The Challenges for Rural Electrification

August 2025

RESEARCH FINDINGS

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A report by the Countryside and Community Research Institute

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Foreword

This report has been prepared to provide an objective and comprehensive assessment of current energy transition strategies and their implications, particularly for rural and off gas-grid areas. It draws on both technical evidence and stakeholder perspectives, with the aim of informing policymakers, industry leaders, and communities about the opportunities and risks associated with different heating technologies.

The research findings focused on practical issues and did not encounter any questioning on the necessity for climate transition. However, throughout the data, there were numerous references to 'mono-technology' and the prevailing focus on 'heat pumps or nothing'. I note that, in the recent past, rural interest groups have expressed concern about the apparent ‘one-size-fits-all’ approach to electric heat pumps and the lack of willingness to include other alternative fuel sources. The findings of this study strongly resonate with those views.

Integral to these issues is the recognition that Government and experts must do much more to promote alternative fuel sources for off gas-grid areas, rather than relying solely on the current heat-pump-centric policy. This is especially important for fuels that can be ‘dropped in’ to existing supply chains, fuels that can be used by consumers in their current heating appliances, stored in existing bulk tanks and cylinders, and distributed using today’s infrastructure and skilled workforce.

Failure to adopt a more inclusive and flexible approach risks rural areas being left behind in the transition. It is our hope that the evidence and recommendations contained in this report will contribute to a more balanced, pragmatic, and equitable energy strategy for all communities.

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Chairman of Directors and Company Secretary for Rural England CIC

Executive summary

This project aimed to garner multiple opinions on the challenges posed by the electrification of rural homes as the main source for heating. This was achieved by engaging with sector experts and rural householders with differing perspectives and experience. A combination of qualitative methods was used to explore barriers and enablers, including 16 in-depth interviews and two focus groups.

Key findings

Five themes were interpreted from across the data set:

1. *Disparate landscape ("a complicated picture")*

Systemic issues in the sector were highlighted with participants citing multiple, differing and conflicting priorities with a lack of guidance across all levels. Some suggested the prioritisation of urban over rural needs; influenced by a lack of investment and the benefits for the sector of going for "low hanging fruit" to the disbenefit of rural residents. Despite above, the group spoke of pockets of positive activity, however this was dependent on location and individuals leading them.

2. *(Hidden) retrofit costs ("why bother")*

Grant funding (if successful) does not cover all costs attributed to retrofitting rural homes. Considerations regarding the size and age of housing stock need to be made especially in relation to insulation. Participants also perceived a cultural cost to adopting some greener technology.

3. *Trust & negative noise ("is it just easier not to think about it?")*

The group described a lack of trust in both the green technology and its installation perpetuated by a lot of (the wrong) noise from the disparate landscape. There was a perception that this impacts adoption.

4. *Capacity and supply ("it won't happen without us")*

The focus groups spoke about the interdependencies between the key actors and an element of relying on the slow adoption of greener technology within rural communities as the infrastructure is not there to support it yet. In addition, a skills shortage was highlighted as a barrier partly because of a 'boom and bust' mentality and focus on mono-technology; "too heat pump or nothing orientated".

5. *Rural nuance ("it's a cultural thing")*

Throughout the data there is an acknowledgment of the differences presented by rurality, such as by geographic area type, age and type of housing stock and an ageing population. The community group spoke specifically about their "cultural commitment to comforts" in respect of maintaining certain, more traditional energy and heating options. However, this was also felt to have practical as well as emotional drivers due to a need to foster community resilience in light of the potential for uneven provision of electricity as a viable main source for heating rural homes.

Implications

- The variability of the adoption of greener technology between rural communities could lead to uneven provision of further electrification, a state already impacted by geographic location and climate change.
- It will be necessary to develop a language that includes the cultural capital of rural communities and not simply a change of utility.
- Most adults living in rural areas were part of or observed deficiencies in previous technological rollouts such as broadband. Expectations need to be managed.

Recommendations

- Exercises in community and trust building would be beneficial.
- Learn together how to adopt and adapt to new technologies, including what best *not* to do.
- Harness those who are simultaneously enthusiastic about the technology and their communities.
- Replace negative examples with rooted projects and authentic accounts of installations.
- Add expert rural voices to facilitate change in the green finance sector.
- Utilise communities to design and develop shared, collective and locally distributed responses to further rural electrification.

1. Introduction

This project aimed to garner multiple opinions on the challenges posed by the electrification of rural homes with sustainably produced power. This was achieved by engaging with sector experts and rural householders with differing perspectives and experience. The project was focussed on addressing the following research questions.

1. What are the key barriers to greater electrification of rural households? This will include if there are barriers related to building regulations or planning policy which prevent rural households from retrofitting properties and how they impact cost/ time taken to retrofit.

2. What proportion of rural households would require connection upgrades? (e.g. to 3-phase supply as a result of the need for heat pumps and EV charging)

3. What are the particular challenges for off-gas grid households?

4. What are the challenges posed by the capacity and fragility of the electrical network serving rural areas?

5. How could adopting household technologies related to the transition to rural electrification be accelerated?

6. What interventions could enable rural households to invest in electrification technologies?

1.2. Why Gloucestershire

The county of Gloucestershire is broadly typical of rural England, particularly those areas in the south and Midlands. It has an ageing population, with outmigration of young people; the housing stock is generally older, with stone buildings and some thatched dwellings; transport and accessibility issues are varied. The economic structure in rural areas is reflective of national trends in lower wages and higher self-employment, with agriculture, public services, and tourism playing a large role. Within that picture there are variations, with the Cotswolds being more affluent but also more unequal and better connected with links to market towns with younger populations. The Forest of Dean is distinctive in being a rural industrial area, with a tradition of light industry, and as the name denotes, remaining heavily forested. Politically, Gloucestershire is mixed, having most major parties represented at county or parliamentary level, in part feeding from and sustaining high levels of civic engagement. In the county's connection to urban areas, it is distinct from remoter rural areas such as Devon and West Somerset, Cumbria, and Northumberland. The detail of this understanding allows us to be confident, within parameters, of the degree of typicality across rural England of the discussion in this report.

1.3. Research approach

The research approach undertaken has been largely qualitative. A combination of methods were used to enable both deeper enquiry and discussion of those elements considered important to the participants while also addressing the project research questions. Two sets of participants were invited to take part in this research. The first, referred to here as the 'expert group', and a second 'community group'. The expert participant pool was devised with representation from groups working for and across rural electrification. For example, electricity distributors and suppliers, central and local government, green technology providers, charities, community action groups, consultants, influencers and users. The community group was made up of rural homeowners and was approached via social media and third sector connections such

as rural charities, local community groups and local government outreach co-ordinators.

The first data gathering exercise took place between 7th February and 25th March 2025, with expert opinion being sought via 16 semi-structured interviews. Initial observations were interpreted and contributed to the development of three projected scenarios (see Appendix A). These scenarios were used to prompt discussion at the second data gathering exercise; an 'expert' focus group (EFG) conducted on 1st April. This focus group comprised of eleven experts with wide-ranging expertise and experience in rural electrification. Of the group who participated, four had been interviewees. This enabled us to triangulate and therefore validate responses. A second 'community' focus group (CFG) was conducted on 10th June at a village hall in the Forest of Dean; this group was representative of rural homeowners from the village and surrounding areas.

The findings are presented in two parts. The data in part one is combined from both the expert semi-structured interviews and the expert focus group. Part two outlines findings from the community focus group. We are confident in our findings because of the expertise and candour of the groups. Due to our robust confidentiality procedures and adherence to Chatham House rules we cannot identify participants, however we felt this helped participants to fully express some areas of concern and conflict.

In addition, and acknowledging one of the key themes identified within this research, desk research was undertaken to understand the rural electrification landscape and help explain the "complicated picture" that many participants spoke of. Figure 1 comprises entities and organisations that were discussed by participants with additional scoping from the research team. The closer to the 'sun' (rural households) and the larger the text, the greater the potential influence. There are also instances where actors could have more direct influence, irrespective of a perceived distance between the two, and these are highlighted within the diagram by a 'leapfrogging' line of influence. For example, Power for People, a non-for-profit organisation who run campaigns to engage individuals and local communities to lobby their elected

representatives for changes in the law or government policy. The supporting text to this diagram is contained in Appendix B.

