends not to help as many homes. This area is currently underexplored, and the role place has in exacerbating fuel poverty requires further investigation and analysis.

... but I think the problem that we've identified right from the outset about rural fuel poverty, as with rural poverty in general, is that it's much more dispersed. You don't get big pockets and so on. The nature of the housing stock means that people who are on low incomes living in the worst housing have really severe fuel poverty, and in a way programmes, you do need rural-specific programmes that recognise that there are additional costs in tackling that on top of that, but the housing is often worst. It's also more expensive, have to travel further and so on. (18)

We do do work in rural areas, but it's nowhere near as much as we do in urban areas, firstly because it's just easier to get to people in urban areas, and that's for all services, not just ours, and the neighbours talk, so inevitably interest in referrals are generated in urban areas. (11)

...even to the point where if folk are installing external wall insulation, the scaffolding could be into the thousands, it could be £2,500 in Orkney compared to £600 in the mainland, so the money that comes out for government funding doesn't go as far as it would everywhere else because we don't have the economies of scale. (14)

4. Occupants

There needs to be sustained work to explore the lived experience of fuel poverty in order to bring to light the many diverse impacts fuel poverty has on people, as well as the coping strategies people employ. There is a need to understand comfort practices and to enable people to be comfortable in their homes. This is particularly the case within the context of moves to decarbonise and when new technologies are introduced. Failing to help vulnerable occupants get the best out of retrofitted homes and new technologies, such as heat pumps, can result in carbon mitigation, cost reduction and health improvement goals not being met and, in the worst cases, fuel bills rising. The way people in extreme poverty make decisions is not well understood, and further research on this could aid understanding of how to encourage and enable people to make changes in the home and take up financial assistance. There is a need for caution, however, in that an emphasis on occupants can imply a 'faulty consumer narrative' that blames occupants for not addressing their fuel poverty, when many vulnerable households have little control over their homes, and addressing fuel poverty requires much more than changing consumer behaviour.

...especially if you're someone with a disability, and you need to maybe have increased washing loads, it's something – with some earlier work on disability and fuel poverty in the UK, it's something we commented on that the way we measure the problem doesn't take into account any kind of increased costs for people with disabilities. (16)

It's no use just sticking in lots of nice bling technology if we don't bring the tenants along for them to just have a voice and maybe just either leaving folk open to fuel poverty or opening them up to it. Even at the point where they can't control the system that they've got, it is obviously still around cost too, because with the way that electricity costs have gone. (14)

it seems like it's very much like a faulty consumer narrative. I don't think that's helpful. When we look at the power dynamics and we look at the broader drivers of energy poverty, it's very clearly beyond the role of the consumer. They don't have power over a lot of those structures, the way that energy pricing works, the way that they can access the schemes, but it seems like it's a very easy topic for people to focus on. (16)

I'd be interested to see if people could do some more qualitative research on how people in extreme fuel poverty make decisions about energy. (17)

