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Public support for decarbonisation policies: Between self-interest and social need for alleviating energy and transport poverty in the United Kingdom

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ABSTRACT

Policies for transitions to decarbonised energy and transport systems have implications for social welfare. Here we firstly investigate, via focus groups, public support for policies that have implications for energy and transport poverty in a country with a sizeable incidence of both, the United Kingdom (UK). We then examine which of the publics' policy preferences concur with those of a wider group of expert stakeholders (n = 47), observing concurrence in the top choices of both for: (i) better public transport; mandating improved energy efficiency in (ii) rental housing and (iii) new homes; and (iv) expanding an income supplement scheme (such as the Warm Home Discount). While the public are relatively supportive of policy for electric vehicles, expert stakeholders see the shift to convergent electrification and digitalisation in domestic contexts as carrying risks for lower income households and those less digitally literate. We highlight that many of the public questioned view themselves as likely to be worthy of assistance, given the level of price inflation in the UK. We conclude that decarbonisation policies require careful attention not only to infrastructure, but to social welfare policy if they are to carry public support.

1. Introduction

In democratic states, policies for the decarbonisation of energy and transport systems require public support sufficient to legitimise their implementation. Accordingly, here we explore the views of two groups within a national public, namely citizens and expert stakeholders, to understand their rationales and preferences in relation to such policies. We take the case of the United Kingdom (UK) at a time when the cost of energy and other commodities has risen nationally and globally. Underlying the study is the question of how public support for decarbonisation policies may be maintained and strengthened in difficult economic contexts and in ways that enhance social equity. This has implications for maintaining public support for decarbonization, as a significant proportion of the population may be adversely affected by net zero policies if adequate social protection measures are not in place [1]. Given the latter, we set the study in the context of public support for such social protection, broadening the context to a European level.

In the UK, 'energy poverty' has been more conventionally referred to as 'fuel poverty', but here we follow [2] in viewing these as fundamentally the same phenomenon – being unable to access and/or use the domestic energy services required for societal participation and basic well-being. Fuel poverty has a long research and policy history in the UK [3]. Transport poverty is much less established in policy and public discourse, but can be defined as being unable to attain essential transport services required to participate in wider society [4]. More recently, the term *double energy vulnerability* has been used to describe the simultaneous experience of energy and transport poverty, an issue that is likely to have compounding impacts upon individuals' well-being [5] p.1; see also [6]. The rationale for considering both energy poverty and transport poverty together is that both involve energetic consumption;

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that this consumption can account for a substantial fraction of the incomes of poorer households; that the costs of both to date have been closely related to fossil fuel prices, which at the time of writing have risen substantially in the UK and elsewhere; and that decarbonisation policies are likely to have substantial impacts on both types of poverty [1,7–9].

The more specific objectives of the study are to consider: (i) general public perceptions of, and support for, national government policies and proposals that will have implications for both decarbonisation and for transport and energy poverty; (ii) how these perceptions are related to publics' own experiences; and (iii) how public perceptions and support compares with 'expert' stakeholder views on the efficacy and social equity implications of the same policy options. These expert stakeholders include (primarily UK) individuals representing national NGOs, advocacy and voluntary sector support groups, local government, central government, and academics working on these topics.

To this end, for opinion elicitation purposes we select extant (as of late 2022) UK government policy aspirations relating to transport and energy poverty and relevant decarbonisation policy. The policy selection is also informed by the criterion of needing to be comprehensible for public groups, with explanation where necessary. The study is qualitative, with the overall aim being to probe empirically the reasons that UK general public and experts give for their views. Comparison of expert and public views is undertaken on the premise that points of divergence are indicative of possible areas of national dissensus, although further, quantitatively more extensive study would be required to establish the prevalence of such dissensus.

In terms of the structure of the paper, we firstly locate the study in the context of transport and energy poverty viewed as a form of double energy vulnerability [5]. Viewing transport and energy poverty policy as forms of social protection, we then introduce the literature on EU and OECD public support for welfare policy. In so doing, we note the role of self-interest in this support, the relevance of which here comes from the public's expectation that they and their social circle are likely to be affected by the energy price rises anticipated in the UK. Following this is an overview of the relevant policy framework of the devolved UK regions, which we observe is fragmented, with limited coherence between decarbonization and social protection policy. A description of methods and findings from our focus groups and interviews follows, with discussion and conclusion. Note that we have published a sister article to this study using some of the original data, though framed differently with different lines of argument, in [10].

2. Material and methods

2.1. Context

2.1.1. Double energy vulnerability

The concept of energy poverty has gradually entered the EU's political and policy agenda, reflected in regulatory documents and policy proposals [11,12]. Double energy vulnerability, however, remains little referred to in policy contexts. The concept denotes the situation of experiencing energy poverty and transport poverty at the same time; it is most likely to affect people on low-incomes, who are more likely to be older people, households with children or dependents, people with pre-existing health conditions or disabilities, women, and people from ethnic minorities [1,6–9]. Given this, measures to alleviate energy and transport poverty can be viewed as a form of social welfare (protection) policy, such that understanding public support for the former will likely benefit from an understanding of the latter. In the next section, we therefore provide an introduction to the evidence on the influences on public support for welfare policy.