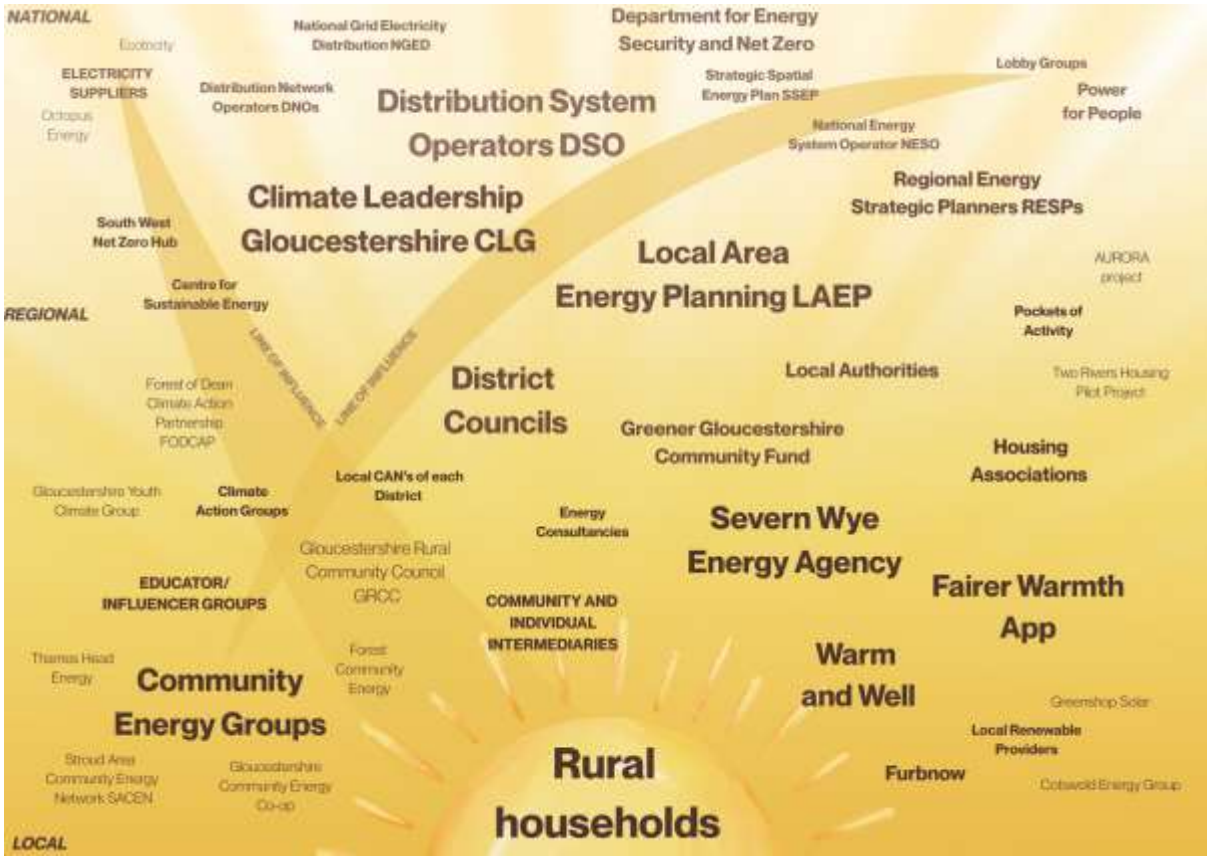

Figure 1: Graphical representation of the rural electrification landscape in Gloucestershire

2. Part one – expert insight

2.1 Thematic mapping

Thematic analysis of the combined expert data interpretated the following key themes. These themes are illustrated below in a thematic map (see Figure 2) and highlight the interdependencies and overlap observed within the data.

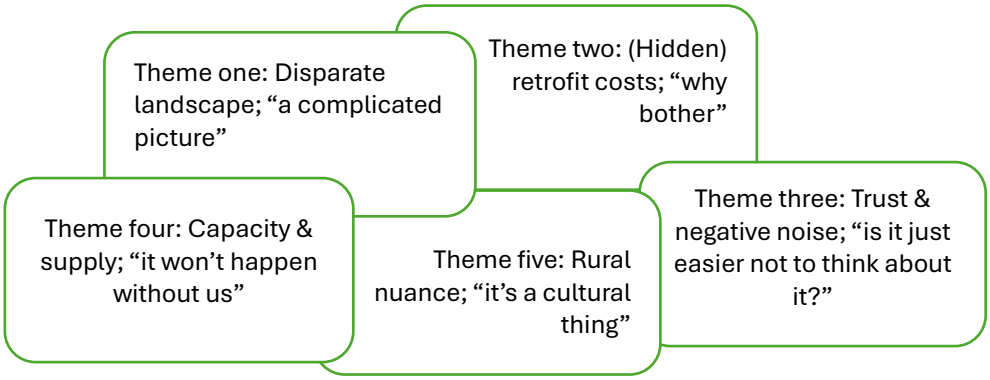

Figure 2: REG project key themes

2.2 Findings

Each of the key themes address elements of the research questions. For ease, themes will be presented below as responses to each of the research questions (RQ).

RQ1: What are the key barriers to greater electrification of rural households?

2.2.1 Theme one: Disparate landscape; “a complicated picture”

The first theme highlighted a systemic issue in the electrification of rural communities. Participants spoke of multiple, differing and conflicting priorities from across the delivery landscape. A number of them pointed to a lack of guidance for the

electrification of rural homes from central government, leading to local government not having the necessary remit to act: “It's not a statutory duty to push all this stuff” (P2).

> “I think the really overriding question is- does the entire policy framework around this stuff work? And I think the simple answer is no. It's too disjointed, it's too siloed. It there's not enough interoperability. I'm not sure we're even building it, the capability. I would love to be told that I'm wrong… Policy is too inflexible, business I think are willing to do things, but they won't do anything without the right policy drivers… we haven't got policy right. But at every level.” (P8)

Some went further to suggest that it didn’t suit government policy to attend to rural areas, when “there are no votes in it for us” (P6). Coupled with the perception from most participants that National Grid’s upgrade policies are skewed around larger population bases, there was common agreement that the sector as a whole is focussing more on electrifying urban areas. However, participants also made it clear that this is purely down to an overall lack of investment and that for those with a remit to reduce climate change across the county, focussing on urban settlements over rural is seen as delivering greater dividends:

> “…the one thing I'm trying to crack is climate change in terms of contribution to the decarbonization of our economy and our lifestyles and things. And in that regard, sometimes I'm going to pick the low hanging fruit and go for the ones that deliver the biggest, biggest bang for our megabucks.” (P6)

In contrast, the participants were eager to speak to pockets of positive activity that are happening across the county, in spite of a lack of a holistic approach, central direction and investment.

Complications are seen at all levels of delivery. Interdependencies are acknowledged but pulling in different directions. As one participant explained when discussing the tension between conservation and planning departments at local government level, “there’s a bit of a clash of worlds” (P16). For this participant, rural households can be

presented with a “bit of a bump with the conservation area thing”. Here the focus is again on what central government can do to remove this friction, to cut through myriad and conflicting advice for householders.

Many participants spoke of individual volunteers and community energy groups, and within that key person dependencies. There is an element of a ‘postcode lottery’ in respect to how knowledgeable, time- and ‘green’ asset-rich the individuals driving change within rural communities are. For these individuals, working alongside local government and green technology suppliers to deliver change within their communities, they seem to have been able to navigate through the complex landscape.

2.2.2 Theme two: (Hidden) retrofit costs; “why bother”

The second key theme speaks to the many different types of cost a rural householder might incur. The expert group participants acknowledge that there are some grant funding streams available, but that these only partially cover the hidden costs of adopting greener energy technologies. There were assumptions made by some of the group that rural homes face greater challenges in respect to retrofitting due to the size and age of the housing stock and likelihood of them being in conservation areas. For those who are ‘able to pay’, concerns were raised in respect to these challenges equating to a larger capital spend and acknowledgement that “people have finite resources” (P8). There was a particular focus on the challenges of insulating rural homes:

> “The issue with that is… if your home isn't particularly well insulated already, the cost of doing all the other stuff that's necessary to fit a heat pump might mean you still have to fork out a lot of money, which might make it both unaffordable and just too disruptive.” (P16)

In addition, many participants acknowledged the cost of upheaval to the home and homelife and that this needed to be considered especially where a homeowner is

vulnerable. One participant gave an example of an elderly homeowner who has started to move to greener energy:

> “She's got panels on her roof, but she's got oil central heating, and she's never taken the leap to heat pumps because they'd have to rip the floors up, the radiators out, and it's just too much for her to cope with, even though the oil prices are really high and, you know, she doesn't like relying on it.” (P2)

It is this combination of fabric and retrofit costs alongside the cost of time and upheaval that is prompting rural homeowners to ask, “why bother?” (P12) when it comes to considering green energy.