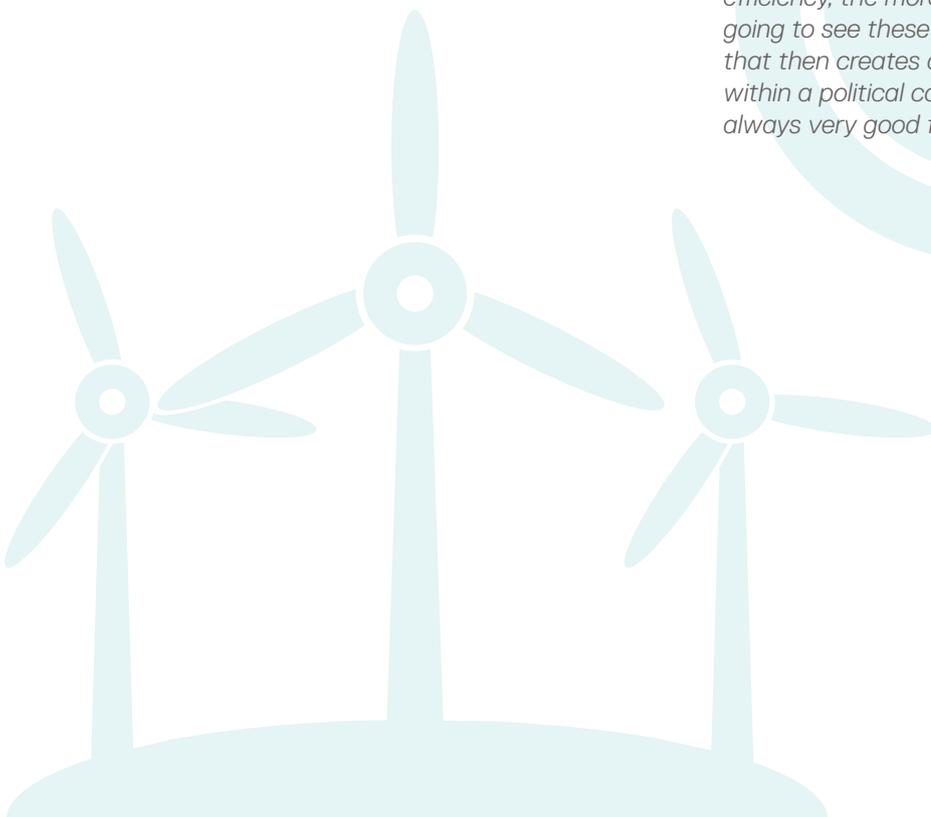
5. Climate change and just transitions

A transition to low-carbon energy is a vital part of climate change mitigation. There is an opportunity in that a move towards more energy-efficient buildings and modern clean technologies can address inequalities but there is also a risk that people in fuel poverty may be 'left behind', even though they could benefit the most. Although low-carbon technologies can be cheaper to run, they commonly require an initial capital outlay, which many people do not have, and rights to modify buildings, which tenants in the private rented sector lack. There is also a need for changes in practices around heating and cooling that respond to the different modes of operation of new technologies. Digitisation of services and smarter home systems offer many advances, but it is important that these do not create new barriers to participation that in effect penalise those with learning disabilities or a lack of financial resources. Conversely, smart systems offer myriad potentials for researchers to access data to understand comfort practices. Research that helps to ensure that people are not marginalised in the movement towards decarbonisation will be critical over the next decade.

... in terms of the energy transition, we're just seeing a sort of increasing gap in access to clean energy. We're seeing that repeated all over the world, in European and non-European countries...the way that policies are designed, mostly requiring a financial impact from households, it feels to me that that's where the next energy challenge is, is where we end up with middle- and high-income households using very clean energy sources, and then more vulnerable, lower-income households still using very polluting sources and are unable to access that level of technology. (16)

One of the big questions that we're going to have going forward is how do we make sure that low-income, vulnerable and fuel poor households can afford the necessary energy transition that's going to be required to decarbonise heat. So we're going to see people that are using coal or solid fuel, heating oil, LPG at the moment are going to cease to be able to use those types of heating fuel in the future, and they're going to have to transition to some form of lower-carbon heating. That's going to be a huge behavioural change for them. It's likely that government is going to have to play an important role in not only funding the heating systems, but also managing that behaviour change to make heat pumps normal for people off the gas grids, for example. That's definitely the kind of behavioural side of those heating system changes. (15)

There's a huge agenda here for social scientists because the more technology that comes in around energy efficiency, the more investment there is, the more we're going to see these complex interactions, and, indeed, that then creates all kinds of tensions, and it works within a political context, so all of these things aren't always very good for low-income households. (18)



6. Inequalities

There is a risk that fuel poverty may be individualised and understood as a behavioural issue, whether that behaviour is individual practices in the home or householders' decisions about retrofit and home technology. It should rather be recognised that fuel poverty stems from deep-rooted inequalities relating to building stock, access to capital and the structure of the energy market. The ways in which fuel poverty is defined and measured determine who is classed as fuel poor and therefore 'deserving' of support. The research community should continually challenge key policy actors to ensure evidence as to the causes and drivers of fuel poverty is not disconnected from other agendas such as social welfare, income and housing.

I would say fuel poverty is a structural thing, and it's a structural thing because it's embedded in poor housing, in huge systems of disadvantage and in huge infrastructural inequalities. (19)

The households who reach out for help or who are, you know, have relatively easy problems to solve, they are likely to already have been helped. It will be households, as you know, who don't realise that they're in fuel poverty or that there's any help available for them or have other issues that take over, and so they and the people in the household, their children, people they care for, are therefore suffering because of issues related to it. (11)

That's not simple, as we know! How do you work out who is at risk of cold – like I was saying, being somebody who needs a higher temperature because of their health condition, and that's not recognised, might not necessarily fall into someone who's fuel poor. Then you've got people who might have the money available, but an older person doesn't want to spend money on themselves, and they live in a cold home, they don't turn the heating on or they fear losing their retirement funds, whatever. (13)

7. Health and wellbeing

There has been a great deal of attention within the literature over the last few decades to the interrelationship between health and fuel poverty. However, despite this plethora of research significant work was still seen to be needed to address gaps in the knowledge base and generate a depth of understanding in particular areas of health and wellbeing. In particular, there remain knowledge gaps relating to the interplay between stress, mental health and fuel poverty. There is also a significant gap in knowledge about how we can measure the economic benefit of fuel poverty measures in order to make the case for comprehensive interventions via health budgets. There are opportunities to work more closely with health care professionals to address the wider determinants of ill health within the context of housing conditions and fuel poverty.