2.1.2. Public support for social welfare policy

Previous research on EU public support for social welfare or protection policy finds that EU publics share views on deservingness (who deserves what and why), with, in rank order, elderly people viewed as most deserving, closely followed by sick and disabled people; unemployed people; and finally immigrants [13]. A recent review of factors affecting EU policy support for social welfare continues to find strong EU public support for what it describes as European-style welfare states, albeit with country differences [14]. Thus, public attitudes continue to reflect the 'deservingness' principles of (social) insurance and reciprocity - i.e. people agree to be taxed in return for knowing that they will receive welfare state benefits if they need them - as well as the principle of need (extra help for those most in need) [14] (p.8). Publics are nonetheless not homogenous in their views, and attitudinal modifiers include individual-level factors such as socio-economic characteristics, values and normative beliefs; as well as contextual factors such as institutional designs and economic conditions (ibid, p. 8). Regarding perceptions of need, similar to the hierarchy of deservingness found by [13], while self-interest is a factor, the rank order found by [14] is that of sick and elderly almost universally being ranked first, followed by families, and then low income and unemployed people.

In the specific context of the UK, public support for 'welfare benefits' as a means of supporting low-income households declined substantially from the late 1980s to the mid-2010s [15], with a widespread perception that many people claiming benefits were doing so either illegitimately or unfairly (e.g. they could find employment if they really wanted to, and were thus "undeserving" of unemployment benefits) [16]. Sociological studies attributed this shift in public attitudes partly to increasingly hostile and stigmatising portrayals of welfare claimants in political discourse and amongst the mainstream media [17–19], alongside widespread beliefs in the 'need' for deep public spending cuts following the 2008 global financial crisis [20]. However, by 2019 and increasingly so in 2020, public attitudes toward welfare and unemployment benefits specifically had become more favourable once more, partly due to the economic effects of the COVID-19 pandemic and associated covid-19 lockdown policies [21]. In summary, at the time of conducting our study, wider British attitudes toward 'welfare' more broadly had become more positive than they were 6-7 years previously. From the foregoing, we infer that public support for policy intended to alleviate energy and transport poverty is likely to depend at least in part on whom that support is perceived as intended and likely to help (the latter relating to efficacy). It is also likely to be shaped by the wider social, political and economic context.

Although there is a large literature on public opinion of specific low carbon energy technologies, the literature on public opinion of decarbonization policy, particularly specific to Europe, is much smaller. There is even less empirical work on the connections between public opinion of (a) social welfare policy and (b) decarbonization policy, despite energy and transport poverty arguably constituting intersection points between the these. Of the limited work with some relevance, [22] examine links between public attitudes towards climate and welfare policies as evident in the European Social Survey (2016 data), observing how public attitudes towards welfare and climate policies differ according to the social welfare regime of their country, with support for both strong welfare and climate protection being generally (but not solely) highest in welfare regimes classified as social-democratic. [23] analyse data from the 2018 Eurobarometer survey, finding that most citizens would prefer the EU to prioritise the promotion of renewable energy. This is strongest for citizens in western Europe who have both a left-leaning political ideology and high concern about climate change. For citizens of central and eastern Europe, especially those who are right-leaning and who perceive energy security as a problem, the Energy Union of the EU should give priority to increasing energy security. [24] combine regional level and European Social Survey data, to demonstrate how climate policies that would concentrate costs spatially and socio-economically are opposed by individuals who would incur the associated costs, either directly or indirectly through living in potentially affected areas.

The UK has, relative to European means, slightly positive (stronger) views on climate protection policy and slightly negative (weaker) views

on social protection policy [22]. The present study explores how citizens and experts view the tensions therein in the specific contexts of energy and transport policy in so far as these affect energy and transport poverty.

2.2. Research design and methods

2.2.1. Research questions

The research design is one of a country case study (the UK, consisting of a central government located in England and three devolved governments in the nations of Scotland, Wales and Northern Ireland), used to investigate research questions relating to public support for policies with implications for both decarbonisation and energy and transport poverty. These questions are:

1 How do UK publics and expert stakeholders perceive various decarbonisation policies in terms of their impacts on energy and transport poverty, and why?
2 In what ways do stakeholders and publics concur and differ in the above regards and what does this imply for policy support?

To these ends, and for consistency[1], we selected policy measures with implications for energy and transport poverty in the context of decarbonization, from policy documents issued by BEIS (the Department for Business, Energy & Industrial Strategy) and DfT (the Department for Transport) - the two UK central government departments with briefs directly relating to energy and transport. One policy measure also takes account of the response of a standing UK government Committee on Fuel Poverty. Detail on the sources and the rationale for selecting each policy option is provided in appendices 1 and 2. In summary, policies were chosen because all were assumed to be readily comprehensible by publics; all are relevant to a range of time-horizons; together they reflect some of the variety of options available in UK policy documents; and each have implications for energy and transport poverty, either directly or indirectly as decarbonization policies. The main documents drawn upon are: [25] *Sustainable Warmth Protecting Vulnerable Households in England; Decarbonising Transport - A Better, Greener Britain* [26]; *Bus Back Better: national bus strategy for England* [27]; and [28] *The Ten Point Plan for a Green Industrial Revolution.*

Using government ambitions as a basis for the policy options does lead to options that favour relatively incremental change. For comparison, with regard to energy poverty, [29] recommend several policy options that whilst similar to those that we have selected here, extend them by suggesting that VAT is lowered for renovation and installation of energy efficient equipment; that social security support is provided for specifically the energy expenditure of low-income households; and that electricity supply companies are prohibited from charging customers more for not paying by direct debit. However, addressing these more radical policy measures would have had at least two implications. First, they relate to a wide range of scenarios that the research team could only have subjectively identified. Second, engaging with current, proposed policies lends the study more tangible policy relevance, with the potential to help identify which actual policy options are supported and prioritised by different parts of society.

