

Business, Energy and Industrial Strategy Committee

Oral evidence: Decarbonising heat in homes, HC 110

Tuesday 8 June 2021

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Members present: Darren Jones (Chair); Alan Brown; Judith Cummins; Richard Fuller; Sarah Owen; Mark Pawsey; Alexander Stafford.

Questions 1 - 65

Witnesses

I: Ed Dodman, Director of Regulatory Affairs, Ombudsman Services; Stephen Knight, Managing Director, Heat Trust; Caroline Bragg, Head of Policy, Association for Decentralised Energy; Matthew Copeland, Policy Manager, National Energy Action.

II: Jenny Hill, Head of Buildings and International Action, Committee on Climate Change; Neil Kenward, Director of Strategy and Decarbonisation, Ofgem; James Richardson, Economist, National Infrastructure Commission; Polly Billington, Chief Executive Officer, UK100.



Examination of witnesses

Witnesses: Ed Dodman, Stephen Knight, Caroline Bragg and Matthew Copeland.

Q1 Chair: Welcome to this morning's session of the Business, Energy and Industrial Strategy Select Committee for our penultimate hearing in our decarbonising heat in homes inquiry. For our first panel this morning, I am delighted to welcome Ed Dodman from Ombudsman Services, Stephen Knight from Heat Trust, Caroline Bragg from the ADE, and Matthew Copeland from National Energy Action. I should declare my interest: my wife works for the ADE, but I can confirm that it is not Ms Bragg, probably much to her relief.

Moving on to questions, my first question today is to Matthew, please, from the National Energy Action organisation. It is about the level of consumer understanding. We have had evidence that some polling shows that consumers do not really see their heating as a carbon-intense process, even if they are climate-conscious, and they do not really understand the alternatives to the standard gas boiler. Are we starting to see that change, or are there some fundamental problems in terms of consumer understanding in being able to make these changes that we need to see over the coming years?

Matthew Copeland: There is still some difference between the current understanding of what needs to be done and what actually needs to be done. At the same time, that is increasing. My expertise is with fuel for low-income and vulnerable households. You can see from the stats from the green homes grant that 75,000 low-income households applied for that grant, which was quite a lot in the timeframe. You can see the amount of interest that was there. Still, a lot more needs to be done in order to engage households.

There are two things from an engagement point of view that need to be considered: raising awareness of what is available and what needs to be done and the benefits of making change, and also the practical advice to help people to do that. They are very different things, and different actors need to do things as well. The Government need to talk about the benefits of changing, but households really need extensive handholding, especially in some of the poorest, most vulnerable households. There is some demand there, but we are lacking in some of the engagements to get people through. We are definitely lacking in overall advice provision, definitely in England, to give the advice to get people to make the change in the first place.

Q2 Chair: Ed, from Ombudsman Services, we often talk about consumers needing to understand their bills and tariffs, and making sure they are switching to get the best deal with their standard gas and electricity tariffs. From your perspective, what work do we need to do to make sure that consumers understand how these different technologies work and get charged in different ways?



Ed Dodman: That is really important. Just to build on what Matthew said and to start with some positive views, there is this growing awareness of green issues, and net zero in particular. We did some research last year that suggested that the green credentials of energy suppliers are becoming a more important factor in consumers' decisions on who to go with, which is encouraging.

On the other hand, where there is a disconnect is on people's understanding of their personal responsibility, or the responsibility we will ask of them. I know Ofgem is on the next panel; it published some really interesting research recently, which suggested that most people in this country already think they are doing enough to contribute to net zero in their own homes. That is a remarkable position to be starting from, really, when we are talking about engagement. There is clearly still a hearts-and-minds piece here.

In terms of people understanding what is required of them and what it means, we need to split it into those two bits. There is still that hearts-and-minds piece to be won. Then individually, when we think about who can offer that advice, we need to recognise that it might be a combination of skills. Most people now appreciate that this is not simply about swapping old technology for new in people's homes; it is an opportunity to influence behaviour as well. We need to recognise, therefore, that there might be a combination of skills. To your question, some of that will be understanding what it means for customers' bills, how they use this new technology and what differences there are with the existing energy supply that they have.

Q3 Chair: Coming to Caroline Bragg next, we understand that consumers find it difficult to identify where to even find different technologies or to know what to replace their gas boiler with. Presumably that consumer confusion is a problem for installers and manufacturers in being able to supply, sell and distribute their technologies, if consumers do not really know where to find them or what to pick.

Caroline Bragg: Yes, exactly. I would agree with many of the comments that have been made so far. Adding to that, there are some important international examples that we can look at in order to do this more effectively going forward. If you look, for example, at the use of retrofit co-ordinators for energy-efficiency retrofits, both in Scandinavia and through the Better Buildings programme in the USA, they were successful in providing local tailored advice, based on individuals' personal circumstances and what would work best for them. That is the kind of provision that we need to make sure that we have, to get the right heating technology in the right place for the right people.

Q4 Chair: Lastly from me in this section, Stephen Knight from Heat Trust, Citizens Advice told us that we needed a national awareness campaign to educate consumers, not just about their choices around different technologies but how they work in their homes, and their rights. From a Heat Trust perspective, do you have a particular view on that?



Stephen Knight: From a Heat Trust perspective, our focus is very much on protecting consumers of district heating and communal heating systems. We are a specialist for that particular type of heating. What I would say is that the discussion about the technology of how you source the heat, whether you are burning gas or whether you are using heat pumps and so on, is one question, but there is the issue of how you get that heat into people's homes and whether you do that through individual heat sources or whether you do that through a communal network, a heat network, a district heating system. That is at least part of the question about how we can decarbonise heating in homes. We should not overlook that issue as well, in terms of the technology.

That changes the relationship that the consumer has with their energy supplier very much. If you think about a gas boiler, you have a relationship in terms of the gas supply but you do not have a relationship necessarily in terms of the running of the boiler, which is very much your own within your home, whereas, if you are on a district heating system, your relationship is very much with a supplier who is providing the boiler as well, albeit it is a remote heat source, as well as the network that brings that heat to you. That very much changes the relationship that consumers have with their energy supplier. We must not overlook that.

Q5 **Chair:** Presumably for heat networks, you are either living in a relatively new-build environment, where the heat network has already been installed, or you might be in a high-density development with retrofits; for example, we have some blocks of council flats being retrofitted in Bristol. Other than those environments, am I right to say that consumers would assume that they are not on a heat network unless someone starts digging up the road and laying the infrastructure?

Stephen Knight: What we must not forget is that there are a number of heat networks that have been installed, going back to the 1950s. The Coal Board installed a lot. You have very historical heat networks that were installed in council estates, and we see some on housing association estates as well. Quite often, they are communal heat systems, or they are a set of boilers that serve a whole estate or a block on that estate. Sometimes they are unmetered supplies going to people's homes. There is a whole history of the very old ones, the ones that have been around a very long time, and also the new-build district heating systems, which, as you say, are often new-build developments going up much more recently. There is a big mixture.

Historically, of course, we have not done as much district heating as many other countries in Europe, or even in the East. That is because we have had a historic reliance on very cheap natural gas and gas boilers. That has been the way in which we have gone. Other countries have not necessarily done that. Perhaps, in some ways, they are in an easier situation when it comes to decarbonisation, because they do not have to decarbonise what is in everybody's house; you just have to decarbonise



the communal heat source, which in many ways is a much easier thing to do.

Q6 Chair: This is the last question from me before I hand over to colleagues on the Committee. Who should be responsible or how should responsibilities be divided between Government, regulators, energy companies, councils and whoever else should be a stakeholder in terms of engaging consumers in this discussion? We have had the evidence from Ms Bragg that there should be a co-ordinated system, which sounds like a great idea, but are there any other thoughts about who should be responsible? At the moment, it does not seem to me that anyone is really explaining to customers what is happening here.

Caroline Bragg: With respect to heat networks specifically, just as Stephen says, there is a slightly different relationship with the household in that circumstance. If we are, for example, to introduce heat network zones in future, which will be areas where a heat network is the most cost-effective path for decarbonisation, then we would propose that local authorities or an equivalent local body should be given the powers and the resource to do consultations and significant participation and discussion with citizens and also local businesses, ahead of zones being introduced.