I'm not sure how good we are at, for instance, understanding the effect of stress. If somebody... is really worried about putting on the heating because they just haven't the money to pay for it, what does that do to them? The whole mental health and stress bit, which is probably endemic with a lot of poverty and therefore endemic with a lot of fuel poverty. Again, I'm not sure we've got enough on that, and mental ill health is even more difficult to quantify in terms of money or measure accurately. There are ways of doing it, but I don't think we're very good at that. (12)

You've got the eternal problem [that] local authorities might be in the place to insulate homes or support people, but the NHS is going to save the money through having healthier people. The local authorities say, 'We're not going to pay for it because we're not going to save the money. The NHS should pay for it because they're going to be the ones that are going to gain for it.' And the NHS say, 'Well, we don't improve homes. We're about medicine, so we can't do it.' (13)

8. Engaging with and focusing on the energy industry

The energy industry is potentially a very powerful stakeholder for research on fuel poverty. Research would benefit hugely from greater involvement by the energy industry in helping alleviate fuel poverty. However, academics, in particular, are often concerned about what working with corporate entities would mean for their academic practice. There is therefore a significant opportunity to find ways to work in partnership with industry and, where necessary, hold that industry to account. The intersection between the rollout of technology, such as smart meters, and the impact on fuel poverty was also seen as a specific area of future fuel poverty research. Similarly, the changing nature of supply, from large power stations to localised grids and renewable energy.

I don't think we do enough on governance for the... energy industries... I believe that it could be a long time before we've tamed the industry sufficiently so they're no longer helping to create fuel poverty. I think they're instrumental in making things worse on most counts...I want to know why Ofgem don't do more. (12)

I think they're given far too big a role at the moment in delivering...fuel poverty programmes. With respect to the energy efficiency industry, there is a very mixed picture... what you're finding is that you're getting the energy efficiency industry saying to local authorities, 'Right, we want you to come up with a criteria as wide-ranging as possible, so it makes our job as easy as possible to deliver measures!... so the easiest jobs get done first. I think their primary concerns are profit. That mitigates [sic] against social justice and equity. (18)

...it fits in with what I was saying about the standing charge and why it's increasing. We are moving from a system where our electricity was a large capital expenditure in a generating power station combined with high running costs, so therefore that was one charging system that fitted with the supply side. We're moving to a completely different supply side, which is one large capital expenditure in a wind turbine and no running costs, and what should that do with pricing? How should the fuel poor respond, etc? It's got to eventually have made a big difference. (12)

9. Terminology

Whilst some might argue that discussing terminology is a distraction from the business of alleviating fuel poverty, our study suggests that there is a fragmentation of research around different terms. In part, this reflects the internationalisation of the field and the broadening of its scope to encompass cooling and non-comfort forms of energy. It also reflects some concerns about the connotations of the term 'poverty', partly because determining people to be in poverty can be stigmatising and counterproductive, and also because it might constrain debate to instances where the barrier to energy access is primarily financial. Despite these concerns from some, 'fuel poverty' is recognised to be a robust and well-established term with currency in research and policy domains. There appears to be a need, however, to consider to what extent continued use of this term might limit conceptual expansion of the field into new contexts and whether alternative terms may come to more comprehensively represent the challenge of accessible and affordable energy as an international concern.

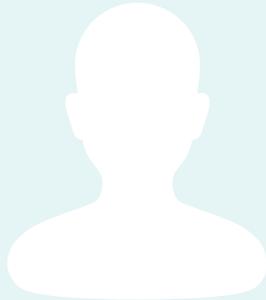
I think there is a very valid case to say you don't talk about fuel poverty on the doorstep. I haven't seen the research on that, I haven't read it, but it seems to me quite feasible that some people would find it offensive to be told they were in poverty or that they were in fuel poverty. So you ask them questions like 'Do you have difficulty paying your fuel bills?' or 'Do you get cold?!, etc. That seems to me human pleasantness to do that. (12)

Particularly within Cuba, they don't talk about poverty. It's really taboo to use any kind of negative language, so we were finding in focus groups that whenever we talked about something negative, people would kind of frame it in a positive way, always. So one thing that emerged from that was to talk about energy solidarity instead and energy vulnerability. (16)

It's tricky, so I'm in favour of a common definition at a European level. I think it helps to give political visibility to the problem, but that is at the trade-off of maybe restricting the emergence of new terms that might be better, especially if you end up with quite a restrictive definition. (15)

10. Knowledge transfer

Fuel poverty researchers want to have an impact on how we think about and address fuel poverty and work towards a reduction in its incidence. For policy makers and practitioners there are challenges in accessing and effectively utilising research. The nature of the research is also important: isolated detailed studies may be less useful to policy makers than comprehensive summaries or wide-ranging studies. To some extent there is a mismatch between what is happening in research and how this is transferred to policy makers. Researchers are concerned about a lack of support for fuel poverty research, and a shortage of fuel poverty initiatives 'on the ground' has implications for opportunities for empirical studies. The research community should develop strategies that would allow them to engage proactively with policy actors to help the transferability of research findings on fuel poverty to meet the priorities described in this and other studies.