2.2.2. Data collection

In terms of public opinion data collection, 8 focus groups were recruited by a market research firm (N=2 for each of Northern Ireland, England, Wales, and Scotland) comprising a total of 49 participants. While we are not claiming national representativeness for the results, soft quotas were applied across age, gender and region in each focus group, and each contained a mix of urban and rural residents to ensure that both rural and urban views were represented. The samples demographically represented the general population in terms of a mix of levels of income, although it should be noted that participation required an internet-connected device and that all participants were able to afford a broadband connection. Appendix 3 provides the focus group script, Appendix 4 the interview questions for expert stakeholders, and Appendix 5 provides more detail on the focus group participants.

To represent stakeholder opinion, 47 interviews were conducted with stakeholders from across all four devolved nations of the UK, with each having energy and/or transport poverty expertise; of 47 interviewees, 41 policy ranks were recorded. Stakeholders were selected on the basis of their apparent knowledge in UK energy poverty, transport poverty and/or decarbonisation policy, and were selected to be likely to represent a range of expertise and interests (there was a with a relatively equal split of energy and transport poverty expertise among the interviewees). We sought a relatively equal number of experts from different backgrounds, on the premise that experts from different backgrounds may take different views. However while we did look for patterns in this regard, qualitatively and quantitatively, we did not observe it. Contact details for the experts came from databases associated with the larger research programme of which this study was a part, plus snowballing. The (semi-structured) interview questions are provided in Appendix 5.

Both the focus group script and the interview questions refer to the same policy options on which participants were asked to voice their opinion, so that there was a common basis for comparison. Participants were asked to rank their three most preferred policy options in both the focus groups and interviews, either for addressing transport and energy poverty directly, or in terms of anticipated effects on these. Beyond this, participants were free to apply criteria of their own choice. The rationale for these choices, and any direct or implicit references to need, deservingness and self-interest, were permitted to emerge rather than being prompted (and hence primed) directly[2]. The ranking exercise was explicitly undertaken in order to provide a basis for discussion and the elicitation of qualitative opinion: as is common with ordinal scales, individuals may have ranked with differing degrees of difference between ranks in mind and we did not investigate this statistically.

The focus group participants in particular were also asked about their own experience of costs relating to energy and transport. The responses of all participants were audio-recorded, transcribed and anonymized, with consent gained and background project information provided. The focus groups were held in the first half of March 2022 and the interviews throughout April and the first half of May 2022. We planned on needing to inform the participants of forthcoming home energy price rises, but sustained media coverage and their own experience of substantial price rises for home energy and transport fuel in the UK meant that the topic was already salient for most. As the focus groups involved discussion between multiple individuals, they had a different dynamic to the interviews, and involved social influence. In general we observed that the social influence within the groups was reinforcing, with comments being affirmed and built upon, rather than disagreed with.

[1] In terms of UK policymaking, energy and transport policy are 'reserved matters', meaning that they are regulated by the national parliament in Westminster in England. However, there are a range of relevant exceptions: heating and cooling, housing, environment and economic development are policy areas devolved to Scotland, Wales and Northern Ireland. We used the same policy options throughout the study for consistency and comparability, rather than drawing on those in policy documents from each devolved region.

[2] The study is exploratory and issues of deservingness were only one of the topics explored. Nonetheless in our view this theme merits more sustained attention in the context of designing social welfare/protection systems that support decarbonisation. It may be noted that participants may well connect this to their political ideology and that question framing will be influential.

2.2.3. Data analysis

The data were coded with NVivo qualitative data analysis software, with high-level codes being informed by the interview question and focus group themes, and sub-codes added as they emerged [30]. The coding firstly reflects the themes of the interview questions, with an emphasis on reasons for up- or down-ranking the particular policy options. The quotations presented here have been selected largely in proportion to the frequency of their reference: that is, most of those selected illustrate points made repeatedly across the groups.

Regarding the rankings and their presentation in Figs. 1 and 2 below, firstly the focus group (public) scores are down-weighted by 41/49 to adjust for the larger number of focus group members relative to stakeholders (41 stakeholder interviewees, 49 focus group participants). Secondly, the x axis is a normalised score. Hence the rank of 1 is converted to a score of 5, a rank of 2 is given a score of 4, a rank of 3 is given a score of 3 and non-selection of a policy option is given a score of 0. It should be noted that while the scoring method up-weights the selected policy options relative to those not selected, participants were not always as stark in their distinctions. That is, the scoring method accentuates differences within individual participant's choices.

3. Results and discussion

The data consist of the qualitative transcripts of the focus groups and expert interviews, plus participants' numerical ranking of their three most favoured policy options of the lists provided. Here we organise the data in terms of (i) public and stakeholder perceptions and ranking of energy-poverty related policy options; (ii) public and stakeholder perceptions and ranking of transport-poverty related policy options; (iii) public and stakeholder *rationales* for their expressed opinions.