Matthew Copeland: I just wanted to say quickly that different households will require advice from different sets of people, particularly for the sorts of households that NEA helps—low-income and vulnerable households. They really value having advice from trusted third parties, not necessarily from their suppliers, where there might be a bit of a lack of trust at times. Charities like NEA, and sometimes a local authority as well, have a significant role to play in providing that advice that they can trust and know they can make a good decision on the back of.

Stephen Knight: Given the scale of what is needed in terms of decarbonisation and also the degree to which the solution really has to be tailored to the individual circumstances of the street, the neighbourhood, the locality, it is very difficult to imagine anybody but the local authority having a key leadership role in delivering that, particularly at the sort of scale that is needed. We have to empower local authorities.

The other issue here is particularly when you are moving to a heat network. From a consumer perspective, there is a very big shift from what is a competitive market with gas and electricity, where you can switch supplier, to where, if you are being joined to or if you are joining a heat network, you are tied to that supplier in perpetuity, with no opportunity to shift. Therefore, it is really critical that there are consumer protections in place to ensure that consumers are not ripped off as part of that relationship. That is really critical, and I am sure we will come to that later. Because it changes the relationship and given the lack of competition that exists in the other energy markets, it is really critical that there is some accountability to how things are delivered. Therefore, as well as regulation of the market, which we will come to, a key role for



leadership for the local authority provides communities with a certain level of local accountability as well, which is really critical.

Q7 Alan Brown: Matthew, if you look at costs, we have heard from academics that the move to low-carbon heating will entail substantial costs. Indeed, the Committee on Climate Change has estimated a total cost of £250 billion. If these costs are not distributed fairly, what impact will this have on consumers? On the flip side, how do we make sure upfront and running costs can be distributed fairly?

Matthew Copeland: That is a really key question. It is worth not just considering how the costs of doing these things are distributed, but how the benefits are distributed as well. Before I get into the meat of it, I will just say that, while policies like the energy company obligation and warm homes discount are paid for on levies, on bills, which is a fairly regressive way of doing it, they are very progressive in the way that they help consumers. NEA was really pleased to see that those things have been expanded.

Some stuff that we are paying for is distributed very unfairly. The green gas levy, for example, that the Government are currently pushing forward will be a cost on everyone's bill—on the standing charge. It will be the same for a low-income fuel-poor household as it will be for a big business. That is distributionally unfair from a cost perspective, and it is not really helping low-income, fuel-poor and vulnerable households from a benefits perspective either.

The same could be said for things like the feed-in tariff as well, where that disproportionately went to more wealthy families but was levied on bills. Something like the renewable heat incentive was relatively good and tax-funded, but, on the flip side, it did not support low-income households particularly well in the way that the policy was run. There are lots of different ways you need to think about it.

Also, I would like to point out that distribution impact can be really complicated. I would like to commend Ofgem for the work that it is doing in assessing the decisions that it makes from a policy point of view and how the distributional impact will pan out for its decisions. It is trying to use that to make better decisions from its side of things. I would really recommend that BEIS takes a similar approach and does real deep-dives on its decisions, to make sure that what it is doing is as progressive as possible.

In terms of the impacts of these decisions, where there are bad distributional impacts, often that means higher costs for low-income households. We know that low-income households ration their energy. They ration their energy as their income reduces, but also as energy costs increase. That is really dangerous. Rationing their energy means living in a cold home, which means bad physical health, bad mental health, more adverse impacts for children in their development, and broader social issues as well.



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That can be mitigated. The really key thing is that energy efficiency needs to come first. We should have a fabric-first approach. When I say “energy efficiency”, I mean the thermal demand of the building should be reduced as far as possible before we try to decarbonise the heating supply. That reduces the running cost for whatever technology you go down. That is really important. That is a solution that needs to be there, whatever the technology. For capex, particularly for low-income, fuel-poor households, it is really important that people living in fuel poverty do not pay for this stuff and that this stuff is grant-funded as much as possible.

Traditionally, this stuff has been paid for through bills. There are good and bad ways of doing that. Energy efficiency is key, and fuel-poor households should not have to pay for this stuff. It should be grant-funded, either through things like ECO or preferably through things like RHI, which is Treasury-funded.

Q8 Alan Brown: As you say, RHI is Treasury-funded. For you, in terms of support for fuel-poor households, it should come from general taxation rather than further levies on bills.

Matthew Copeland: Yes. In the best-case scenario, things would be funded through general taxation. There should be a drive to reduce the quantum of levies on bills, but there may be outcomes where levies are placed on bills. It is actually really important to understand how to do that and how to mitigate those impacts as well. First, it is really important, if there are levies on bills, not to put it on the standing charge, like the green gas levy will do. That is an incredibly regressive way of doing things and we would never recommend that.

Secondly, there are things that could be done to mitigate the impact of levies, like exempting low-income households from those costs, exempting prepayment-meter households from those costs, and maybe something like a rising block tariff, so a number of kilowatt-hours without policy costs attributed to them, which is something that Dieter Helm recommended a long time ago—it was not so long ago, really; it feels like a long time ago—in the Cost of Energy Review.

Q9 Alan Brown: Caroline, do you want to add anything, particularly about the levies between electricity and gas bills?

Caroline Bragg: I would only add that I agree with what Matthew is saying. We have seen modelling recently that is showing that if you simply shift, for example, levies that are currently on electricity bills to gas, you can have a significant impact on bills, raising average bills about £70 a year against the counterfactual by 2030, and £65 a year for the fuel-poor. Therefore, there is a need to explore whether those levies can be moved to Government expenditure.

Q10 Alan Brown: Just sticking with you, Caroline, Stephen touched on this, but we have also heard as a Committee that, in terms of installing low-



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carbon heating systems, it is going to vary depending on geography, on-grid or off-grid and building type. There is a whole raft of different solutions that need to be considered. How do the Government make sure that there is equity in these different solutions in terms of a fair and attractive offer to install low-carbon heating systems and make that available for all consumers?

Caroline Bragg: It is an extremely good question. If I am totally honest, I don't think we have the full answer to that yet. For example, exploring the introduction of heat network zones is a policy that has worked elsewhere in starting to address that question, because it looks in some detail at the local waste heat resources that you have in a local area, the building stock that you have, for example, and should get you to the right answer in respect to where heat network zones are best. In terms of creating a sustainable framework across heat network zones, areas where heat pumps are best or where we may use other options, including, for example, biomass boilers, as well as this broader question around how liabilities created in future, such as things like CCUS, are going to be recovered, that is still something that no one yet has the full answer to.

Q11 **Alan Brown:** I will just throw that out there. Caroline says no one has the full answer. Does anybody else want to have a pitch at giving us an answer? Ed, do you want to come in?

Ed Dodman: I am afraid it is not a complete answer. I just would like to add a point of principle, which we think is really important to consider. The first thing is that, as a principle, it does not feel right to us to financially penalise people who are prepared to make this change. That feels like a fairly obvious point to us. They are potentially doing this for the collective good, and it feels right to make that financially viable for them.

Importantly, though, it is important to recognise the limits of price signals. We only need to look close to home to realise that. There are millions of people, energy consumers, every year who choose not to switch energy supplier, even though that could save them hundreds of pounds. I am sure a lot of those consumers are perfectly happy with their supplier; I am sure many are not. This is about more than cost; it is about hearts and minds as well.

The point I would just like to make, though, is that we would be concerned if that principle then meant that you just moved the deckchairs and lumped the costs on the people who do not decide to do this for whatever reason. We would be concerned for two reasons. One is that people who do not take up these solutions will do so for a variety of reasons: maybe they are renting; maybe it is the personal geography, as you mentioned, or the personal situations of their homes.

Secondly, intuitively, those people who do not make the changes are probably more likely to be disengaged and vulnerable for other reasons.



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There is growing evidence across other sectors to back this up. We only have to look at something like the EV market to see that that is probably true. There are other examples in areas like communications.

We do not take a position on levies or wherever they should go but, if it meant that more costs were going to land on the people who don't change, that is a concern for those reasons.