Some participants also spoke of rural householders preference for their Agas, the independence they felt with having wood burners and an ideal of living closer to the land. That in some way, moving solely to electricity would be giving up a way of life and impact their rural identity:

> “They've grown up being able to be reliant in some places. You know, they, they have a sustainable life. They grow their own trees, they have wood burners, they like that resource of independence” (EFG)

Overall, there appeared to be a consensus in respect to there being different and greater costs associated with rural electrification. For example, participants’ discussion surrounding a perceived cultural cost of rural electrification is a relatively novel consideration. In order to understand more about the decision-making process against this complex backdrop, questions will need to be asked of rural homeowners in respect to what they understand to gain and lose against a substantial investment.

Finally, when discussing cost as a barrier to rural electrification, a few of the participants referenced a ‘middle’ group of homeowners that are potentially missing out:

> “I suspect there's a good chunk in the middle that's, you know, doesn't qualify for a grant, but would probably struggle to spend a lot of money on an upgrade or solar panels or whatever” (P16).

Participants acknowledge that there is support for those with lower incomes who can access subsidises, however, it is the group that earn just above the threshold to access grant funding who find the cost of retrofitting unaffordable.

2.2.3 Theme three: Trust & negative noise; “is it just easier not to think about it?”

A key barrier to adoption by homeowners is a perceived lack of trust in both green technology and its installation:

> “I think it's more than the money though, cause I think we're working from a negative position because of public perception” (EFG)

> “Because I think it's 99.9% of installations go well, right, let's be clear about that. There isn't a problem with good installation, there is some historical problems where ventilation wasn't put in… but the vast majority of installations are done well and there is a perception that that it can be really difficult, but the vast majority go well, and I think that's something we need to show” (EFG)

Many in the group were confident that the technology is available and that it works. They also felt that the problem is not necessarily a lack of communication, but rather confusion around the plethora of many different interest groups communicating, sometimes with the wrong type of communication. Negative noise and bad press only confirm the reluctant position of late adopters and naysayers and makes the decision harder for those interested in adopting because there is too much conflicting information.

> “Not only are you going to spend that money, but you're then told that you've maybe been mis sold technology, you know, or the technology isn't as good, or

> the next version is going to be better than the version you've got at the moment and things like that" (P8)

> "you've got lots of people shouting: my technology, my technology and that actually results in people being sort of slightly bunny in the headlight. Frozen and say, 'well, you know, maybe it won't. Oh, I'll give it. I'll wait a year and see what happens'" (P6)

The expert group questioned whether adopting green energy has become too confusing for many to think about ("is it just easier not to think about it"? (P8)), linking to the challenge of communication.

> "there's massive, vested interest that does not want this transition to happen. And it slows it down, mainly the fossil fuel industry, and it ain't sitting back quietly. It's very purposefully trying to put people off and a lot of that is through misinformation" (P16)

Questions were asked with respect to who rural homeowners would listen to and who is responsible for providing the right kind of advice for them specifically, when some of the consultation tools that do exist do not factor in rural requirements:

> "the problem with rural properties is always like you know, you get the boxes and well, my property doesn't quite tick. So, it's because the boxes are designed for the 90% of properties which are not those remote... off grid type or tenuously connected to the grid type properties because they're just so few in number" (P6)

This participant went on to question who takes on the liability for this advice - central or local government? Several other participants voiced this specific concern, however there were also examples given of 'trusted brokers' with local councils cited as recommending specific technology and tradespeople[1].

[1] Such as Warm and Well and Furbnow

2.2.4 Theme four: Capacity and supply; "it won't happen without us"

This theme highlights fundamental dependencies when it comes to infrastructure capacity and the actors involved in rural electrification. The majority of the expert participants cited National Grid's limited upgrade infrastructure as impacting both its ability to serve rural areas but also invest in local initiatives such as community energy generation (e.g., microgrids).

> "regardless of whether you're taking electricity from the grid or putting it onto the grid, they have to have enough kind of infrastructure in place to be able to support that. Having too much electricity [is] as much a problem for them as having not enough" (P9)

Infrastructure providers are fully aware of their role ("it won't happen without us" (P12)) and spoke of the creation of new teams open to more granular engagement and a focus on local energy plans to seek to explore what investment is needed. They see the importance of engaging with local community groups:

> "So much of this is about just educating people. It's amazing how many people haven't put two and two together. But these things like heat pumps and EV is going to need such a drastic overhaul of the electricity network. They don't understand the barriers we're up against. And just having that conversation with local residents. Or, you know, community energy organisation, so you start to see each other's viewpoints... Oh, okay... so these are the restrictions we're working within, but this is what is possible." (P12)

A much-repeated challenge related to a skills shortage in the sector. Partly to blame was the focus participants felt that central government placed on a 'mono-technology' mentality, for example, being "too heat pump or nothing orientated" (P16). This problem has a particular impact on rural communities where green technology solutions might

not be heat pumps. It was felt that the focus on mono-technology misrepresented rural supply and demand.

Participants also referred to a 'boom and bust' approach:

> "... the government stopped the feed-in tariff years ago because it felt, you know, it should be a something that is financially viable in itself. Which put a load of the installers out of business and really caused chaos. And that's been part of the problem with the skills and the industry, you know. They kind of boom when there's a subsidy, and then they all go bust and try and recover when the subsidy is removed. And it's the same with insulation as well. You know with these... they brought in these new various schemes for insulation which have failed, and the industry's kind of built up and then flopped..." (P2)

New technology coming onto the market was also felt to feed into confirmation bias:

> "one of the challenges...is that speed at which technology is advancing... is huge because what you decide is a good idea for rural communities in Gloucestershire now might be massively superseded by an amazing new technology that comes onto the market in 2032, you know, as an example, and suddenly all changes" (P12)

There were also contrary views with respect to concerns that demand for green technology will outstrip supply and a relief that rural homeowners have been slow to adopt against burgeoning upgrade requirements. The challenges of capacity and supply exacerbate issues around the disparate landscape and competing priorities:

> "It's very, very slow uptake, and I think if everybody started doing it, there'd be a real capacity problem. But when it comes to... solar farms and big generation, that's where it's now running out of capacity. I think in our districts, we were told, when the next solar farm gets planning permission, you're out of capacity till mid 2030s" (P2)

RQ3: What are the particular challenges for Off-Gas Grid households?

2.2.5 Theme five: Rural nuance; "it's a cultural thing"

The data that addressed RQ3 focuses on rural nuance and how potentially leaning into the differences of rural households might bear fruit. For example, because off-gas grid households don't use gas, the move to electricity was perceived by the group as an "easier" (P9) step to make.

> "... there's just this underlying feeling that it's easier to promote air source heat pumps to off gas properties" (P12)

> "Some realise that it makes more sense to do it because you're already off gas grid, for instance, and by investing in your own heat and electric generation, you're kind of solving a problem, moving away from expensive oil" (P2)

Participants also cited a legacy of cultural, and likely pragmatic, assets such as community resilience, self-reliance and independence that may impact electrification adoption. This adds credence to the earlier reflection that rural identity could impact the type of green technology adopted by rural communities and the assertion that wood burners and biomass boilers allow them to live closer to nature. They also discussed the recent winter storms (such as Storm Éowyn in January 2025) and how these adversely impacted rural communities as many homes were without electricity for weeks. Some of the participants spoke of how this must be a consideration when engaging with off-gas grid homes.

In addition, participants warned that much of the off-grid housing stock are more generally "old and draughty" (P9) and often listed which necessitates the need for insulation technologies that are in keeping with their homes' aesthetic.

RQ4: What are the challenges posed by the capacity and fragility of the electrical networks serving rural areas?

Due to a lack of grid capacity, some participants expressed relief in slower adoption:

> "... if... everybody suddenly goes out and goes 'Ooh, we're going to, we're going to buy all this', is going to be the cost of reinforcing the grid. Humongous, but I think the way it's playing out, it's not such an issue because it's the uptake is relatively slow, which is giving us the time to put the reinforcement in" (P12)

There was also talk of how locally generated energy could "cause issues with the harmonic flow of electricity" (P12), noting that although this is a draw for households to sell back to the grid it is a challenge for National Grid in terms of line capacity as it requires it to facilitate a "two-way flow" (P12). This falls within a general consensus within the group that a more agile, reciprocal electricity network is required and that at present demand is outweighing supply, however slow the uptake. This last point again highlights the complex array of barriers in adoption and their interdependencies.

Participants felt that the network's focus is on more urban and semi-urban areas. Many described how they considered rural households "last on the list" (EFG) when it came to blackouts and upgrades, with many located literally at the 'end of the line'; "a mile off the road, down a track" (P1).

There is an assumption that "...decarbonising a village needs loads more electricity" (P12) and resource, with added complexity of planning and access on rural land and within conservation areas.