3.1. Public and stakeholder perceptions of energy poverty-related policy options

Fig. 1 compares rankings of energy poverty-related policies among the general public and expert stakeholders. There is substantial concurrence between publics and expert stakeholders, especially at the top of the rankings. The public and the expert stakeholders agree on their top three policies. Top-ranked in both groups was requiring landlords to improve the energy performance of their homes, followed by increasing financial assistance to households via an expansion of the Warm Home Discount (a supplementary payment scheme) and then ensuring that new homes emit 75% lower CO_2 emissions than at present. It should be noted, however, that especially among the expert stakeholders, support for the ensuring new homes emit 75% lower CO_2 emissions was somewhat reluctant and was often chosen for want of a better option.

Both groups thus felt that a combination of energy efficiency improvements (via mandating landlords to improve the energy efficiency of existing homes, and ensuring new homes were built to a low-emission standard), and financial support (either via Warm Front or some other form of financial payment) was necessary to address energy poverty during a time of decarbonization. Also mentioned was a need to reach a balance between providing short-term, relatively immediate support through monetary payments, especially in the context of dramatic energy price increases, and longer-term measures achieved through energy efficiency.

For the remaining options, although there was broad agreement between stakeholders and publics, the stakeholders were less convinced by the merits of smart meters. In general, among the expert stakeholders there was much stronger agreement about which three policies were the "best", whereas opinion was more evenly split among the general public. The stakeholders also tended to be more critical when expressing their opinions toward the three least-favoured options.

3.2. Public and stakeholder perceptions of transport poverty-related policy options

Fig. 2 compares the rankings of transport poverty-related policies among the general public and expert stakeholders. There is some concurrence between public and stakeholder perceptions, although less so than the energy poverty-related policies. In the case of transport poverty, the public and stakeholders agree on only their top two policies. These were making bus and train ticketing simpler and cheaper, followed by restarting bus services after COVID and expanding the coverage of bus networks. Both groups can thus be said to favour enhancing public transport as a policy to both contribute to emissions reductions and to mitigate transport poverty. The public were particularly favourable towards the idea of simplifying ticketing and reducing the cost of fares, with this having relevance and resonance for most people, whether they used public transport regularly or not.

After this, there was less similarity between the groups. Public participants ranked increasing the number of electric vehicle charging points as their third-favourite policy, with some also noting that they saw electric buses as part of this. In contrast, this option was only ranked fifth among expert stakeholders. The normalized scores show that the public participants were more than twice as favourable toward electric vehicle-supportive policy compared to the expert stakeholders, with the public valuing this for its environmental benefits, while the expert stakeholders largely anticipated adverse or neutral effects on transport poverty. The expert stakeholders ranked increasing cycling infrastructure (specifically designated cycle lanes) as their third-favourite option

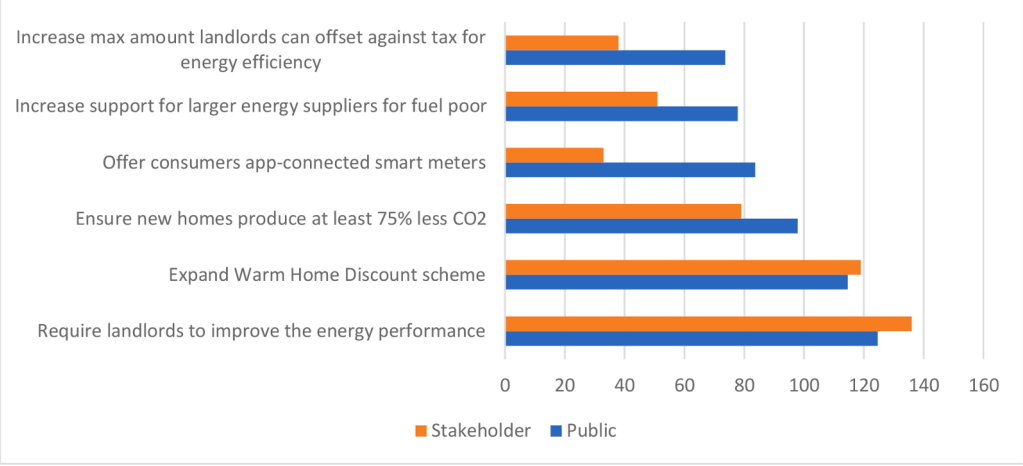

Fig. 1. Comparison of general public and expert stakeholder rankings: energy poverty.