Q12 Alan Brown: That probably goes back to the Chair's opening question. In terms of engagement and making sure people are not disengaged, who has the main responsibility for driving that? When should that conversation take place?

Ed Dodman: Given what we know about people's awareness of their own responsibility and what we will be asking them, there probably is a need for some kind of co-ordinated, centralised campaign. It would be really interesting to see how the Let's do Net Zero thing that the Scottish Government launched last week does. It may be that something UK-wide is needed.

One of the relationships that we have not mentioned so far is that of the energy supplier. That is a potentially really important relationship. They, in theory, know their customers' energy needs better than anybody. We have seen a really encouraging move from some suppliers viewing energy as a commodity to viewing it as a service and almost a consultancy. That is a relationship we need to foster. This is not all centrally delivered. Relationships like that are also really important.

Q13 Alan Brown: Would that need regulation? Surely, if I am an energy supplier and I have supplied gas, my long-term interest is a switch to hydrogen to keep people feeding off the gas network, whereas that might not be an appropriate solution; it might be electrification for some people. How do you make sure that does not go wrong because of conflict of interest?

Ed Dodman: That is a really important point. There may be a role in terms of setting standards and expectations about how suppliers interact with consumers. What we are saying is that we think it is a very important relationship, because of the existing relationship suppliers have and because of what they know about consumers and what might suit their needs.

Q14 Alan Brown: If I just go to one more topic, because I realise people are fed up with my voice, if we look at the energy-as-a-service model, there are obviously going to be strengths and opportunities looking at energy as a service for domestic heat decarbonisation. This may be for you, Ed. What are the strengths and weaknesses in that type of approach?

Ed Dodman: The energy-as-a-service model has the potential to benefit consumers from simplifying things. It is quite a complicated set of markets at the moment. The move from looking at energy as a commodity to looking at it as a service is very welcome, and that is the



right way to move. We would have a couple of concerns around it that potentially could hinder us in this. One is if outsourcing your energy efficiency to somebody else as a service disconnected you from the behavioural change that you might need to make. If it is someone else's problem, do I then need to do my bit? That would be a real loss, because behavioural change is a very important part of this.

Secondly, my experience of energy as a service is not enormous, but one of the experiences we had from the green deal was that when you introduce different ways of financing these things, you also introduce the possibility of confusing customers. We just need to make sure that, where different service models are designed, it is done in a simple way, in a way that consumers can understand and in a way that does not restrict consumers from doing other things—moving house or whatever it is. There is potential for simplifying and bringing in new skills that consumers don't have.

Those are the two things that we would need to guard against: separation from your own energy usage and the potential to complicate things.

Caroline Bragg: One of the great benefits of something like the energy-as-a-service model is that it unlocks quite a lot of opportunity for people to use their heating flexibly, so that they can save money or actually even earn from flexibility for the energy system. That is a really important part of this. We should not lose the opportunity to do that.

More than that as well, looking at, for example, other industries that have already gone this way, the aero industry already started a power-by-the-hour business model some time ago. The other thing that it does is it focuses the attention of the industry much more on, for example, reducing outages and ensuring that operations and maintenance are going well, which is also important.

The final thing that I would say is, if you look at, for example, the ESC Smart Systems and Heat trials, the use of, for example, a heat plan that includes warm hours was more salient to people than charging by the kilowatt-hour. From my understanding, that is what they found.

Q15 **Alan Brown:** Caroline, is there any way that using the energy-as-a-service model can reduce the course of decarbonisation or be used to drive a more holistic approach?

Caroline Bragg: Energy as a service is one way in which we could unlock a lot of this flexibility. The benefits of flexibility, particularly in reducing overall system costs as we increase electrification, are very clear. If you look, for example, at very recent work that has been done by Imperial College and the Carbon Trust, they found a saving of about £16 billion per year by 2050. That cuts across scenarios, whether that is the hydrogen-dominated or electrification. Indeed, within that study they found that just maximising the use of hot water tanks as a cheap form of



storage resulted in between £500 million and £1 billion of savings per year to the system.

Q16 Judith Cummins: We have heard about engagement, we have heard about costs and we have heard about winning hearts and minds of the consumer, but we are now turning a bit to when things go wrong. We have also heard from MPs and their constituents that there have been problems with low-carbon heating systems being improperly installed. How widespread is this issue and what have been the main problems? Specifically, what should energy companies be required to do to ensure that high standards are upheld for all installations of low-carbon heating systems? May I start with Ed Dodman and then turn to Stephen Knight?

Ed Dodman: I will perhaps answer this in two parts, first on district heating, so heat networks. If you are on a heat network and your heat network provider happens to be a member of Stephen's organisation, Heat Trust, then you also have the right to come to us with an unresolved complaint. We see unresolved complaints from a proportion of the district heating market. We see very similar problems to what we see with core energy. That is typically problems about billing, disputes over usage or customer service. We do, though, see proportionately more problems around supply, be that intermittent problems or outages. We see complaints from customers who are further away from the heat source and are having problems with supply. There is a different flavour to it. Because of the restrictions Stephen mentioned around switching, we also see complaints like, "I was not told about this when I moved in. It is not fair that I cannot switch." They are very similar complaints, but there are a few different aspects to it as well.

On other types of decarbonised heat, they largely fall outside of our remit today. It is probably quite telling that there would not be a single organisation or person that the Committee could ask to give you a view of what all the problems are across those. That is something that the Bonfield review five years ago identified. The route to address for customers is patchy, depending on who your supplier is, whether they are a member of a scheme, whether they use redress.

Our experience in those technologies comes through the green deal, so we do have some experience. That was typically around problems with installation. We still accept complaints from customers today, even though the scheme largely ended five years ago, around problems that are just surfacing now. We saw complaints about the scheme itself, because of its complexities and the way customers were navigating. The big difference for me between core energy and the heat networks bit that we look at is that those problems are fed back into the system to try and improve things for all customers.

Currently, with decarbonised heat largely, individual customers may get justice if they are lucky, but actually those learnings are rarely then brought back into the system to improve things in the round. Again, that is the big difference for me at the moment.



Q17 **Judith Cummins:** What system do you think should be in place to redress that imbalance? Also, what compensation should there be for households that receive poor-quality installation? *[Inaudible]* the process *[Inaudible]*.

Ed Dodman: You broke up, Judith. I think your questions were around what redress should look like for these markets and also a question about compensation. Is that right?

Judith Cummins: Yes.

Ed Dodman: This might surprise you, given that I am the ombudsman, but I don't think the answer to this is just redress. I think this is a much bigger question around protection.

If we take the core energy market as an example, it has its problems, I will admit, but in terms of a protection framework it is robust. We operate what we call a tripartite model with Citizens Advice, which provides advice and advocacy, Ofgem, which is the regulator, and then us as the ombudsman, providing the strategic redress. The real benefit of that system is that we use our data insight to help work together to improve things for all customers. I think we need to think about this in a similar way. I am not suggesting it is exactly the same model or the same people, but what we have seen in the past is that we have only ever solved problems for individual consumers, and to answer your question, that is not the real benefit of redress. The real benefit of redress is using that insight to improve things for all customers. I am not saying it needs to be the same, but something similar, which has that wraparound protection, is the answer.

On your question around compensation, there is a point of principle for me, which is, if we are asking consumers to make big changes to their homes and lives for a collective good, and things go wrong, we have a responsibility to them. Again, I don't have a particularly strong view about how that should be paid, if it is compensation, but where we are asking people to make decisions that they would not normally make, we have a responsibility to them.

Stephen Knight: I very much agree with what Ed said. The starting point for me is that what consumers really want is a system that doesn't fail, that is reliable and works all the time, 24/7, and provides a warm environment or a comfortable environment in their home. That said, obviously it is unrealistic that every system is going to be 100% reliable. Therefore, we do need proper redress and proper standards for suppliers to come up to and be measured against, audited against, tested against and held accountable against where that doesn't work.

Just to pause for a moment on the reliability side, one of the things that is absolutely critical is that we do have much more rigorous technical standards that systems have to comply with, to ensure that they are reliable from the start, when they are installed and built. That is



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something that I know BEIS is developing. There are some voluntary technical standards at the moment that hopefully most new systems are using, but they need to be in law so that every new system that is built has to be built to a reliable, high standard, because that is the starting point: we want systems that work first time, without the failure.