2.3 Interventions

RQ5 & 6: How could adopting household technologies relating to the transition to rural electrification be accelerated? What interventions could enable rural households to invest in electrification technologies?

This section focussed on the enablers, or interventions, with respect to rural households adopting electrification technologies. As the flipside of the barriers noted above, four principal interventions are suggested and link directly with many of the themes (see Figure 3 below).

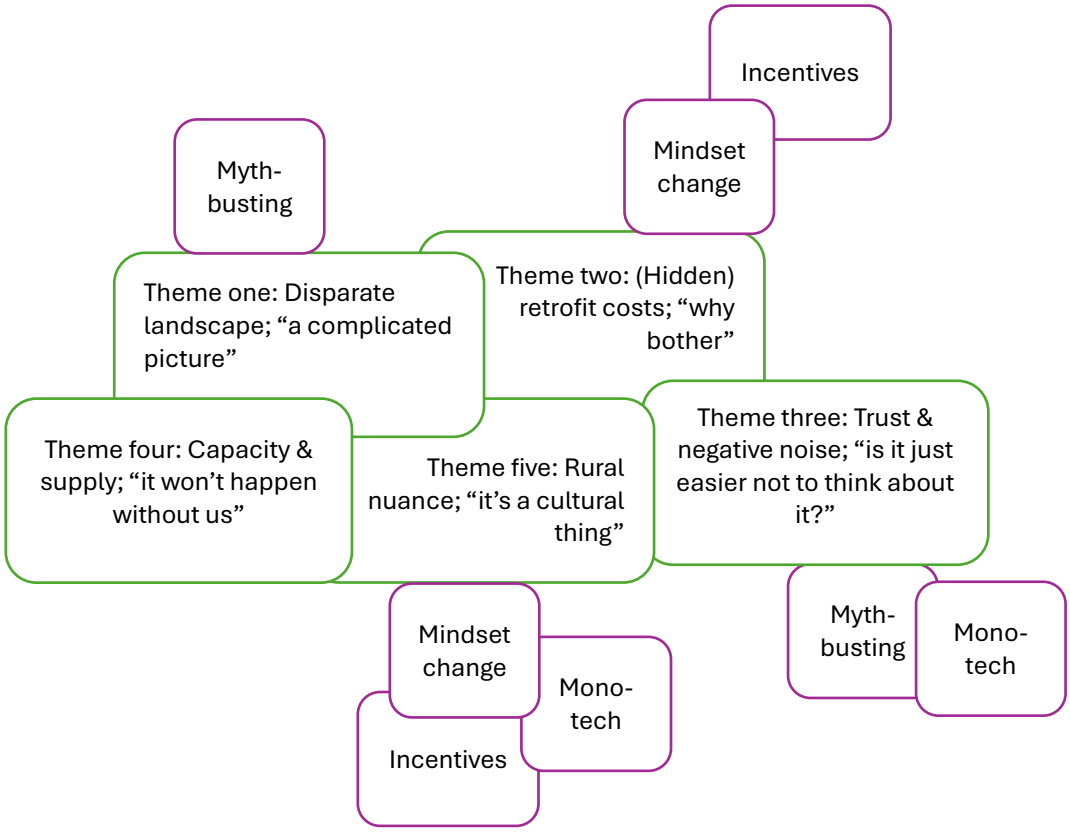

Figure 3: REG project key themes linked with interventions

2.3.1 Intervention one: A mindset change

An issue raised in the interviews, which was then built upon with the EFG, related to the cultural identity of rural communities, and the need for a greater understanding of rural community culture and perceptions. That before agencies go into rural communities to talk about green energy adoption, "there's a [psychological] step before" (EFG). By understanding more about rural communities' attitudes towards rural electrification, it will be easier to bring them along in the journey.

> "Yeah, it's a cultural thing. This is a cultural shift and it's what, what X says. Yeah, we can talk about technical solutions day in day out but unless we take that really person-centred view on this or we're not, you know, we're not going to shift. We're not going to see the behaviour shift though that's required." (EFG)

This point was touched on above in relation to the cultural cost of retrofitting, with some rural householders seen as having a preference to live more independently, alongside nature.

> "They like their Aga, they like being independent, so you could, you could flip that on its head and say, you know, install battery and enough solar to charge it" (EFG)

To achieve behavioural change, the sector needs to have a mindset change, plugging into community resilience and the nuance of rural life and living. This was perceived as a huge positive and opportunity if done effectively. It also goes back to acknowledging rural households may need different green technology solutions, and to see these in homes like their own.

> "And I think that people need to see, people living in houses like their house and at the moment, you know, those of us that have adopted technologies we're, you know, we're really proud of them, aren't we in our lovely houses with the solar

panels and the battery and the heat pump and the EV charger. That isn't reality for most people." (EFG)

2.3.2 Intervention two: Myth-busting through a rural lens

Across the data set, education and engagement was considered fundamental, especially when utilised to combat the negative myths surrounding green energy. The group acknowledged that a change in narrative is needed. This may be in terms of dialling up the community resilience aspect of green energy as "free energy from the sun" (P1), or as highlighted above, designing initiatives and communicating them in a way that aligns with rural motivations.

> "where we're trying to shift the perception, to kind of double down on what 'B' was saying, is that I think what's missing at the moment is the benefits and the definition of those benefits and what that actually means for motivations and communities and people ultimately because we know the technical solutions work, this isn't a- there are technical challenges in the delivery and scalability, but the technology works, we know it works, we've solved that bit. It's the it's people and politics. And that's the bit that I think we struggle with" (EFG)

The group suggest showcasing relevant pockets of activity that are already in place and working, that everyone in the sector can look to, and learn from. A few of the group cited other countries, such as Wales and Germany where there are case examples of rural retrofitting and community energy generation respectively. In addition, influencers within rural communities such as 'net zero Dads' (as described in the below quote) are seen as being able to myth-bust from within rural communities.

> "And it is, hate to say it, generally men of a certain age and I include myself in that, that like a bit of a new tech the new app and I can fiddle with it and mess around with it in my home and you're not even doing it, because you particularly want to be net zero, you just like the tech, right?" (EFG)

2.3.3 Intervention three: More than mono-technology

The participants made a series of assumptions with respect to rural electrification. For example, that rural locations have more land to house green technology and less concerns over noise pollution; and that some homes would be open to different kinds of technology, such as biomass boilers or zero emission boilers:

> "particularly in older homes… includes rural, maybe some alternative heating options than just heat pumps might be important to getting people there because sometimes less, you know, well insulated homes that are quite old are quite hard to fit traditional heat pumps too. So, whether you know there are other solutions like zero emission boilers and things that" (P16)

These assumptions highlight the need for an approach that really understands not only the differences between rural and urban electrification needs but also differences *within* rural communities; such is the diversity of their own geographies, housing stock and culture. This will demonstrate that these communities are being listened to and address concerns over trust.

An observed tension here is that what could work for rural homeowners, such as access to variable, adapted technology, is not necessarily what central government are incentivising, the aforementioned 'mono-technology', such as heat pumps or solar panels.

2.2.4 Intervention four: Incentives for change

Some of the participants suggested exploring financial incentives such as 0% loans to spend on energy-efficient home improvements and green technology. Mindful that this could appeal to those previously cited as the 'middle' group who earn too much for grants and not enough to invest in electrification without support, the group discussed the need to combine financial incentives to really make a difference to the adoption of green technologies.

"...the way you get to that behavioural change is by incentivising people by lowering the electricity price so that there's an incentive to put a heat pump in by providing 0% loan to householders to do all the additional work" (EFG)

However, there was a warning from a few of the participants in respect to how much energy bills will be affected when converting to green technologies. That due to the investment needed by the sector in terms of infrastructure, households might not see as significant a deduction as they might have expected.

There was some tension with respect to incentivising rural residents to improve their individual properties, when many aspired to a more localised solution[2], e.g., community organisations and individual households selling electricity to neighbours. That as well as saving money, these community energy schemes serve to strengthen community resilience.

> "so what that will allow is organisations like mine and individual households to sell electricity to their neighbours and that will really strengthen community efforts because it means that someone who whose house is underneath a load of trees and can't have solar panels, because they wouldn't do anything, could benefit from their neighbour, who is in a favourable position or from the farm over the road that's got a great big barn and could have some on the roof and we would help fund that and everybody benefits..." (EFG)

This latter point also plays into an observation that rural communities may also benefit from - and therefore potentially adopt - 'healthier community' incentives. For example, participants described community energy projects where local generation powers community buildings and so builds on existing assets and community resilience:

> "It's actually a school and they put in a biomass boiler, and it was all funded by the members of the community, they all put into this and then that then funds

[2] Local Electricity Bill (https://powerforpeople.org.uk/read-the-local-electricity-bill)

> the school. The school pays for their energy, but they pay less than they ever used to, and then they're 'OK because we pay for that. We're paying less. So, we'll give you some of the difference back to the community'" (EFG)

Participants are describing a different incentive to change which is more altruistic. An opportunity to be actively 'net positive', not just 'net zero', and ultimately give back to their community.