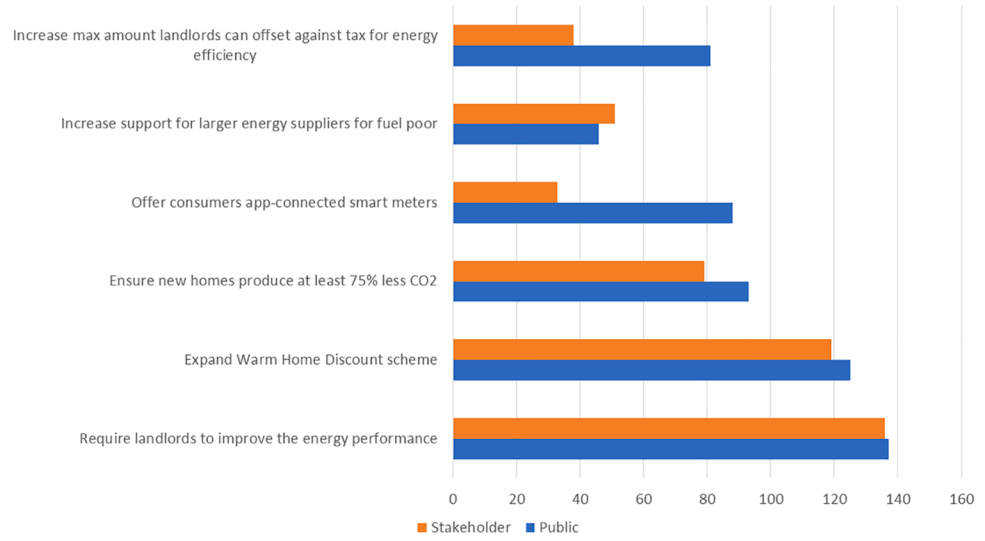

Fig. 2. Comparison of public and stakeholder rankings: transport poverty.

by a large margin. Although this was ranked fourth by members of the public, the normalized scores show it to be substantially more popular among stakeholders.

Both publics and stakeholders ranked sustainable aircraft fuel and banning sales of fossil fuel cars as lower priorities, though not identically. In particular, the public were generally more positive about requiring aircraft to use sustainable fuel than the stakeholders, who noted that low-income groups are relatively unlikely to fly.

3.3. Rationales

Several distinct rationales are used by the public and stakeholder participants to justify their policy preferences. Our analysis suggests that these reasonings can be categorized into three broad ethical and pragmatic principles:

- *Efficacy*: policies should (cost) effectively and efficiently produce the desired result (in terms of reducing energy or transport poverty, respectively)
- *Need:* policies should prioritise help to those struggling to meet their needs
- *Self-interest:* policies should be beneficial to oneself, kin or friends

Despite the findings of previous research reviewed in Section 2.2 (e.g. [13]), we did not find evidence of the principle of a hierarchy of "deservingness" within the broad group of those in need. Both public and expert stakeholders often highlighted the need to avoid omission of low-income working households from those considered in need of assistance. They did not, though, rank particular demographic sub-groups as being more or less deserving. We would suggest that the difference between our findings and those of OECD/EU surveys may arise from a lack of priming: if requested to rank sub-groups, it is possible that our focus group participants may have done so.

In general, there was broad similarity in reasonings used by publics and stakeholders, although expert stakeholders more frequently referred to *efficacy* and tended to substantiate their opinions and reasoning in more detail. Similarly, publics tended to express views relating to self-interest relatively more frequently. It should also be noted that there were often moral and emotional tones to the conversation: many people were angry and affronted by the perceived roles of the large energy firms and the UK government in the energy and wider cost of living crisis in the UK.

3.3.1. Efficacy

Reasoning related to some notion of efficacy was most commonly expressed firstly in relation to the policy option of *increasing financial support to large energy suppliers so that they can fund energy efficiency measures*. Some felt that large energy firms were well-placed to offer assistance; for example, some stakeholders suggested they had access to various forms of relevant knowledge, including being able to identify those struggling to pay bills. However, others felt that asking such firms to install energy efficiency was a conflict of interest (energy supplier profits increase as consumption increases). As such, several public participants were distrustful of whether suppliers would provide assistance efficiently and effectively (see also [31], which may in part account for this policy's relatively low-ranking in among both stakeholders and publics. This mistrust was also associated with shareholder profits and privatisation. The energy efficiency programme Warm Front, by contrast, worked across the UK historically with community groups and local providers, to build energy efficiency into residential homes and housing blocks, and lacked negative connotations [32]. Some focus group participants remembered this scheme favourably as part of their reasons for supporting the option of working through large energy firms.

Obliging landlords to upgrade the energy efficiency of the homes that they let and *allowing landlord to offset energy efficiency investments against tax* were also particularly evaluated in terms of efficacy. There was a general view that energy efficiency improvements were likely to be among the most effective and long-term measures to mitigate against energy poverty. Additionally, many participants did want to see landlords incentivized to take action – either because they lived in a cold and privately-rented property themselves, or because they had a wider understanding that this sector typically has the highest levels of energy poverty (this was especially the case among expert stakeholders). Nonetheless, both publics and stakeholders ranked a landlord tax offset increase among their lowest preferences, with the primary reasons being practical difficulties with enforcement, evasion and possible perverse effects.

Many tenants did not fully trust landlords to use any financial support for the benefit of their tenants. Northern Ireland stakeholders referred to a range of specific problems, such as a dependence on heating oil, political deadlock at the time of writing, an ageing electricity network and limited transport infrastructure. Obliging landlords to upgrade the energy efficiency of the homes that they let was ranked higher in both groups, although both still expressed some concerns regarding enforcement. Both groups, especially stakeholders, also stated doubts about the reliability of the Energy Performance Certification scheme, which was generally seen to be only weakly correlated with the degree

of thermal comfort in the home. Overall support on this policy was thus *conditional* on concurrent improvements being made to enforcement (such as greater resources for local authorities to carry out inspections) and potentially to EPCs, in order to maximise its effectiveness.