Moving on to failures, heat networks, for instance, are not regulated in the same way that gas and electricity suppliers are regulated at the moment. That needs to change. In the absence of that, the Heat Trust was developed by the industry, with BEIS, Government and others, six years ago. That provides, for those suppliers that are members of our scheme, similar protections to consumers as they would get if they were a gas or electricity consumer, in terms of a whole range of customer standards. They are things like, if your supply fails, it should be fixed within 24 hours and, if it is not fixed within 48 hours, you start to benefit from compensation payments.

Obviously, we don't want any of that, because we don't want the system to fail in the first place, but it does provide a certain level of accountability and redress. We provide access to Ed Dodman's services in terms of the ombudsman. We provide a whole range of standards that we expect suppliers to live up to in terms of things like transparency, information to consumers, keeping registers of vulnerable consumers and so on.

What we cannot do as a voluntary scheme but what a regulator is going to have to do is look at pricing because, as we spoke about earlier, this is a market in which there is no choice to switch supplier and so on, so you are tied in for life, essentially, for the building, to one supplier. That means a regulator is going to need to look at price, particularly where a private supplier is providing heat. That will need to be regulated. Technical standards need to be regulated.

At the moment, our Heat Trust scheme covers about 11% or 12% of those consumers connected to heat networks. That is a relatively small percentage. Most of the members of our scheme are relatively large district heating schemes and, as I said, the heat network market is dominated by lots of very small communal boilers and communal heating systems, some of which are very old. There are an awful lot of local authority and housing association-run heat networks that are not members of our scheme. Those consumers obviously don't get any protection. They don't get access to an energy ombudsman. They don't get access to the standards that we insist that suppliers who are members of our scheme adhere to, such as 24/7 reporting of faults and so on.

What I would say is that we talked a little earlier about a different relationship. If you are a gas consumer with a gas boiler at the moment, occasionally the gas network will go down for one reason or another, or the electricity will go down if you have electric heating; you will have



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power outages. Most of the time when you have a heating failure, it is not due to the gas network going down; it is because your boiler is broken or something has gone wrong with your internal heating system.

The difference with a heat network, as I said earlier, is that if the external boiler, the heat centre, fails, that is your supply. That is the regulated bit that you should be protected against. At the moment, consumers are not protected by regulation. If their boiler fails, they have to get that fixed. They have to contact an engineer. Hopefully parts can be found and an arrangement can be made to have that fixed, but it could be down for days or weeks in some cases, if the parts cannot be found to fix it or if you cannot get an appointment sooner.

In a system where your supply goes down and when you are on a heat network, we would very much expect it to be up again very quickly, usually within hours, certainly within 24 hours if they are part of our scheme. Although there might be slightly more outages from failures if you are on a heat network, what you would normally experience is that those outages would be short and they would be fixed quickly. If you have your own heating system and your boiler does fail, as they do sometimes, then you face a much longer-term and bigger problem, and of course a big bill.

Q18 Judith Cummins: How disruptive is the physical installation of the low-carbon heating systems in homes? Does the reality match up with the expectation of the consumer as to how disruptive it will be? I am trying to ask what exactly you can expect in your home when you get an installation. I would be really interested in hearing about that, just to see what someone could expect, how this could be minimised and what energy companies could do to accurately tell people what will happen when they have these heat pumps or whatever installed in their home. Again, if I could ask Stephen, Ed and Caroline if they could give their views. In fact, can I start with Caroline?

Caroline Bragg: Perhaps I can give you an example of what might happen if you retrofit a heat network into a block of flats. You would take out the boilers in the individual flats, and then you would put in what is called a heat interface unit, which looks a little similar to a boiler; it is about the same shape. You either put those in the flats themselves or you put them in the communal areas—in the basement, for example. You might also need to install some pipework in the building and then some small pipes in the flat itself.

The next steps really depend on how that building was designed. In some cases, though it tends to be a minority, you might need to change the radiators or the thermostat controls on those radiators, in order to make it all work together. If there are not already hot water tanks in the flat itself, you might also look to install those, or you could do those communally too. The other part of this is that, exactly as Matthew says, what you want to do is be installing energy efficiencies while you have a



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comfortable home that has a sensible level of thermal demand. That would involve perhaps, for example, cavity wall insulation.

When we talk to the companies that are members of the ADE, that probably means that you would be looking, for example, at a few days or something in terms of actual works in the home to sort all that out, and then maybe a little longer to sort out the broader works in the building.

Stephen Knight: From a consumer perspective, the important thing is that they have clear information and advice on what the impacts of all this will be, how it will be paid for, what impact it will have on their bills, on the supply of the energy and what their consumer rights are and so on. That information needs to come not just from the energy supplier but actually from some third party—a more credible source, if you like, than just the person who is selling you the change.

Consumers need to be supported through those changes and need to feel informed and protected, because there will be physical changes to the building, as has been said, and changes to the relationship they have with energy suppliers in terms of contractual relationships and what they will be supplied with. Explaining all of that to individual consumers and what it will mean to them is absolutely critical, as is ensuring that they have proper support and advice.

Ed Dodman: I would just add two further points. This might seem like a very simple point to make, but the disruption to consumers actually has the potential to begin before installation. Choosing a decarbonised heat, if you have got to this point, is not just, “Go away and look on the internet for an hour and come up with the right solution for you.” You are probably going to have to have someone come to your home and advise you on it. If you are not willing to make the decision, it probably means having someone come back at a future date. That is disruption to people. We should not underestimate that.

We have seen problems with installation. The other point I would just like to make, though, is that is not where the problems end. In fact, in a way, if you have a problem with the installation, it is usually easier to fix because your supplier is probably still there. You may well be within some kind of warranty that you had, or guarantee. As I said, the green deal in its original form ended over five years ago. We still get complaints that come through from customers now who are having problems develop. They may or may not be within warranty. Their old supplier may or may not still be in business.

We see similar things with smart meters. There is sometimes an assumption that once you have the smart meter into customers’ homes the problems end. That is not the case and that is not what we see. We continue to see complaints with things like smart meters throughout the course of their life. I would caution against assuming that, once you have installed these things in people’s homes, that is all you need to do and you can forget about it. That is not what we are seeing.



Judith Cummins: All of my colleagues on the Committee will be aware of what [*Inaudible*] fed a fair few issues into the ombudsman, so thank you, Ed.

Stephen Knight: I just wanted to add one further point. We have a very complex home ownership and legal framework for the way in which that is arranged. Particularly if you are looking at blocks of flats, you often have freeholders, you have managing agents, you have leaseholders and you have tenants, and the issues will be very different for each of those groups. Who makes the decision and what the impacts are will be different for each of those groups. We need to very carefully look at legislation that protects particularly tenants and leaseholders, empowers them to make some of these changes collectively, gives them a say, but also protects their interests, because far too often this complex legal structure of ownership ends up with a deadlock of actually ensuring that nothing ever happens.

I have seen this where I live, where it is impossible to fit cavity wall insulation, because as leaseholders we do not have the right to change the fabric of the building. It would require long legal processes to change leases. This is the kind of legal structure where we need legislation that cuts through all of that and enables these changes to happen, but also empowers the people who need it within those structures so that tenants and leaseholders really do have a say, their interests are protected and they can also empower change where they live.

Q19 **Judith Cummins:** Turning to consumer confidence, which is partly what you are talking about, are there any unforeseen problems that could discourage consumers from installing low-carbon heating technologies? How accurate are these perceptions? What can be done to overcome them?

Matthew Copeland: Particularly on heat pumps, the first thing I will say is that there are trials going on at the moment for electrifying heat. They are looking at some of these disruptions, for example the cost of purchase, the time it takes to install, the noise that an air-source heat pump can create, the space constraints and the consumer perceptions around that pre-installation. They are working with manufacturers to try to minimise all of those things and to try to give more confidence for consumers to make sure that they understand that they will not have as big an impact on their life as they might think they do.