It's always very striking if you go to a parliamentary event where you do get MPs, or whatever, it's often actually, it's that sort of person who will know at first-hand what the issues are, or sometimes the advice worker who is very good at communicating that, that will have the biggest impact. I think research, statistics, evidence is all important, but, as you know, you need that voice as well. It doesn't feel like that type of forum, there used to be a lot more of that taking place than currently exist. (19)

I'm on the email system with the Fuel Poverty Research Network, where there's academics and lobbyists and charities and government, yes, all sorts of different stakeholders that can share ideas and get a better understanding about research has happened before. (15)

I'm very conscious of this, as somebody who has worked more in policy, that you're not so plugged in to what it means to the people on the ground to receive services and what is involved in delivering programmes. This is really important. What can make all the difference between a successful fuel poverty programme and a programme that's not successful is that understanding of people's motivations and so on and what engages people. There are forums that allow that dialogue and really should be encouraged. (18)

...organisations like NEA probably help because they pick up the research and they make the policy links and then they do the campaigning as well. If it wasn't for organisations like that and Eaga as well that are making those links... It's a real shame that Eaga isn't carrying on because I'm not sure how that's going to work and how without more organisations like Eaga... The projects that Eaga has funded, I think maybe they've been small projects, but they've been quite important in providing that evidence. I'm not sure how that's going to continue now and have the place, somewhere you can go for that focus and that interdisciplinary space. (13)

4. Conclusion

This study has attempted to identify and explore current directions of fuel poverty research, evidence gaps, areas of disagreement, and identify challenges for the future. It has done this by engaging with a large audience of academics, researchers, practitioners and policy actors who are in some way engaged with fuel poverty research. Although our work was grounded in the views of people working predominantly, but not exclusively, within a UK context, our findings have relevance to those working in other settings as well. In undertaking this study, our goal was to help provide an informed evidence-based agenda for fuel poverty research to support scholarship over the next decade. By employing a Delphi methodology, we have systematically distilled a number of key areas of work that could provide a focus for research to be designed and commissioned that:

- embraces the internationalisation of fuel poverty research
- broadens fuel poverty to include cooling and non-comfort energy services;
- is grounded in visible spatial contexts;
- is situated in the lived experience of fuel poverty;
- ensures fuel poverty features as a key factor of just transitions in measures taken to mitigate and adapt to climate change;
- takes into account the structural inequalities that cause and drive fuel poverty;
- continues to investigate the health impacts of fuel poverty and highlight the need for joined-up health–housing–welfare interventions;
- develops strategic and ethical partnerships with the energy industry;
- develops a shared vocabulary;
- enhances learning and knowledge transfer between research, policy and practice.

The responses suggest that a strategic focus on these areas of work will transform the future of fuel poverty research over the next decade. It is hoped that researchers, research funders and commissioners, governments and other key actors can draw on this work to develop co-ordinated plans to support work in these areas over the coming years.

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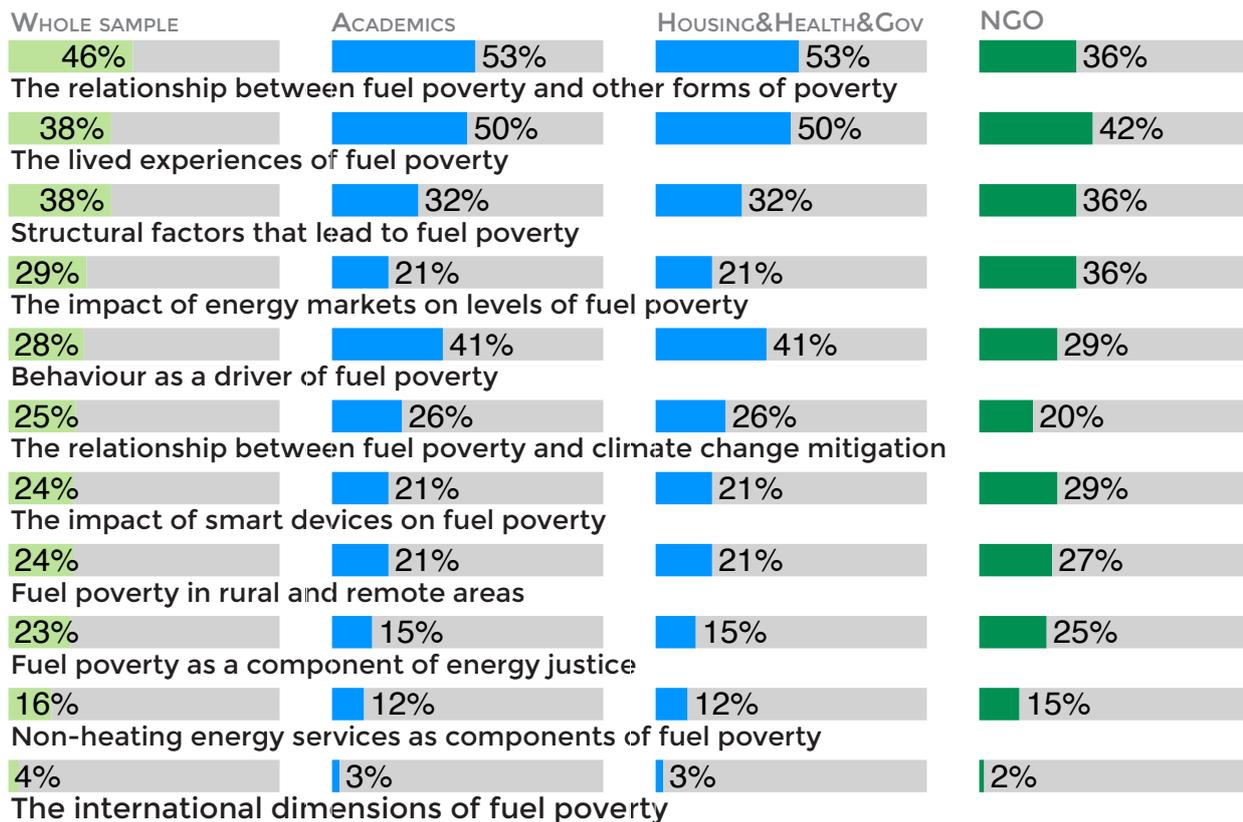