Expanding (in terms of both payment amount and eligibility) the Warm Home Discount (WHD) received relatively high levels of support partly because it was generally seen as a policy that could be implemented relatively quickly and easily. Among many stakeholders, a qualifier to this view was that the funding for the WHD (and the funding of the decarbonization policies more broadly) should be moved from energy bills[3] and into general taxation – with the reasoning that this would lower bills for all, and that general taxation is fairer, as it would enable affluent households to contribute relatively more. It was also noted that the monetary value of present and likely future payments under the Warm Home Discount (WHD) are disproportionately low relative to present and foreseeable energy prices.

In terms of transport poverty policies, efficacy was less prevalent as a form of reasoning. It was partly relevant when considering the relative lack of support for expanding electric car charge points among expert stakeholders. They noted that such a policy was likely to take a long time to have any significant effect on either emissions or transport poverty due to the length of time it would take for electricity vehicles to become widespread and the sheer number of oil-powered cars that would remain on the road over the coming decade. The lower levels of support for this policy were also partly justified based on ideas of need, which we discuss in Section 4.3.2 below.

Box 1 Box 4provides indicative examples of how perceived efficacy influenced public and stakeholder opinions on some policy options.

3.3.2. Need

Reasoning based on ideas of need focused on whether policies would provide assistance to the right people, namely those who 'required' help in order to meet their needs. In this sense, it can be thought of as an ethical principle of distributional justice [33]. Among members of the public, the over-arching narrative was that most 'ordinary people' were in need of some form of help with paying their energy costs and installing energy efficiency. Such views had clearly been shaped by the energy prices rises experienced in the UK and elsewhere, reflecting our earlier point in Section 2.2 that perceptions of social policy are impacted by the wider political and economic context. In general, public participants favoured policy assistance that was not limited to any social group too narrowly, but rather encapsulated a broad section of the general population. A sizeable minority did refer to the need to ensure help for low income working people whose incomes made them ineligible for existing forms of social security. Alongside the issue of efficacy mentioned in Section 4.3.1, this further explains the relatively high levels of support for expanding eligibility for the WHD programme (or some other form of direct financial support).

Nonetheless, whilst they felt that the majority of people would be impacted to some degree by energy price rises, participants were nonetheless aware that some population groups would be *more* affected than others. They identified these as anyone with a relatively low and fixed income, while also having an unavoidable need for heat or transportation, particularly those who are elderly, disabled or in receipt of state income support.

In terms of expert stakeholder views, similar views were expressed on the importance of expanding eligibility for the WHD, with recent energy price rises meaning that the proportion of people affected by energy poverty was now so large that it went beyond only those on a low-income. Going beyond only the WHD per se, a few stakeholders interviewed expressed support for more universalist measures, such as a regulated entitlement to a basic level of energy service or supply (a form of 'Universal Basic Service'), or, less directly related to energy, a Universal Basic Income. Requiring energy efficient new-build housing, while viewed positively on the whole and hence third ranked for that reason, was also viewed as being of no immediate help to the fuel poor and as providing likely limited value to low-income households in the medium term for reasons of affordability. Views on smart meters were mixed, with those who worked with people in fuel poverty most sceptical of their value – they argued that many of those in energy poverty already carefully ration their consumption and so had little to gain from digital feedback.

Box 2 Box 4provides indicative examples of how principles of need influenced public and stakeholder opinions on energy poverty policy options.

Turning to policy with implications for transport poverty, both the general public and stakeholders all gave a high priority to the policies of making bus and train ticketing and fares simpler and cheaper and reinstating and expanding bus services post-covid. The reasoning for this related strongly to principles of need and fairness. It was generally felt that low-income households are more likely to use public transport, particularly buses, due to lower levels of car ownership and the unaffordability of many trains. As such any policy to enhance these services was supported on the grounds of fairness and need, since it would be especially beneficial to those who most needed assistance with transport costs. Nonetheless, the general sentiment among members of the public was again that most people are, and would be, affected by rising transport costs (although the level of anxiety about this was perhaps not as high as in relation to domestic energy bills). Thus, whilst it would be of particularly helpful to those on low incomes, expanding and lowering the cost of public transport was also justified on the basis that it would potentially assist *everyone* by providing a low-cost option that anyone could use if they so wished, regardless of whether it was their only possibility.

Principles of need were also evident in explaining the relative *lack* of support for other transport poverty policies. This was especially the case in terms of requiring aircraft to use a proportion of sustainable-sourced fuel. Members of the public and expert stakeholders generally considered air travel to be financially out of reach for low-income households, and so such a policy would do little to help those who most needed it. This view was expressed especially strongly among the expert stakeholders operating in England especially, partly explaining the very low-level of support for this policy among this group. However, the policy did resonate as more valuable and fairer with participants from more geographically remote parts of Scotland, Northern Ireland and Wales, where it was suggested that air travel was sometimes not a 'luxury' but a basic necessity in terms of enabling physical connectivity with relatives, friends, and for business and work purposes.