2.4 Part one summary

The findings so far present a complicated and complex picture in respect of rural electrification. For example, combining theme one, 'disparate landscape' with four, 'capacity and supply' highlights a patchwork approach where pockets of activity are making strides alongside stifling policy bottlenecks. The [hidden] cost of green technology (theme two) and distrust (theme three) in its installation are still very real barriers as to why rural households fail to adopt renewables. However, the findings here have added nuance (theme five) in terms of interventions needing to acknowledge the importance of rural difference, community culture and motivations.

The following quote brings together many of the barriers cited here:

> "getting off oil and Calor Gas[3] and putting heat pumps in, in many ways, makes much more sense if you're in a rural area, but it still hasn't had the kind of incentives to make it happen. And there's a big skills gap as well. So, if you do go for a heat pump, I know people who've done this, who live in rural areas, who've had terrible experiences because the skills to put it in aren't there" (P2)

Even when a door is ajar, in the sense that these participants felt it an easier ask for rural households to move from oil to heat pumps than gas to heat pumps, there are still

[3] Calor Gas is the common name for LPG; a liquid gas sold in the UK by a number of different national and regional companies

barriers ahead in terms of retrofit costs, installation concerns and the spectre of negative noise convincing rural households to stay put.

Interventions that address the above are reliant on an infrastructure that has the capacity to distribute electricity consistently. They are also reliant on there being investment in the right skills and resource to design, retrofit and install green technology that works for rural households.

3. Part two – rural community insight

The data so far was captured from those with an 'expert' view on rural electrification. The group made assumptions regarding how rural homeowners interact with greener energy solutions to their home; based on their own experiences and talking to their communities.

The project also sought to include contributions from a rural community as a way of 'testing out' the insight gained in part one. The following section contains data collected at a community focus group conducted in a village hall in the Forest of Dean. Participants (n= 21) described themselves as having a mix of experience and perspectives with respect to rural electrification.

The community group were asked three questions informed by the overall research questions: What is your understanding / experience of 'rural electrification' and the green technology that supports that, such as heat pumps or home storage batteries?; What might prevent rural homeowners / you from adopting greener energy solutions?; What might help you adopt green energy solutions?; and then the discussion widened out to invite any further insight they wanted to share. Each question was addressed in turn and discussed separately to ensure all participants had the opportunity to share and deliberate.

3.1 Observations from community group responses

The table below contains the focus group questions against some of the key findings and demonstrate the range of responses given.

Table 1: *Sample Responses to Community Focus Group Questions*

Question	**Sample response**
What is your understanding / experience of 'rural electrification' and the green technology that supports that, such as heat pumps or home storage batteries?	"I know nothing!" "Rural electrification? Is it the right term? We already do have electricity" "No experience of heat pumps, but do know they are expensive, noisy, not always efficient" "I have solar and battery with an electric car. A heat pump is expensive and not always cost effective" "I have a heat pump and solar panels funded by ECO4, replacing Calor gas boiler. Good experience, but the disruption during installation was not anticipated"
What might prevent rural homeowners / you from adopting greener energy solutions?	"Cost. Lack of knowledge" "Is our roof suitable? Too old? Is it a myth that heat pumps are ineffective?" "The cost of installation. The cost of electricity. Unfamiliarity with the technology. The need for more companies and tradespeople to have experience and expertise in the technology." "Initial outlay to install £££. Cultural commitment to comforts, e.g., log fire" "Costs. Insulation. New windows. Grant doesn't cover everything"
What might help you adopt green energy solutions?	"Help paying for it" "Easy read information. Independent experts. Professional person with no hidden agendas or getting financial benefit" "I would be more inclined to buy green energy solutions if I could meet someone who had them installed and see how they worked and talked to them about the pros and cons. Not a salesman" "Community projects. Help from the Council. Changes to planning" "I already have green energy and have used a grant to get it. We'll keep an eye on new developments and acquire more information from good sources"

As outlined in Table 1, there was a mix of understanding with respect to rural electrification. Some participants had never heard of the term and some questioned whether it was the correct term to use: “Rural electrification? Is it the right term? We already do have electricity” (CFG). There was also a mix of experience and technologies within the group, albeit only a minority felt they knew nothing. Most of the group had heard of green technology such as heat pumps, and many had installed or attempted to install green technology.

3.2 Interwoven ‘Cost’ and ‘Trust’ themes

3.2.1 Barriers to adoption

The theme of ‘Cost’ featured heavily when asking what might prevent homeowners from adopting green energy solutions. This was expressed as upfront cost of technology, insulation costs, installation costs and running costs. In addition, some of the group were concerned with respect to recouping expenditure should they move house. Cost overlapped with a perceived lack of knowledge and “unfamiliarity with the technology”, as the group cited a “lack of genuine local expertise” as preventing them being able to decide and therefore a barrier to adopt. As a group they asked if they were getting the right kind of advice and from whom that advice came from. One used the expression “evangelical versus reality” with some in the group sharing stories of carpets being ripped up and the upheaval they - or others - had experienced during installation.

There was a lot of talk with respect to installing green technology in older houses, specifically fitting heat pumps in stone-built properties, and concerns whether an older roof might bear the weight of solar panels. Another rural-based challenge was a perceived lack of broadband which would impact the use of software and apps associated with some green technology. Others simply referred to a preference to their log burners being a barrier to adopt other technology.

3.2.2 Enablers to adoption

When it came to sharing considerations in respect to what might help them adopt green energy solutions, help with cost and trust in the advice given was fundamental to the group. Help with costs in the form of grants, subsidies and other incentives, as well as more reliable information of, and access to, these options. A few in the group asked for more consistent messages from government and local authorities. Here, participants want to understand what to do and who to trust, suggesting government recommend a list of fitters, “no cowboys” (CFG).

Another interesting enabler to change was how the group felt that their way of life, as a rural community, needs to be protected alongside adoption of greener energy. One participant spoke emphatically about the solar panels they had fitted, how they do not regret the decision to upgrade even given the disruption to their home. However, they later revealed that they still had their log burner as ‘backup’ and explained that their decision was two-fold. One informed by practicality as they didn’t want to have to rely on energy produced by the sun, the other was more emotive as they enjoyed having their log burner; “I've got a wood burner and I'm not getting rid of it” (CFG). This insight supports the first intervention highlighted above - a call for a mindset change in the sector - in the sense that bringing rural homeowners along the electrification journey needs to first acknowledge that their existing lifestyle needs protecting. And similar to the third intervention, ‘More than mono-technology’, rural homeowners would benefit from the recognition that one-size will not fit all and consideration of new, established, and different energy technologies working in tandem for these homeowners and their need to maintain independence, and consequently their community resilience.

Some of the group took the opportunity to ask questions about green technology and this prompted a discussion within the group. Some participants wanted to understand more about payback; after having experiences of being told they might be too old to benefit financially from revenue raised from selling electricity back to National Grid. That rural communities are also often older communities in older housing stock was acknowledged. For those considering adopting green energy solutions, they wanted to

know if it would work for them personally, and this means the sector putting the person- or home- before any top-down solutions.

The figure below diagrammatically summarises this data, pulling together interrelated themes of 'cost' and 'trust' and adoption considerations, while focussing on the progression from negative to positive exchange as the group moved from considering barriers to enablers.