Figure 1 - In terms improving the lives of those living in or at risk of fuel poverty, which of the following should be prioritised over the next 3 years? The list is the same as the previous question. (Please select up to 3.)

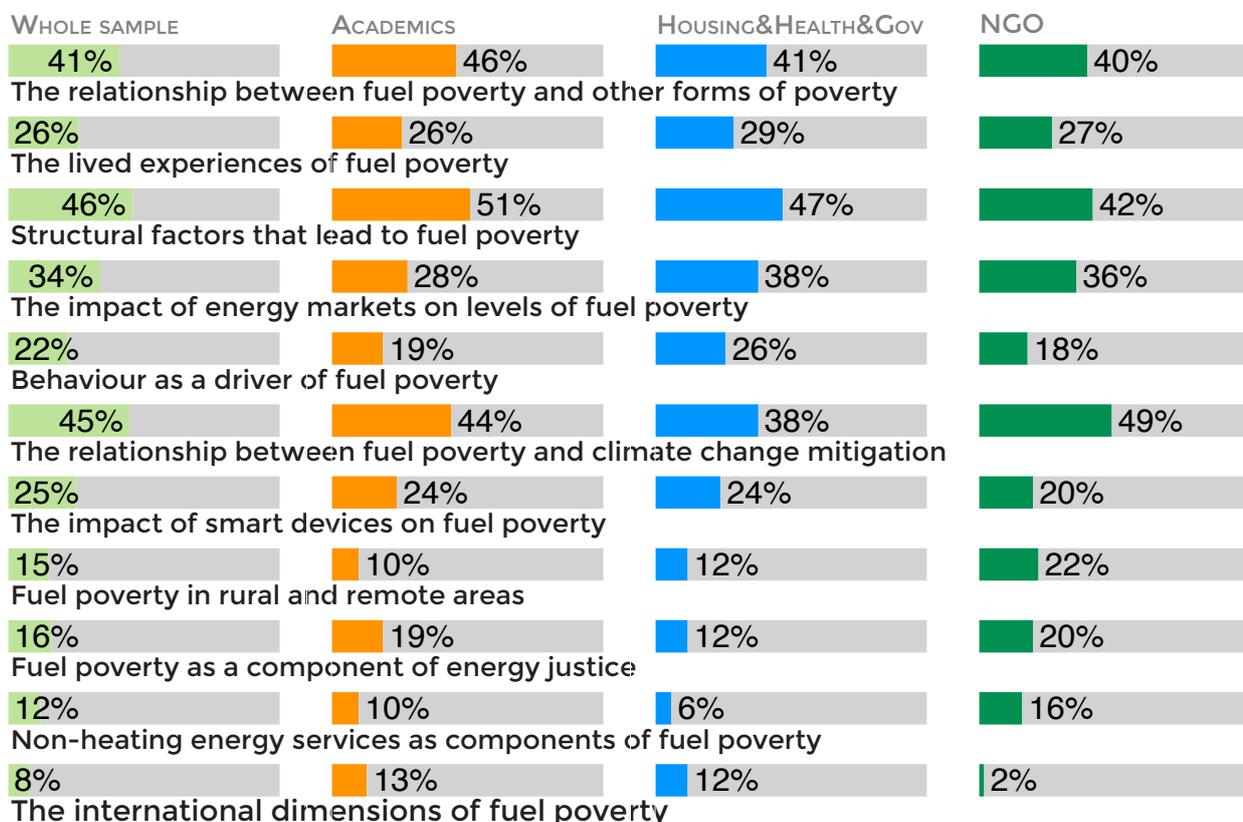


Figure 2 - In terms of having the greatest impact on fuel poverty policy design and delivery, which of the following should fuel poverty research prioritise over the next 3 years? (Please select up to 3.)