While the (existing) policy of phasing out sales of new fossil fuelled cars was supported by most, as was support of local authorities for the roll-out of electric vehicle charging points, among expert stakeholders neither policy was seen as of much value for those who are transport poor, as such households were less likely to travel by car or be able to afford an electric vehicle. The public were more supportive of measures to support EVs, often prioritizing these because they saw them as environmentally and practically necessary, while knowing that the measures were unlikely to alleviate transport poverty directly. There was mixed support for expanding cycle routes as a means of addressing transport poverty, with doubts expressed as to its realistic value given terrain, weather and the health and behavioural norms of those in fuel poverty. Some expert stakeholders did however view cycling as a low-cost option for low-income individuals themselves and so potentially suitable in that regard. Many expert stakeholders advocated '20-minute

[3] In the UK currently, social and environmental policies relating to energy, such as funding energy efficiency improvements and the Warm Homes Discount, are funded via a fixed-rate charge on all energy bills. This comprises about 8% of the average capped energy bill. See: https://www.ofgem.gov.uk/information-consumers/energy-advice-households/costs-your-energy-bill

Box 1
Participant reasonings for supporting energy and transport poverty policy options based on perceived efficacy

On mistrust of large energy firms to deliver energy efficiency:

"Option number six is not good, because the energy companies will have a lot of profit from it, and whatever you increase, the price will just increase all the time, so I don't support number six." (FG 2 participant, Wales).

On mistrust of landlords to deliver energy efficiency:

"All the options I picked are ones that didn't involve the landlords because I think too many landlords just find ways of getting round it and not getting involved in it. Not spending the money they're supposed to spend." (FG 1 participant, England).

On the immediacy and simplicity of expanding the Warm Home Discount scheme:

"I just think it's a quick win, really best way forward. It's not really going to help longer term and it wasn't something I know the pensioners get to pay but I wasn't aware of this. It's something. I'm not necessarily saying it should be a payment of £140 but it could be something to help people out shorter term. It's something you can do quickly." (FG 1 participant, England).

Box 2
Participant reasonings for supporting energy poverty policies based on the principle of need

On a wide section of the population needing help with energy costs:

"I get that it's low income, but obviously I live on my own. I work in retail. I've got, you know, a decent job but my salary hadn't gone up for three years and it's not going to go up probably in the next year or two years. So I'm on the same money but my bills are growing continuously and it's gonna be tough for everyone. There's always a focus on the lower paid groups, and you know, I admit … there's less emphasis on the middle ground and we're the ones, you know, I live on my own so I'm the only one that can pay the bills." (FG 2 participant, England)

On a wide section of the population needing help with energy costs:

"And we were kind of doing okay, you know, cutting back…but now maternity's over I'm between jobs. It's scary, thinking to fill up the oil tank again. Luckily we filled it up about a week before the price went up… but we've actually been thinking about taking just…you know, little, small containers and going down to the Go garage and just being able to afford maybe smaller top-ups of the oil, because we just can't afford to go and buy three hundred litres or whatever in one go now, because of the prices… We're not struggling, I wouldn't say we're in poverty, but it's definitely a big chunk out of what we budgeted for other things." (FG 2 participant, Northern Ireland)

On integrated policymaking:

"unless these considerations are built into policies, flexibility in energy markets will create winners and losers. Unless we have these perspectives at the forefront of our mind when we're developing policies, for a lot of people who are already really struggling, disadvantaged, excluded and isolated from the energy market and transport and society in general, it will get worse." (Government body, national).

On targeting and policy design:

"On the regional level, so here I'm talking about devolved administrations, but also decision makers who sit in local authorities, mayoral cities, very much being able to respond to the particular geographies of their local areas. So what I don't hear it discussed enough in terms of fuel poverty or energy systems more broadly, to be honest, is how bespoke the energy system is going to need to be locally." (Advocacy group, national)

neighbourhoods' in relation to this policy option.

Box 3 provides indicative examples of how principles of need influenced public and stakeholder opinions on transport poverty policy options.

Box 3
Participant reasonings for supporting transport poverty policies based on the principle of need

On lowering the cost of bus tickets helping a large section of people:

"Yes, I used to live in Cardiff as well, and the buses I used to catch every ten minutes, but now you'd be lucky if you can get one every half an hour where I live now in Cwmbran. But if they reduced the price of the bus tickets, the fares, then I think more people would take the bus." (FG 2 participant, Wales)

On cycling not being accessible to those most vulnerable to energy poverty:

"People who are vulnerable to fuel poverty, who are likely to be living with it, are people with long term health conditions. People who are older, people who potentially have young children, it's going to be difficult for them to cycle around." (Charity, national UK)

3.3.3. Self-interest

Whilst perceptions of and support for energy and transport poverty policies were partly based on ethical principles of need, such views were also informed by *self-interest.* This was often difficult to disentangle from more altruistic judgements of need. Despite the focus group participants having general population characteristics, most were either already adversely affected by energy cost increases themselves or expected to be in the future. Thus, many saw themselves as being legitimately "in need" and so worthy of state assistance, and therefore supported policies such as expanding eligibility for the WHD and making public transport more accessible, partly because they felt they would personally benefit.

We observed in Section 2 that one factor relating to widespread European public support for European-style welfare states (i.e., those with relatively generous support, acknowledging that this definition remains somewhat vague) is the perception that these systems are in everyone's interests at some point in time. Anticipatory self-interest and/or the interests of family or friends was quite frequently evident in the discussions, not as a sole reason, but as part of reasoning: people reasoned self-referentially, thinking that it could be they who need support at a future time or in a future circumstance (Box 3, which should be considered in relation Box 1 too, the latter concerning own experience).