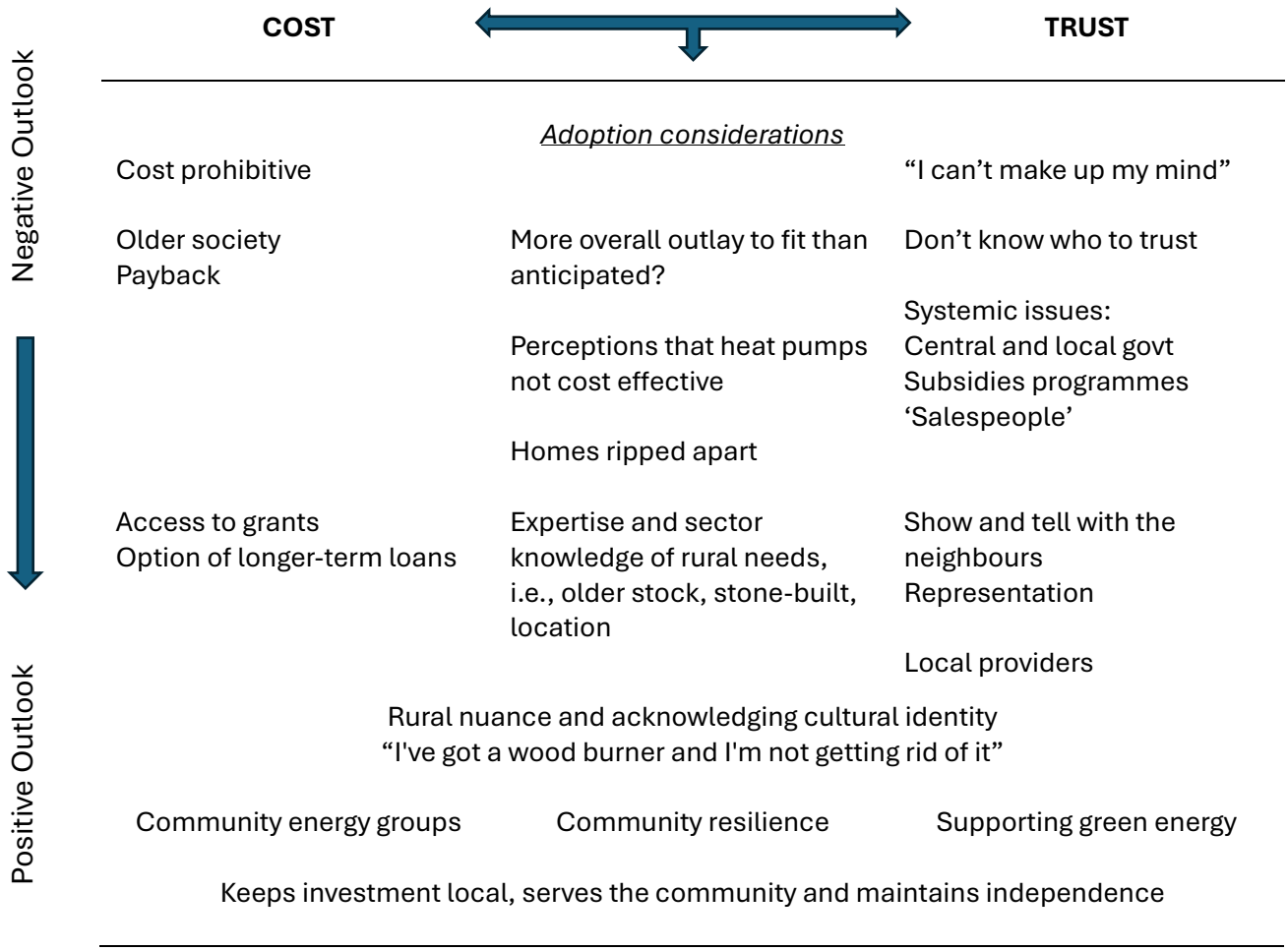

Figure 4: Diagrammatical summary of community focus group output incorporating change from negative to positive outlook

By allowing this community group to lead much of the discussion, the focus group became a space to share insight which was then probed allowing for further explanation. For example, one participant began sharing how disruptive installation had

been to their home, only to go on to say later that installing solar PV was the best thing they had ever done, before finally announcing that they were not giving up their wood burner. This demonstrates a variability of response *within* participants as well as between participants, as outlined in Table 1.

3.3 Part two summary

The data captured by speaking to rural communities about rural electrification was wide-ranging and insightful. Participants represented groups with no understanding and experience to groups of early adopters keen to share their knowledge. All three of the questions asked were addressed and in addition the group spoke about who they might trust to learn more going forward. Two adoption considerations, 'Cost' and 'Trust' were shown to impact decision-making. To that end, the group favoured an engagement approach which acknowledged the individual differences of rural housing stock, as well as considerations for an independent, and often older, society.

4. Conclusion

This project sought to understand the key barriers and enablers to electrification in rural households. In response to the research questions which explored this, five key themes were interpreted. The first theme, 'Disparate landscape', spoke of a lack of guidance and consistency from the sector at large, specifically from central and local government, relative to who the participant represented. For example, one expert participant justified their approach to prioritising urban settlements over rural as "low hanging fruit" (P6), with another citing that it was not their statutory duty to push rural electrification. Disparities within the sector was echoed by the community focus group, albeit indirectly with systemic issues noted such as lack of rural broadband to support smart technology in rural spaces.

The next two themes, '(Hidden) retrofit costs' and 'Trust & negative noise' were first proposed by the expert group and strongly reinforced by the community group. All participants highlighted how prohibitive the cost of installing green energy solutions are for many, and specifically for rural housing stock that is often older and not suited to a 'fabric first' approach. In addition, of the many industry voices competing, the community group did not know who to trust when considering such a large upfront investment, especially given their nuanced needs. In addition, the community group added their own negative noise when sharing experiences with neighbours, playing into confirmation bias.

A fourth theme, 'Capacity & supply', attributed the current limited infrastructure as a key barrier to electrification, with the expert group acknowledging rural communities were furthest down the line in terms of upgrade. In moving to enhance the national grid, prioritisation is perceived as being given to larger conurbations, emulating previous infrastructure projects such as broadband, without explicit learning from that experience. In addition, both groups spoke of a skills shortage, potentially borne out of a 'mono-technology' model which has impacted on householders' ability to access the right kind of advice and installation. Finally, discussions circled around the last theme, 'Rural nuance', which acknowledged the differences presented by rurality, such as

geographic locales and an ageing population. Rural identity was also expressed through and invested in via different technologies in the home, for example, the basic utility of a woodburning stove, a simple but sophisticated and culturally freighted item, was juxtaposed with the newer technologies.

4.1 Implications

4.1.1 Even greater disparity

The findings presented here highlight an already disparate rural electrification landscape, however, there is potential for that to grow further. Both groups spoke of particular individuals and communities pushing for and achieving rural electrification in spite of the barriers described. Indeed, where there have been successful pockets of activity, these need to be celebrated and learned from. The other side of these singular achievements are communities who don't have these 'human assets' and so fall behind. This variability between rural communities could lead to uneven provision of electricity, a state already impacted by geographic location (such as differing typologies) and climate change (such as an increase in severe weather).

4.1.2 Change the narrative

To understand how to make greener adaptations to people's homes, it is not just their houses that require a granular understanding, but a matching degree of cultural sophistication. In addition, the language of rural electrification is often predicated on it being simply a change of utility, but the home is much more than a matrix of utilities but a place of emotion, safety, belonging and aesthetics. Therefore, it will be necessary to develop a language that includes the cultural capital of rural communities, such as, closeness to nature, self-reliance, community participation, the aesthetics of older properties and awareness of the life stage.

4.1.3 Learning from previous technological rollouts

The comparison with broadband is limited but important. A market-driven, consumer-orientated provision of these services to rural areas did not reach the communities with a single network - mobile phone masts and satellites were utilised. Specialist rural

providers have appeared, but this has taken a long time and a maturation of the technology far beyond initial expectations. Early adopters of broadband paid very large sums, only to see much cheaper provision come along in short order, and community initiatives that flourished at first were displaced by house-to-house provision by private entities. Most adults living in rural areas were part of or observed this technological rollout. The greatest challenges here are the interlocking technological imaginations of a particular form of electricity grid, matched with a similarly rigid set of household technologies without a rural lens.

4.1.4 What was not spoken about

There was a perception from the expert group that off-gas grid households were residual and would have taken up the option of mains gas had it been available. Those people living off the gas grid saw this very differently as discussed above, and in many ways the discussions exemplify the lack of a rural lens. It was interesting that no one made any reference to the opportunities presented by other fuel sources such a liquid gas (LPG) or bioLPG as a transition fuel. This may have been because this project was focussed on electrification rather than reaching net zero targets, however, it highlights an engagement opportunity.

4.2 Recommendations

There are several significant absences from our interviews, in that the necessity of climate transitions has not been questioned, and we have not been drawn into wider ideological questions. Rather, our participants have been focused on the social pragmatics of what will work in heating their homes, how can it be affordable and effective, how is it culturally acceptable, and who could they trust to install it. These concerns are not necessarily easily addressed, as time, money, and capacity are all limited, and for many experts, the focus is understandably on the electrification of urban areas as a priority, discussed in a technical manner.

We have a few recommendations that would be helpful, not only to rural communities but urban ones as well, as there are similarities and continuities.