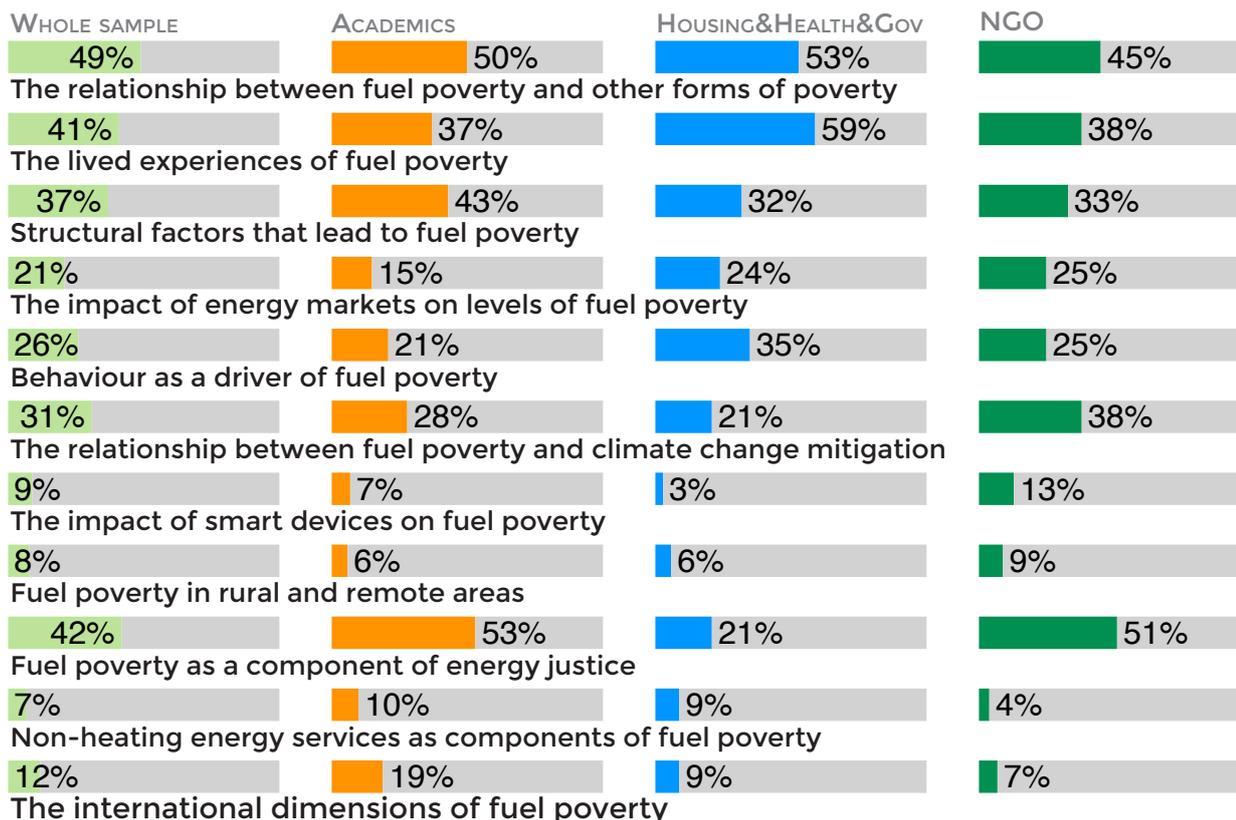


Figure 3 - In terms of the ways in which fuel poverty is discussed and conceptualised, which of the following should fuel poverty research prioritise over the next 3 years? (Please select up to 3.)