There are a couple of things that we have experienced that have not been identified in those trials. First, there is the fact that with the installation of a heat pump you often have to apply to your electricity network to get permission to install such a heat pump if it goes beyond a certain capacity. That can take time. It can potentially take cost. That can be quite a big disruption just through the hassle of doing it.

Also, there is a lot of the ancillary work that might have to happen as well, for example installing radiators, rewiring a home if it has not been



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rewired, changing pipework to different sizes and different materials, and drains as well. All of this stuff is really important. That practical stuff can have a real impact on households, especially if a neighbour has had a heat pump and they have had to have all that disruption, but your household might not have to. On a case-by-case basis, it will change, but communicating what could happen and what might happen in your instance is really important.

In terms of our experience of whether the perceived disruption matches up with the actual disruption, it is incredibly variable. It depends on the state of your house, to be honest. Does it need rewiring or new pipes or whatever? The unexpected things are the things that really annoy people. It is not the fact that it takes a couple of days to install, because people know that. It is, "The heat pump takes two days to install, but actually we have to get an electrician around to do another day's work and someone else in as well."

I would point out, though, that heat pumps are quite invasive in terms of the amount of work that needs to be done compared to gas boilers, so there needs to be suitable advice for households to make them aware of what could happen and what is likely to happen.

Q20 Mark Pawsey: I just wanted to put a couple of questions to Stephen about the role of district heating in achieving decarbonisation of heating. Stephen, is the principle of district heating and achieving decarbonisation that one big boiler serving a number of houses is more efficient than lots of small, individual heating systems heating individual residences? Is that the broad reason for advocating district heating?

Stephen Knight: That is right. A lot of existing district heating systems use combined heat and power units, which do have an efficiency gain, albeit they are driven by gas. When we move to decarbonisation, the real benefit of the district heating system over individual heating is that, if you like, you take away that infrastructure change, away from individual homes, and you just have to make that change once at an energy centre. Whether it be heat pumps, biomass or whatever it is, you are doing that in one place that is not in somebody's home.

One of the challenges, particularly if you are moving to heat pumps, is where you actually have to find a source of heat near a home if it is done on an individual basis. Particularly in an urban area and if you are looking at, say, an air-source heat pump, are you going to have space physically to put large air handling units tagged on to every apartment or every house and all the rest of it? Is there space to do underground pipework for ground-source? The advantage of having a district heating solution is that you can move that away, find the space in the neighbourhood somewhere, and then pipe the heat into individual homes.

Q21 Mark Pawsey: There will be one method of generating the heat. We have more control over making sure it is carbon-efficient and it saves having lots of small, relatively inefficient units. I want to ask you the



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point about choice because, in most cases, most people's experience of district heating here is that the heating is included as part of their service charge. They are paying a fixed amount for their heat, almost regardless of the amount that they have used.

We have had some witnesses who have given us evidence and said that meters do exist now whereby the individual would actually only pay for the heat they have used, thereby providing a price incentive not to use more heat than they would otherwise need. We hear accounts of students, for example, leaving their radiators on full. I pick students because that is probably the aspect or the experience that most people will have had of a district heating system, where they leave their radiators on and open the windows. If people are encouraged to do that, I cannot see any way that is going to reduce our CO₂ emissions and achieve the objective that we want.

How can you reassure us that the metering systems are readily available, fair and at a good price that mean that people do not have an incentive to overheat, which is what I am bothered about, with your advocacy of district heating systems?

Stephen Knight: The first thing I would say is that all of the schemes that we regulate through Heat Trust are on a metered basis. The homeowner will have a heat meter, which will measure the amount of heat they are consuming, in the same way that your gas usage or electricity usage is metered. You will, of course, when you get your bill, also have an element of the bill that is a standing charge, in the same way you do with the water supply, but it is partially a standing charge and partially a usage charge. That would be the starting point. Certainly, regulation is looking to shift all of the historic heat networks towards meters.

Q22 **Mark Pawsey:** Is it a requirement to have metering in that way for somebody either replacing or installing a new district heating system today? If not, why not?

Stephen Knight: That is the direction of travel, because we have the heat and metering regulations, which require new district heating systems to have meters.

Q23 **Mark Pawsey:** To be clear, as of today, anybody installing a new district heating system would have to have a system whereby they meter for the heat provided, rather than doing it on the basis of a fixed charge.

Stephen Knight: That is my understanding. Caroline might be able to correct me if I am wrong. My understanding is that, certainly with new heat networks, they will all be metered. What we do have, though, as I mentioned earlier, is a lot of very old historic heat networks. You will see, particularly in the local authority sector and the housing association sector, a number of—

Q24 **Mark Pawsey:** Can they be retrofitted with the meters that you have just described?



Stephen Knight: Yes, indeed they can.

Q25 **Mark Pawsey:** In which case, should we mandate that? Should we say that within the next few years everybody should have a heat meter, in order that there is a disincentive to leave the radiators on and the windows open?

Stephen Knight: I think we should, and that is the direction of travel. What I would say is that I am aware that a number of heat networks were originally installed in council blocks for very good reasons, to address fuel poverty issues. As we heard earlier around heat-rationing, a lot of people in poverty do turn the heating off and live in cold conditions.

One of the arguments that a number of local authorities used when they were developing these systems was, "We don't want people to be turning the heating off because they cannot afford it, so we will just include it in a standing charge." I can understand the rationale. In the world in which we are living, where we need an incentive to reduce heat and so on, I can understand there is a need to move towards metering, and I think that is right, but we do need to protect low-income customers to ensure that people are not self-rationing and going without heat when they need it because they cannot afford the bill.

What I would say is that, certainly among the suppliers that we look after, there is a very small percentage of people on prepayment meters. They do exist in the heat network market but, unlike in the gas and electricity market, a supplier cannot get a warrant to forcibly fit a prepayment meter. Of course, most of the prepayment meters in the regulated sector are forcibly fitted in that way, as I understand it. That is where a lot of people end up on prepayment meters and potentially end up self-rationing and going without heat when they potentially need it, due to low income.

Q26 **Chair:** I have a couple of wrap-up questions before we end this part of the session. I just want to make sure that I have my understanding clear around the regulation issue. There is the question of installing infrastructure and consumer protections around installing infrastructure in people's homes. There is the question about price controls, competition and supplier regulation. Then there is what happens if there is a complaint about tariffs, community charges or whatever it might be. I just want to run through those quickly to make sure I have understood that properly.

Caroline Bragg, I will come to you first. In terms of the question of installing infrastructure in people's homes, this is presumably a building regulations-type question. Is there a framework in place that is adequate to meet the need for decarbonising heat in homes, or does that need to be updated? If so, what do we need to see?

Caroline Bragg: Yes, it would be a combination of building regs as well as other legislation. The big gap that we have talked about today is the lack of heat network regulation. The industry strongly supports the



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introduction of that regulation as soon as possible. I am afraid I cannot comment specifically on mandatory standards for heat pumps.

Q27 **Chair:** Stephen, I will come to you next. You said that at the moment yours is a voluntary scheme, but you only cover 11% to 12% of consumers. Why are you not covering the remaining 80%?

Stephen Knight: We are covering a lot of the new larger district heating schemes. Where we do not have much coverage at all is in a lot of the legacy systems and the smaller local authority or housing association systems—the communal heating systems, if you like.

Chair: Why?

Stephen Knight: It is probably for a variety of reasons. We were set up by the industry and we were targeted at some of the big commercial providers, because these are the ones that are growing. There is more that needs to be done.

Q28 **Chair:** I am sorry to interrupt. What I am trying to understand is whether there are particular problems in the part of the market that you do not currently regulate that we need to understand when making proposals around bringing heat networks into, presumably, Ofgem regulation. Is there a particular reason why the older or smaller networks are not signing up to your voluntary scheme? What are they telling you? Why are they not signing up to your scheme?

Stephen Knight: It is probably for a variety of reasons. There is the cost of joining our scheme. There is the cost of actually improving your standards. A lot of heat networks are very small. If you are a heat network that covers 20 or 30 consumers, the cost of having a 24/7 helpline for faults, for instance, is potentially quite big, in comparison with the cost to a big energy company with hundreds or thousands of customers. Some of the cost of complying with the sorts of standards that we set are individually a bit higher if you are a small network, but we do have some small networks that can do it, so more can. Local authorities in particular should be able to do that. There is the cost of paying for the ombudsman when you fall foul of complaints. There are our membership scheme costs or regulatory costs, if it was a regulated sector. All of these things come together.