4.2.1 Build trust

Whilst it is important not to exaggerate a lack of trust, it is important to move a conversation beyond that of consumer goods and the standard language of marketing. Heating and powering people's homes is a fundamental need and right; people's homes are their sanctuaries and refuges. Using the wrong language and not respecting the nuances of person, home, and community sets the wrong register of dialogue. Engagement needs to be in communities, developed in tandem with communities, building knowledge and trustworthiness, even if that takes a bit longer. Acknowledging the specifics of people, their homes, and communities is a strong starting point. The CFG demonstrated the variability of just one village in the Forest of Dean; rural communities need to see representation at several levels to gain and build trust. Known and trusted installers, embedded in rural communities would also be an option to support this, but they would need consistent and sustained policy signals, as well as likely a general increase in their number. Therefore, exercises in community and trust building, even if not directed at renewable technologies would be beneficial.

4.2.2 Learn together

Most older adults have lived through some extraordinary technological change, the advent of the internet with its enablers of smartphones, computers, and broadband. We have learnt how to adopt and adapt to new technologies and what best not to do. For those asking to adopt new technologies, demonstrating awareness of previous adoptions and the costs, as well as benefits, is part of building the social underpinnings of this transition. At the surface it is a discussion of incentives, but in the depths, it is a discussion of control. Give rural communities a greater sense of influence and a degree of control over the process.

4.2.3 Harness the enthusiasts

We found a group of people often self-described as the 'net-zero Dads' (but not only Dads) who are simultaneously enthusiastic about the technology and their communities. They hold in the long tradition of tinkerers, adapters, geeks and hackers who, through their interest in technology, can extend, explain and adapt it. Given that

engagement works best with a participatory approach, work with local volunteers, empowering and enabling them to build trust and act as intermediaries. One example of this in action is a local resident-led community energy group in the Forest of Dean, developed in partnership with the local council and other likeminded folk (see Appendix B for more details). The group has played a key role in delivering community solar, including launching a community energy share offer for the rooftop solar PV installation on public and community buildings, as well as promoting energy awareness to local residents.

4.2.4 Authentic intermediaries

With a focus on grand central plans worth billions of pounds, and the sales of technology as a form of 'white goods', there are few who are authentic in talking about their experiences. We heard highly persuasive warts-and-all accounts from those who had experienced difficulties but valued the changes they made. Those who are investing and are invested in the technologies need to be supported to give a full story to their peers – including in respect of alternative heating fuel sources. Replace negative examples with rooted projects and authentic accounts of installations.

4.2.5 Explore green financing

Develop an understanding of the options on offer in respect to funding rural home improvements, and consequently where the considerable gaps are. The one-size-fits-all 'grant rates' can underplay the costs in respect of rural homes and a more tailored approach would be appropriate. Participants from each group placed cost of installing as a key barrier to adoption, adding your expert voice to facilitate change in the finance sector will demonstrate understanding and commitment to change.

4.2.6 Utilise communities

We are always watching and learning from our peers, our neighbours and friends as they make changes to their homes. With a focus on individual households, the discussion is missing the option of shared, collective and locally distributed answers. Rather than diversions from the grand strategy, these rural communities could be spaces of experimentation and development. For example, our participants expressed an interest

in maintaining a level of independence by not necessarily selling back into the grid but setting up community energy projects. Greater resilience will be appealing to rural communities, and with severe weather becoming a more frequent occurrence, necessary. Look to the differing rural landforms and locales to guide options, such as biomass in forests, hydro near gorges.

In summary, the community-focussed output contained within part two of this report further compounds the need for the sector to work more closely with rural communities to facilitate the adoption of green energy solutions.

Appendices

Appendix A: Projected scenarios to prompt discussion at the expert focus group

Scenario one - Maximising information

- 24 months from present
- We undertake to maximise information across the County about existing schemes and technology
- Every district to have a retrofit office
- A county wide website featuring a guide to schemes, range of technologies and local suppliers
- Local examples of best practice in private homes that people can visit

Scenario two - building customer demand

- A six-year time frame
- Focus on skills for installation, a focus on supply side
- Developing preconditions – insulation
- Tackling myths about the tech
- Focusing on creating demand not any particular technology
- Climate change as part of a wider package of resilience

Scenario three - Local renewable energy revolution

- 16 years from present
- Focus on lowering costs by local production and generation
- Autonomy for rural communities in energy production
- Localized combinations of technologies
- Broader focus on bill reduction through smart appliances
- Opportunities for micro-supply

Appendix B: Examples of actors within the rural electrification landscape in Gloucestershire

Actor (ordered alphabetically)	**Role/Connection**
Centre for Sustainable Energy (CSE)	Bristol-based independent national charity founded in 1979. It works to tackle the climate emergency and alleviate fuel poverty by supporting individuals, communities, and organisations across the UK. CSE provides free energy advice, conducts research and analysis to inform local and national policy, and collaborates with local authorities and community groups to promote sustainable energy practices and improve energy efficiency. CSE services cover South Gloucestershire. Pocket of activity: The South West Net Zero Hub has commissioned CSE and Regen to carry out the initial three stages of Local Area Energy Plans in Gloucestershire.
Climate Action Groups	Volunteer-run organisations that connect individuals to work together on tackling climate change by sharing information and supporting collective action. While their primary focus is climate change, energy forms a crucial part of their work, enabling them to support rural electrification by raising community awareness and advancing renewable energy adoption.
Climate Leadership Gloucestershire (CLG)	CLG is a public sector partnership of all Gloucestershire councils, NHS, police, and academia working together to develop and lead county-wide solutions to tackle the climate emergency and achieve net zero by 2045. CLG acts as an interdisciplinary strategic coordinator, shaping plans and recommendations

	that influence the decisions and policies made by local authorities and other partners across the county.
Community Energy Groups	"Community energy refers to the delivery of community-led renewable energy, energy demand reduction and energy supply projects, whether wholly owned and/or controlled by communities or through a partnership with commercial or public sector partners." *Definition from Community Energy England*. Community energy groups enable rural households to invest in local renewable energy projects through share offers. These projects reduce energy cost for community buildings, provide financial returns to investors, keep economic benefits within the rural community, support local electrification, and act as educators promoting renewable energy.
Department for Energy Security and Net Zero (DESNZ)	UK Government department responsible for "UK energy security, protecting billpayers and reaching net zero" *Definition from GOV.UK* Key national player, shaping policy and funding to support renewable energy projects across the UK, including rural areas.
Distribution Network Operator (DNO)	Licensed companies that own and operate the network of cables, transformers and towers that bring electricity from the national transmission network to businesses and homes. Repairing and maintaining the current network.
Distribution System Operator (DSO)	Manages the operation of the distribution network, ensuring the balance of supply and demand. DSO's handle the integration of renewable energy, monitor the flow of electricity, and maintain grid stability. They focus on optimising the grid's performance and efficiency. Strategic, forward-planning.

	They have a dedicated engagement team with a Strategic Engagement Officer for each license area who collaborates with local authorities to support the development of Local Area Energy Plans.
Energy consultancy	Energy consultants assess how individuals and organisations use energy and provide advice on improving efficiency, reducing costs, and lowering environmental impact. They guide clients through sustainability planning, renewable energy options, regulatory compliance, and managing energy projects to achieve net zero goals. Some energy consultants operating in Gloucestershire: 1. Low Carbon Estates 2. Spring Environmental 3. Cotswold Energy Consultants Key players acting as intermediaries between rural households and technical/regulatory systems.
Fairer Warmth App	Digital platform designed to provide individuals with information on improving energy efficiency and reducing household energy bills, as well as identification of potential grants and support schemes available to assist with home improvements. Fairer Warmth is part of the Furbnow service. The project was funded by Innovate UK and led by the Centre for Energy Equality and ran from November 2022 to March 2023. Key player acting as a provider of accessible energy efficiency advice and a connector between rural households and funding for home electrification.