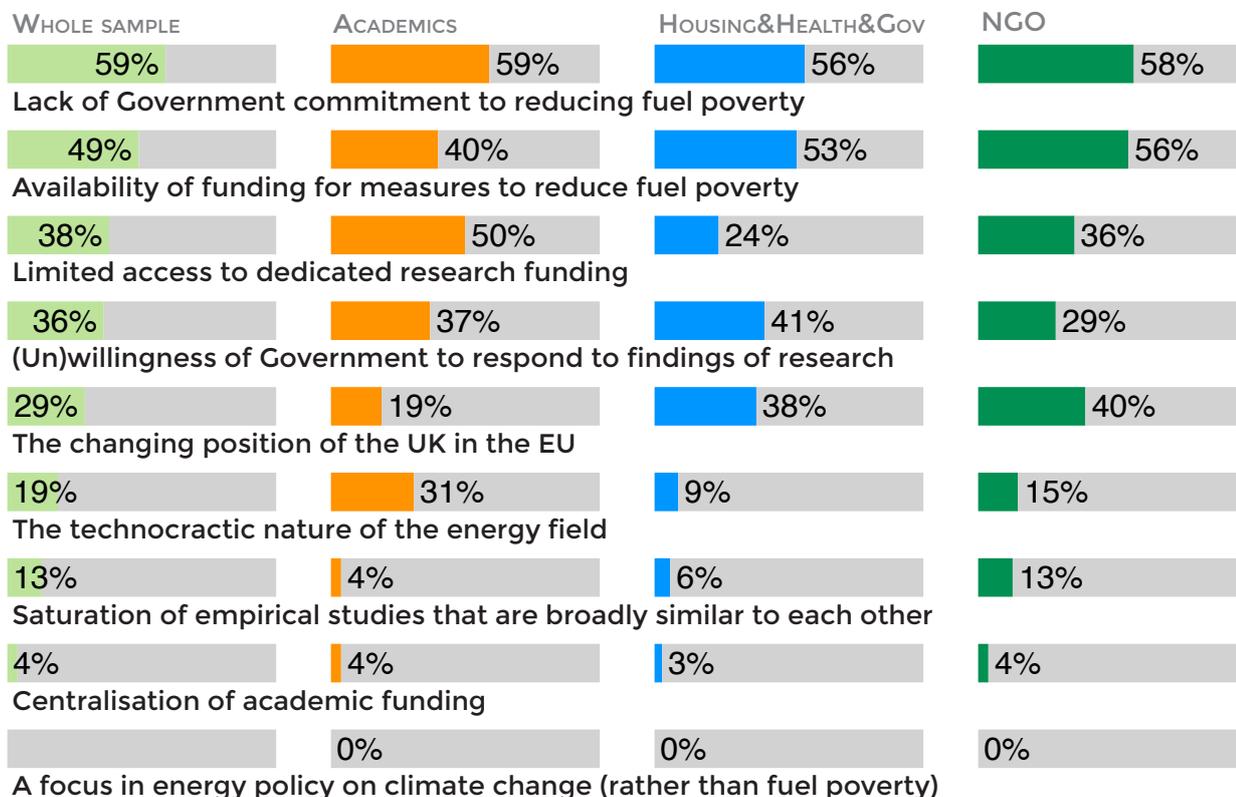
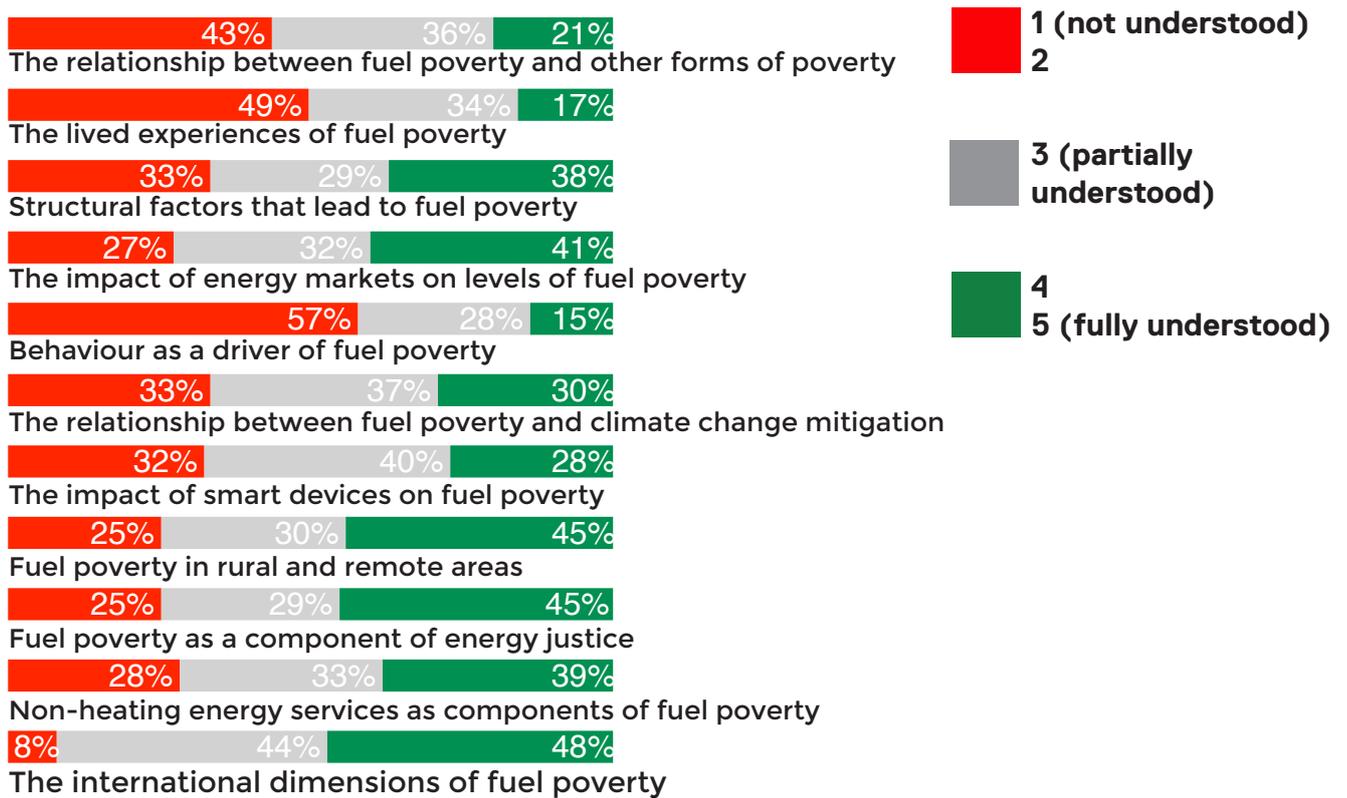