For many of these schemes, they figure they have been around for a long time before we existed; why do they need to join us? They have a captive market. It is not as if people can walk away. This really says why we need these things to be determined in law. We need regulation, so that it is not just those that choose to join a scheme that get regulated; it is actually all networks and all consumers that get the protections that they deserve.

Q29 **Chair:** The barriers to them joining your scheme are the cost of signing up to your scheme as a member, their inability to meet the standards you have set for them, and their inability to pay for either the ombudsman



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service or the compensation that they would be required to pay. Is that not a problem? If we bring all heat networks into Ofgem regulation, what will happen to these small networks or small companies that cannot currently meet your standards when they are having to meet the standards provided by Ofgem?

Stephen Knight: There is an assumption that they cannot meet the standard.

Q30 **Chair:** You just told me they couldn't, which is why they are not part of your scheme.

Stephen Knight: No. What I said is that they may not want to spend the money to do that. From my perspective, they can and they should be meeting these standards. If they are not willing to do it, they should be made to do it through regulation. That would be my starting point, because all consumers deserve these kinds of protections. It should not be left to those that want to voluntarily provide protections to do it.

Q31 **Chair:** I would agree with you on that. Matthew, can I just come to you lastly about the fuel poverty strategy for England, which is called Sustainable Warmth, as I am sure you know? Does this go far enough to protect vulnerable customers in the context of all of this change that is coming down the line?

Matthew Copeland: First, beyond the specifics of the strategy and dealing with the inefficiency of homes lived in by people of low incomes, it provides an absolutely vital mechanism for achieving a just transition. It is the centre of that movement of just transition, and also delivering on the rhetoric of levelling up as well. We think it is a really good, cross-cutting device to achieve some really big things that this Government are trying to achieve.

It makes it really clear that fuel poverty is where you have a low income and live in a particularly inefficient property, which is pretty good. It sets out some really clear statutory targets for 2030, which is excellent on energy efficiency. As I have said previously, thermal efficiency of homes is the most important bit of decarbonising heat. That is really good. It also has milestones to get to EPC E by 2020 and D by 2025. It has a very clear fabric-first principle. It has a very clear worst-first principle, which is to be admired. That is something that NEA is particularly pleased is in there.

The thing that it is missing is the funding to get there. At the moment, we have some funding committed. This is a problem created by the fact that we had a one-year spending review last year. We only have this year's worth of energy-efficiency money, plus the expanded ECO. We are missing quite a big chunk of money up to 2025 to meet that next milestone. It is really important that the overall strategy, which is excellent, is complemented by the drive of funding to actually take the actions that are needed.



We have some estimates from the Committee on Fuel Poverty on the sorts of funding that are needed to meet that next milestone and beyond. If the Conservative manifesto commitments are followed through in the next spending review, bringing forward the home upgrade grant scheme and social housing decarbonisation fund, then that will provide the right funding to do that, but that absolutely has to happen at this next spending review.

From that energy-efficiency point of view, if the funding is there, it is a very strong strategy, but it is energy-efficiency-based, which is the most important thing, but there are other bits around it. We have talked around lots of other bits today, around levies, prices and how things are funded. It does not address that as much. It is really important that the BEIS affordability reviewing coming up this summer looks at this in the round, in the context of, "We have this fuel poverty strategy. We want a just transition. How do we pay for all this stuff as well?" They need to come to the right conclusions and ensure that, as I said before, the fuel-poor do not end up paying more because of this.

Q32 Chair: That is super, thank you. We essentially know what we would like to do but we don't know how we are going to pay for it. That is what we need to figure out. It is an old tale, I am afraid. You have alluded to the fact of energy efficiency being intrinsically linked to heat decarbonisation. Just to point out, our colleagues on the Environmental Audit Committee have been doing the deep-dive into the green homes grant and its successor. We will be working closely with them on that, alongside our inquiry.

That brings our first panel to an end. Thank you to Ed Dodman from Ombudsman Services, Stephen Knight from Heat Trust, Caroline Bragg from the ADE and Matthew Copeland from National Energy Action.

Examination of witnesses

Witnesses: Jenny Hill, Neil Kenward, James Richardson and Polly Billington.

Q33 Chair: We are now going to welcome our second panel of witnesses. We are delighted to welcome Jenny Hill from the Committee on Climate Change, Neil Kenward from Ofgem, James Richardson from the National Infrastructure Commission and Polly Billington from UK100. Welcome to all of you this morning.

My first question to you is about—this is just my personal view—what seems to be a huge gap between knowing what we need to do and where we are now. How on earth are we going to get there in the timeframes that we have? It seems quite a daunting gap, to be honest. Jenny Hill from the CCC, if I can come to you first, the Committee on Climate Change has set out a route map to reach net zero and has taken some views on how we get there in its sixth carbon budget around decarbonising heat. How big is the gap between where we are now and



where we need to be?

Jenny Hill: At the Committee, we like to split this into two parts. The first question is, "Does Government have the right ambition?" The second part is, "Do we have the right policies in place to deliver on that ambition?" I will pick up the first part of the question first. In terms of the ambition itself, we can look at this on a technology basis. If we focus on low-carbon heating, the key technologies that we see playing a role are heat pumps, low-carbon heat networks and hydrogen. On heat pumps, the Government have committed to growing the market to have 600,000 heat pumps installed a year by 2028. That compares to a total of 900,000 in our scenarios.

There are two issues here. It may not sound like a big difference overall, but that is a figure that includes new-build. If you deduct new-build from the total number, it is actually 600,000 retrofit heat pumps in our scenarios compared to possibly 300,000 or a bit over in the Government's ambition. You can see that it is effectively half. That is the first issue.

The second issue is around the subsequent ambition. From what I understand, the Government are not committing to going further than that. They are not looking at going further to 2030, necessarily. In our working, we look at how you can achieve a full-scale turnover of the stock within, say, a 15 to 18-year period. Essentially, if you want to keep open the option of a high heat pump scenario, you need to be in a position where you get to something like 1 million heat pumps a year by 2033 or thereabouts. If the market plateaus at 300,000 a year through to 2030, you can see that is a real challenge. That is the first one on heat pumps.

Secondly, on low-carbon heat networks, there is really good agreement between BEIS and the CCC on what the endpoint is. We both talk about having around 18% of heating being delivered through low-carbon heat networks by 2050. The big problem is that the Government have not clarified what an interim ambition looks like. There is no view from Government, as far as we can tell, in terms of what that looks like for 2030. Our view at the Committee is that this is essentially a major infrastructure undertaking. The main cost component is around civil engineering. There is a huge amount of work to be done in terms of digging up roads, laying pipes, etc. That takes time, so really it is, "Slow and steady wins the race."

Our view more broadly across the economy is that Government have a really important role to play in terms of clarifying what the vision is and providing that long-term certainty for the market to grow. We have seen how successful that can be in the power sector, and we think there is a gap in terms of the heat networks ambition and in terms of really setting out what kind of role in, say, 2030 or 2035 Government are looking for that technology option to play.



Finally, on hydrogen, we have seen some really useful commitments in the 10-point plan. There is a big question, though, around hydrogen-readiness. At the CCC, we talk about all boilers being hydrogen-ready from 2025. That is really useful in terms of option value, and it has a low cost associated with it of £100, which will possibly fall once you get deployment at scale. Again, we are really hoping that we see some commitment from Government there.

At the start of my answer, I mentioned that there is also a policy question here. We will obviously get into that in a bit more detail. There are big questions as to what we will see in the heat and buildings strategy. There are also real questions in terms of what proposals the Government bring forward for a clear trajectory of standards, both on energy efficiency and on heat. In particular, the phasing out of high-carbon fossil fuels is something that they committed to in the clean growth strategy. They committed to doing that within this decade, again based on an 80% target rather than the new net zero target. We have not seen an update on that, so it would be really helpful to get a bit more clarity there.