Furbnow	Plans and manages home energy improvements from start to finish. Surveys homes, creates a plan, produces specifications, finds, vets and coordinates installers, and manages the entire project. Works with all types of homes and handles all energy efficiency upgrades. Covers nearly all of England and Wales, including Gloucestershire, where councils have partnered up with Furbnow. Works closely with Warm & Well. Key player acting as a one-stop service managing home energy improvements from start to finish, working with trusted partners.
Greener Gloucestershire Community Climate Change Fund	Set up by Gloucestershire County Council, this fund supports local projects aimed at reducing carbon emissions and raising awareness about the climate emergency. Eligible groups can apply for grants up to £4,999 to help fund their projects, with a total of £50,000 available in grant funding. Submissions will be accepted until Monday, 9th June. Grant funds play a key role in rural electrification by providing financial support for renewable energy and carbon reduction projects.
Housing associations	Housing associations like Bromford are key players in the decarbonisation of social housing.
Lobby group	An organisation formed to influence government policies or legislation on specific issues. Power for People is one of the lobby groups that campaigns for community renewable energy.
Local Area Energy Planning (LAEP)	LAEP refers to the adjustments needed to shift an area's energy system to achieve net zero emissions within a set period. It also involves engaging local communities to help shape the planning of pathways and scenarios for designing future energy systems. A LAEP establishes a long-term vision for

	an area but is typically reviewed and revised every 3-5 years. Key stakeholders involved in LAEP for Gloucestershire include local authorities, NGED DSOs, DSO Strategic Engagement Officer, and the CLG. South West Net Zero Hub has commissioned the CSE and Regen to advance LAEP stages 1-3 in Gloucestershire. LAEP are not formally commissioned or mandated by central government.
Local Authorities and District Councils	Play a key role in facilitating funding, educating and influencing individuals and communities to achieve net zero, supporting the delivery of renewable projects, providing skills development, employing officers such as Retrofit Engagement Officers, managing planning, and coordinating with County Council to deliver strategic oversight and support for Local Area Energy Plans.
National Energy System Operator (NESO)	Publicly owned company that oversees whole energy system at national level. At the strategic energy planning level, NESO oversees three plans: the SSEP, the Centralised Strategy Network Plan (CSNP), and the RESPs.
National Grid Electricity Distribution (NGED)	Electricity distribution network operator (DNO) for the Midlands, South West and Wales. Its network delivers electricity over a 55,500 square kilometre service area to over 8 million customers.
Power for People	Not-for-profit organisation founded in 2017, working to accelerate the UK's transition to 100% clean energy in a way that benefits local communities. It is funded by UK registered trusts, various organisations, and individual donations.

	Power for People runs campaigns that engage citizens and local communities to lobby their elected representatives for changes in the law or government policy.
Regional Energy Strategic Planners (RESPs)	Responsible for regional energy planning. Develops strategies that align with both local priorities and national energy goals. NESO is responsible for delivering the RESPs and is commissioned by the UK, Scottish and Welsh governments. LAEP feed into and inform RESP, but the influence is limited. Key players that bridge national and local level to guide regional energy strategies.
Rural households	Consumers of electricity. Line of influence between rural households and electricity suppliers: rural households' preferences and choices influence the products and services that electricity suppliers offer. Line of influence between rural households, community groups, and lobby groups like Power for People: rural households can directly influence national energy law and policy by joining community energy and lobby groups, which act as a bridge between local action and national advocacy for change.
Severn Wye Energy Agency	An independent, evidence-based sustainability charity founded in 1999, working across Wales and the English border counties. They provide independent advice on energy efficiency and renewable energy, helping individuals, tenants, homeowners, landlords, businesses, and community organisations reduce fuel poverty, cut energy costs, stay warm, and support the UK's net zero goals.

	Key player as they act as a bridge between rural communities and energy knowledge, facilitating access to advice and support for sustainable energy adoption.
South West Net Zero Hub	Offers free support to public sector and community projects from early development to delivery. Funded by the Department for Energy Security and Net Zero. Also serves as an intermediary funder between the DESNZ and local communities and public sector bodies.
Strategic Spatial Energy Plan (SSEP)	The SSEP outlines the UK's national framework and strategy for energy policy. It focuses on tackling key challenges like energy security, cost, and sustainability, while also providing a national structure to guide the development of energy infrastructure and investment decisions. RESPs inform SSEP. NESO is responsible for creating the SSEP. It is a three-level energy planning system (three tier system), consisting of SSEP, RESP, and LAEP's. However, the SSEP will not include local plans and policies.
Warm and Well	Provides free home energy efficiency advice through trained advisors: supporting households with energy saving tips, help accessing and administers grants, information about renewable technologies, assistance with energy bills reduction, and local installer and tradespeople referrals. Free home visits may be available. The Warm and Well team has been providing free local home energy advice since 2001. Advice line covers Gloucestershire and South Gloucestershire. Managed by Severn Wye Energy Agency. Works in partnership with various local organisations, authorities and public bodies.

Additional initiatives

AURORA project	Launched in December 2021 in the Forest of Dean as part of the European 'Green Deal' initiative, the EU-funded AURORA project aimed to create the first generation of Near Zero-Emission Citizens to lead the way in adopting clean energy practices through a citizen led, bottom-up approach. Over three and a half years, the initiative ran in Denmark, England, Portugal, Slovenia, and Spain, focusing on community-driven actions to lower carbon footprints. In England, the Centre for Sustainable Energy (CSE) partnered with the Forest of Dean District Council to run energy awareness workshops, assess solar feasibility across the district, install solar PV on community buildings in Lydney in partnership with Big Solar Co-op, lend thermal imaging cameras to local residents, and create a blueprint for future community energy initiatives.
Forest Community Energy (FCE)	A local resident-led community energy group in the Forest of Dean, developed in partnership with Forest of Dean District Council, the CSE, and Warm and Well, working closely with local residents. Created as part of the AURORA project, it played a key role in delivering community solar, including launching a community energy share offer for the rooftop solar PV installation on public and community buildings in Lydney, as well as promoting energy awareness, and supporting energy efficiency initiatives such as AURORA Energy Tracker mobile phone app. Since December 2024, the AURORA team and Holding the Space have supported FCE towards self-organisation.
Forest of Dean Climate Action Partnership (FODCAP)	A growing network of local communities, businesses, and organisations working together to drive urgent and fair climate action. It aims to build

	net-zero and climate resilient Forest of Dean by connecting stakeholders, sharing information, and supporting collaborative initiatives. FODCAP has supported projects like the Climathon and one of the FODCAP priority action areas is energy.
Gloucestershire Community Energy Co-op (GCEC)	GCEC aim is to enable community energy for community buildings. They take investments from the public and use that capital to fund rooftop solar and other renewable energy assets. They sell the electricity generated to their clients at a tariff substantially less than their grid tariff and use that income to pay interest and repay investors when they want to withdraw their funds.
Gloucestershire Rural Community Council (GRCC)	GRCC provides a wide range of services aimed at fostering community development, resilience, and well-being. It administers community funding schemes and supports both urban and rural communities to access funding and deliver various projects, acting as community-based intermediary.
Gloucestershire Youth Climate Group	A county-wide initiative in Gloucestershire that engages young people aged 16 to 25 in climate action. The group also aims to advocate for policy change around climate at district and county level. One of its aims is to support the transition to a low-carbon, climate resilient future. Run by Creative Sustainability.
Local Climate Action Networks of each district	Examples include: 1. Gloucestershire Climate Action Network (GlosCAN) 2. Nailsworth Climate Action Network (NailsworthCAN) 3. Berkeley Vale Climate Action Network 4. Bisley Climate Action Network 5. Cotswold Climate Action Network
Local renewable providers	Examples include: 1. Eco Mirage 2. Cotswold energy Group

	3. Solr 4. Forever Green energy 5. County Energy 6. Greenshop Solar 7. My Power Solar Professionals 8. Redbridge & Sons 9. Locogen 10. Green Homes Gloucestershire 11. Britwind 12. MakeMyHouseGreen
Pockets of activity	In the Forest of Dean: • Forest of Dean Energy Climathon • The Forest Fast Followers Programme • Thermal Camera Loan Scheme • Two Rivers Housing Pilot Project In Stroud: • Stroud Area Community Energy Network (SACEN) • Stroud Energy Commons In Tewkesbury: • Maisemore Solar Farm In Cotswold: • Thames Head Energy • Rural housing development by Bromford at Down Ampney • Cotswold Home Solar by Cotswold District Council Cheltenham projects (not rural) • Future Fit Homes Cheltenham Project
Stroud Area Community Energy Network (SACEN)	This network of individuals works alongside Gloucestershire Community Energy Co-op and Nailsworth CAN to support and promote community

	energy projects in the Stroud area. It collaborates with local groups, landowners, and councils to plan, fund, and install renewable energy solutions. SACEN also educates communities through events, networking, and campaigns.
Thames Head Energy	A community energy social enterprise operating in Gloucestershire County within the boundaries of Cotswold District Council. The scheme is run by volunteers, with Cotswold Energy as their chosen supplier for renewables.
Two Rivers Housing Pilot Project	Two Rivers Housing partnered with Stroud District Council and Cheltenham Borough Homes to apply for funding from the Department of Business, Energy & Industrial Strategy (BEIS) to run a retrofit pilot project in a small number of homes across Gloucestershire, including Blakeney, Forest of Dean in 2020. They received £500,000 in government grants from the Social Housing Decarbonisation Fund to support this initiative. In 2025, they received further funding of £4.56m from the Warm Homes: Social Housing Fund to improve energy efficiency across households in Gloucestershire.