Figure 4 - Which of the following are likely to present the most significant challenge(s) to fuel poverty research over the next 3 years? (Please select up to 3.)

WHOLE SAMPLE



UK RESPONDENTS

OTHER RESPONDENTS

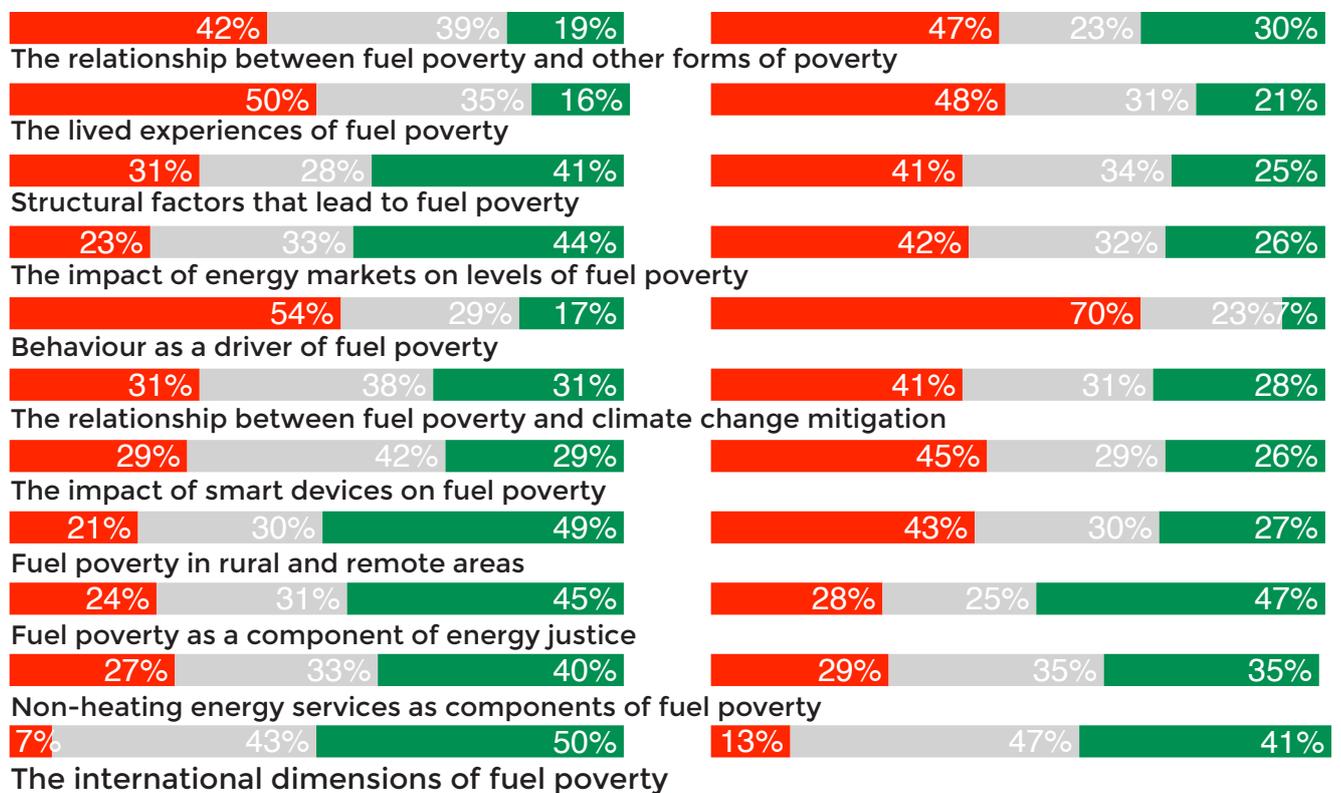


Figure 5 - To what extent do you consider each of the following to be well understood by the fuel poverty research community? (Answers on a scale of 1 to 5)

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