Last but not least, we need a mechanism to deliver heat pumps and a clear governance framework, which again is something that I can talk to in a bit more detail.

Q34 Chair: In short, there are quite a lot of gaps, but thank you for that. James Richardson, can I come to you next from a National Infrastructure Commission perspective? Whether it is about heat network infrastructure in the district area, in-the-home changes or upscaling the capacity in the power market to be able to deal with everything with heat pumps, these are big national infrastructure questions. Are we going to get there on time?

James Richardson: There is no doubt that this is the single biggest challenge in decarbonisation. There is a huge task to be done here, and it is particularly difficult because it is so distributed; it is everybody's home. With a lot of these other infrastructure challenges, they are very large but you are dealing with a relatively small number of players who can be worked with and incentivised and so on to bring change, as we have seen in, say, the electricity sector. Here, it is 30 million households that are all going to have to make quite significant changes to the fabric of their buildings and their behaviour, and therefore it is a different order of change.

It can be done. It is important to be positive about this. This is an achievable challenge. We did, for example, convert the UK from town gas to natural gas in about 10 years. That was a smaller challenge, because fewer buildings were on the gas network at the time. These kinds of things can be done, but it requires a lot of activity and only some of that is in place. The 10-point plan has some great commitments, and that gets us going, but we don't have the policies to implement that. As Jenny was saying, we don't have policies to get us to 600,000 heat pumps; we



don't have the funding. Similarly, there are some great initiatives in there on hydrogen, but we have to see that being delivered and we have to ensure that we don't have some of these issues around standards. We are still waiting to get legislation on energy efficiency in the private rented sector. Again, as Jenny said, are we going to require boilers to be hydrogen-ready? By when? These kinds of questions all need to be addressed in the heat and buildings strategy. We clearly need a replacement for the green homes grant and action on energy efficiency.

There is then a separate question. The 10-point plan really covers what you need to do in the 2020s. You can argue about whether it is quite enough or not, but it covers the main areas of what needs to be done in the 2020s. That really only gets you to the starting gate on this. Most of the work will have to be done in the 2030s and 2040s.

We cannot set out all the policies on that now, because we don't know the answer to how much hydrogen we will use versus how many heat pumps we will have, but we do need to start setting out some of those future decision points so that Government are on the hook to make those decisions and so that the industry knows what the timeline will be and when decisions will get made on these big issues. Just delivering the 10-point plan only really gets you to the point where you can start making some of those really big decisions around the future of the gas network, for example.

Q35 Chair: I will come to Polly Billington from UK100 next. You might have heard in the previous panel that there was a lot of advocacy for local authorities and having co-ordinators going into your homes and doing this on a very local basis. The Government have talked about trying to make every home a minimum of EPC band C by 2035. Especially in the context of the follow-up to the green homes grant, do you agree that this needs to be done at local authority level?

Polly Billington: Yes, it does, but there are a lot of other issues with EPC and that target. First of all, it is a target and not a pathway. What are the stages between now and then? Our piece of work, *Power Shift*, which was published just a few weeks ago, is a comprehensive analysis of all the powers that local authorities have that could be used for local climate action. What is interesting is how many of those are unenforced or unenforceable, including the fact that for EPCs you only need to have a certificate. They may well be now 10 or more years out of date. There is no obligation to update or upgrade them. We could perhaps do that at least, for example, when people are buying or selling houses or renting them out for new so we can at least start to see the pathway to that.

EPCs are also not particularly good at the moment when dealing with energy efficiency in rural properties, because many of the measures that you would need to undertake to make a rural property energy-efficient are not ones that are recommended by the EPC or counted by the EPC. You have some situations where the EPC is not really fit for purpose for what it needs to do, bearing in mind the overall housing stock that we



have in this country; the process of it does not currently design a pathway to being able to upgrade those houses; and, bearing in mind that we are talking about buildings, we have a target that is terrifyingly close, because we only have about 10 years to get things up to standard. The construction industry works slowly. People's incentives to upgrade are lower at the moment for this than they are for getting a new kitchen.

We need to understand where people's incentives are, particularly in the context of our network, which is made of locally elected government leaders who have made commitments on climate action, clean air and clean energy. They are determined to be able to do much of this. Some of them have extremely ambitious plans. Some of them have extremely innovative projects. Those plans are going to stay on paper and those projects are going to stay exceptional unless we transform the regulatory frameworks within which they work so that we can mainstream this stuff.

As I keep saying to people, I cannot wait to turn everybody into a climate nut like me, but I have to work with their motivations at the moment, and that is about mainstreaming it. That is about creating markets, as Jenny has mentioned. It is also about making sure, as James has referred to, that this happens sooner rather than later. That needs to have locally designed programmes, because, if you are talking about making sure you build public consent and support, the last thing you need is every single different utility decarbonising at a different time and digging up your local roads. If you want somebody who is a key player and who is able to coordinate and provide partnership with national Government in delivering net zero, particularly on the decarbonisation of homes, it is local government that know their communities, know their housing stock and have demonstrated during the pandemic quite how good they are at being able to work and deliver for those communities.

There is a range of things that local government are key players in that can quite often be overlooked. People say, "Yes, local authorities will do that bit." No—have them at the table right at the beginning to design these programmes, and they will understand where you are going to have residents' buy-in, where you are going to have residents' resistance and what kind of technologies will work. They need to be working with the energy-sector experts to be able to design that in.

Q36 Chair: You are making me feel bad. I have recently had a new kitchen, but I still have a gas boiler. On that point, Neil Kenward from Ofgem, talking about this gap between targets and where we are now, Ofgem has a regulatory responsibility covering lots of different infrastructure aspects here. What is your perspective on the bits that are missing that we need to see policy updates on?

Neil Kenward: Some colleagues have already set out some of the most important ones. For us in Ofgem, as you say we have a really key role to play and we are really keen to support the transformation of the energy system on the road to net zero. There are two really important things that I would pull out. First, there is our network price controls and indeed



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our oversight of the networks to make sure that, whatever the balance between hydrogen and electricity that is decided on, both of those networks are investing and enabled to respond and deliver on the Government's policy. We also deliver a number of schemes that help with heat decarbonisation, which I can talk about in detail later, if you wish.

On where the gaps are, clearly the Government have set out high levels of ambition. We are all waiting for the heat and buildings strategy. We know there are lots of other strategies in development, such as the hydrogen strategy. We need those to set out really clear plans. From our perspective, we are working with network companies on making the right investments. The earlier we can get clarity on the decision points around hydrogen, the roll-out of heat pumps and whether there is going to be a push to off-gas grid first for heat pumps, which would make some considerable sense, the more useful it will be. We can then ensure that the network investments happen early enough to support that roll-out.

Q37 **Chair:** Neil, just to make sure that I have understood it properly from your perspective, I just want to be clear on what is being regulated by Ofgem now and what is going to be coming in the future. We just heard from the previous panel that heat pumps are not currently regulated by Ofgem, but they are going to be. That is correct, is it not?

Neil Kenward: The Government have not taken a final decision on who will regulate heat networks, but we are talking to the Government and we are one of the options that they have consulted on. That may well be the decision they take.

Chair: The power networks are already with Ofgem.

Neil Kenward: Exactly, yes.

Q38 **Chair:** When we mix hydrogen, would that fall under your current mandate or are there changes there too?

Neil Kenward: The default situation would that if hydrogen is put into the gas grid, Ofgem is the default regulator for that.

Q39 **Chair:** The penultimate question from me is this. The International Energy Agency did a report at the Government's request about the date they needed to ban oil and coal boilers. They said that these should not be sold from 2025 and that all gas boilers should be hydrogen-ready. I want to come to you, Jenny Hill. Does the Government's target to ban just gas connections to new homes only from 2025 go far enough or not?

Jenny Hill: That is a really interesting question. The IEA recently published their 1.5-degree scenario, which is a real game-changer, because we had not seen a 1.5-degree scenario from the IEA before. That is a global scenario, but they do split it into leader countries that move first, of which the UK would of course be one, and then the rest of the world. You can actually compare UK phase-out dates with the global pathway, which they set out.