Box 4 provides indicative examples of how some public participants were personally affected by rising energy/transport costs, and who based their support for energy and transport poverty policies partly on the basis of self-interest.

4. Conclusion

This study has explored how UK publics (8 focus groups) and expert stakeholders (n = 47) perceive governmental policy aspirations with implications for energy and transport poverty, in the context of decarbonization. The study looks at how stakeholders and publics concur and differ in the above regards and why, describing the rationales drawn upon and condensing these to the three considerations of efficacy, need and self-interest broadly defined. The rationale for the study lies in the premise that a sufficient degree of societal consensus, including public support and stakeholder support, is necessary for energy transitions in democratic states. That said, we acknowledge that we have not consulted all categories of relevant stakeholders, such as politicians, nor have we used public samples that are of sufficient magnitude to be statistically representative. Rather, we have focused on revealing the types of reasoning and attitude that publics and experts can and do hold.

In terms of their most preferred 2-3 policy options with implications for energy and transport poverty, the public and stakeholders concurred. Both ranked simpler and cheaper bus and train fares; and restarting bus services to the same scale as pre-COVID-19 first and second respectively. Despite doubts, both ranked requiring landlords to improve the energy efficiency of rental homes first; expanding an income supplement scheme (WHD) second; and ensuring that new homes produced at least 75% lower carbon emissions third. Regarding the other options, the largest differences were for: consumer smart meters, which stakeholders were sceptical of in terms of their role in addressing energy poverty; expanding cycling infrastructure, which stakeholders were much more enthusiastic about; and requiring aircraft to use more sustainable fuel, which few stakeholders viewed as relevant (geographical periphery views on connectivity notwithstanding).

Previous research has suggested that notions of relative "deservingness" inform public views on who ought to be entitled to state welfare benefits and support [14], and we hypothesized that this logic would also be influential in our participants' judgements of the energy and transport policies they evaluated. We did not see any unprompted evidence of a hierarchy of deservingness. Rather, participants' judgements were based on a combination of each policy's perceived efficacy, alongside notions of need and self-interest. This can in part be explained by the socio-economic context in which the research took place. What is widely described in UK news media as a cost-of-living crisis, with consumer price inflation on average 6.2% higher in February 2022 than a year before [34,35] and expected to breach 10% per annum [36], led many participants to believe that large sections of the UK population will be vulnerable to energy and transport poverty – and thus "in need" and worthy of government assistance. This was supported by notions of anticipatory self-interest, in which members of the public included themselves, and their immediate kin and friends, as among those who do, or likely will, experience some degree of transport and fuel poverty, given the extent of current and expected transport fuel and energy price increases.

Indeed, in connection with the latter, a theme that arose somewhat organically across both the public focus groups and expert interviews (in that we did not ask a specific question on this issue) was the relative merits of targeting versus universalism in eligibility for social policy [37], notably in terms of the government providing financial assistance (such as the WHD) to address ongoing energy price increases. The stated preference of the UK government and some fuel poverty charities (e.g. [38]) has been to target support at those "most in need", and a policy of more effective targeting was advocated by some of the expert stakeholders we interviewed. At the same time, in a context in which large sections of the population were struggling with price rises, we observed support for more universalist and transformative policies to mitigate

Box 4
Self-interest as a factor in policy support

On expanding the Warm Home Discount (income supplement):

"Yeah, with myself being unwell, we need to have the house heated and as it stands today, 500 litres of oil is over £600, which is three times the price of what it was. So, when things go up like that and incomes don't go up, we do need that wee bit of extra help. Because I myself cannot go out and work." (FG1 Northern Ireland participant).

On experiencing energy poverty and needing support:

"Yeah, we've not got the heating on during the day. We don't have the electric on. We have blankets at the side so if me or the child gets cold during the day, put a blanket on. The heating doesn't go on. I can't afford to have it on." (FG2 England participant).

On experiencing energy poverty and needing support:

"I'm on pre-payment. I've already been told how much, well weekly. £21 a week extra it's going to go up. So, I've already started cutting back. I usually sit with the light out and just watch the TV. Just the TV light and nothing. Everything used to be on standby. But not now, I just switch everything off. Just preparing. So, I'll still have money when I do top up. I will have hopefully I'll still have money left in the meter to add up. Hopefully cover it." (FG2 Scotland participant).

energy and transport poverty. Among expert stakeholders, this included via explicit mention of both Universal Basic Income and Universal Basic Services, two ideas which are beginning to receive more media and research attention [39,40], whereas among the public the idea was more implicit (participants believed that the vast majority of the population would be impacted by rising transport and energy costs, and were therefore supportive of policies that would benefit the vast majority). This finding suggests that there may be more widespread support for ambitious and transformative policy than is sometimes assumed.

Overall, we conclude that policies of improving home energy efficiency, restoring and extending the accessibility and affordability of public transport, and helping low-income households with an income supplement has the widest, shared support as viable policy measures to reduce energy and transport poverty.

Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

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Data availability

The data that has been used is confidential.

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Supplementary materials

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