The first thing to say is that there is incredible alignment between the two across a whole range of really important phase-out dates across the economy. What that really tells us is that the 1.5-degree pathway is incredibly narrow—that is the phrase the IEA use—but also that the UK will not be moving alone. In that scenario, the IEA has heat pump installations increasing from around 18 million per year today to 60 million by 2030 and 120 million by 2050. That really shows that we are part of a global market.

In terms of your question on the phase-out dates, clearly, when it came to the sixth carbon budget, we spent a good 18 months looking at this and consulting on what realistic and feasible timelines would look like, with Government and with industry. When you compare those with the IEA scenario, you see that we are going faster in some areas and a bit slower in some areas. We are looking at introducing in 2025 something around making new buildings fossil-free. The comparable date in the IEA scenario is 2030.

In terms of the phase-out of high-carbon fossil fuels, the dates that we have in the sixth carbon budget recommended pathway are 2028 for homes and then earlier dates, 2025 and 2026, for public and commercial buildings respectively. We think that those dates are consistent with the Paris Agreement and with keeping 1.5 degrees on the table. Essentially, this takes into account the fact that you do have higher barriers in the UK stock. In particular, in homes off the gas grid, you see higher levels of what we call hard-to-treat homes. We think it makes sense to move first with new-build, to really get the market going, give a bit more time to upgrade the efficiency of homes on the gas grid and then follow up with something in 2028. Our recommendation is for Government to commit to those timelines rather than 2025 in the IEA's scenario.

Q40 Chair: The last question from me before I go to colleagues is about the long-awaited heat and buildings strategy. I just wanted to do a fairly quickfire run-through of all of you to see what you think the top one or two priorities are from your perspective that you want to see in it when it is eventually published; I am sure it will be. Going to Polly Billington first, what are your top one or two priorities?

Polly Billington: We need to make sure that there is a recognition that this will not be delivered without local design and delivery. We want to see a role for local government in being able to achieve this. We want it not just to be targets a long way away and sticks. We need to be able to see a pathway and we need to see carrots. That ultimately goes to the fact that you need to create a market. The Prime Minister, and indeed many others, are talking about the wonderful opportunity that we have with onshore wind. I cannot emphasise enough to parliamentarians that this did not happen by magic. This happened by Government intervention to be able to shape and create a market, which now means that those costs are falling. An equivalent needs to happen with the decarbonisation of heat.



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My biggest anxiety about the heat and decarbonisation strategy, apart from the fact that there may not be a local design element, is around how our heat is going to be different from how it has been in the past. James mentioned the shift from town gas to natural gas. That happened at a national level. We have got used to the British thinking that we all get heated, broadly speaking, in the same way. Experts like us know that there might be off-grid, but, broadly speaking, everyone who is on the gas grid thinks that everyone else is on the gas grid. We are going to have to get used to the fact that heat is going to be different in different places. I really want to see some kind of local recognition of the fact that there will be a diversity of technologies and uses, and that they need to be designed locally.

Also, what is the market shaping that is in there? What are the incentives? How are we going to reduce those costs in order to be able to shape that market? If we leave it to simply long-term targets and sticks, we will leave people frozen in the headlights and unable to make decisions. Individual households cannot make decisions about this. These decisions need to be made at collective and community level, and that is why it is so important that we not only shape a market but we help people make those choices by understanding the local nature of the way we decarbonise heat.

James Richardson: I would point to the need for clear long-term funding. We cannot just say, "Here is a couple of years of funding, and installers can guess as to what comes after that." You need a long-term stable policy environment that everyone can get behind.

You need clear targets and measures. As Polly said, that is not just for the 2030s. What is the interim? How do we get to 600,000 heat pumps? Where do we need to be in 2025 or 2023? We really need to set out those measures and to have clear responsibilities. Who is doing what here? What is sitting with local government? What is sitting with the regulator? What is sitting with the energy companies? What is sitting with central Government? That all needs to be absolutely clear.

Then we do need some policy certainty on the replacement for the renewable heat incentive and the replacement for the green homes grant in particular. There are other things around energy efficiency in the private rented sector, for example. We need to conclude a number of policy areas that Government have been consulting on and get that done so that people can know what they are dealing with and get on with it. We need these policies to be designed for the actual people who are going to do them—households. Ultimately, they need to be simple for people to understand. We need to learn the lessons from the RHI and the green homes grant.

Neil Kenward: I would agree with a lot of the previous comments, particularly getting clarity on the roles between central Government, local government and other actors. As we are discovering, the heat



decarbonisation programme has to be delivered locally to some extent. From Ofgem's perspective as well, we need clarity around timelines and processes for making the key decisions, so that we get that certainty as soon as possible and we know when we are going to get it for the network planning needed for hydrogen and heat pumps.

Jenny Hill: I can give you our recommendation in this space, which very much echoes the previous panellists' responses. Essentially, we are looking for a robust, equitable and ambitious strategy that sets a clear direction for the next 30 years. The key components are standards covering all segments of the building stock, with support for consumers through the transition; plans to rebalance policy costs while making low-carbon more financially attractive; plans to introduce green building passports, again picking up on some of Caroline Bragg's comments in the previous session around the role of retrofit co-ordinators, for instance; and, finally and really importantly, the formalisation of a governance framework to drive decisions on heat infrastructure, including, as we see it, a role for area-based energy plans and zoning of heat networks.

In our view, that captures this really crucial point that Neil and James just made around having clear roles for all the actors here across Government, working in partnership to deliver this.

Chair: That is great. I saw lots of nodding there, so thank you for that.

Q41 **Alan Brown:** If I can just continue a wee bit on policy and policy gaps, I would like to start with Jenny. Jenny, there are clearly still options on the table—hydrogen and heat pumps—and you have highlighted that you want to see a clearer pathway for the roll-out of heat pumps. At the moment, the Government are saying that they do not want to pick a winner between hydrogen and heat pumps; they want to see how things evolve and let the market take care of itself. How long can the Government ride these two horses without having to make an ultimate decision, considering that what the Government do incentivises the market anyway? Also, if it is electrification, we need to have long-term funding in place to allow the networks to be upgraded, and vice versa for hydrogen, which needs major infrastructure investment. How long can they ride both horses? How does the net zero strategy, which is to come out before COP26, take account of these parallel options, as it were?

Jenny Hill: It definitely is a problem if trying to keep both options on the table means that these key decisions are not being made. We are seeing that at a local level, for instance, where some councils don't know whether they can push ahead with electrification, because they possibly might be looking at hydrogen. Actually, our view is that the mostly likely role for hydrogen will be on a localised basis with regional conversions of the gas grid.

This is about trying to use that hydrogen as efficiently as possible. That could be in conjunction with heat pumps, that is, hybrid heat pumps using that hydrogen as efficiently as possible. That really allows you to



prioritise the hydrogen for use in other areas of the economy where you do not have alternative options, such as high-temperature heat in industry in certain cases.

In terms of what Government therefore need to do, we have previously talked about the middle of this decade as being a time when Government can really clarify how it sees this playing out. We framed that previously as a set of decisions around the future of the gas grid. Having a commitment to trials but growing scale is really helpful. That is absolutely what we need to do to clarify whether hydrogen is indeed a viable option for domestic heating. In our pathways, we envisage the conversion of the gas grid on a regional basis from around 2030, from 2030 through to 2050. It is predominantly focused around industrial clusters, in our view, given that this is where you would have the infrastructure in the first place for CCS and also demand from industry.

Working back from that, what do Government therefore do now? The first thing they can do—we have a recommendation in this space—is to undertake a study, which could be a joint Ofgem-BEIS study, that looks to identify candidate areas for hydrogen and, conversely, the areas where the experts are pretty clear we will not see a role for hydrogen, based on the fact that costs really do differ depending on what area of the country you are looking at. That can really unfreeze some of the decision-making at a local and regional level, which will mean that we can move forward with more clarity in the meantime.

We then obviously need to have this governance framework put in place. Our view is that information can only help that, which is why we have a recommendation around area-based energy plans, noting the work that the Energy Systems Catapult and the CSE—I have forgotten the name of the acronym—have done with Ofgem to put together a really helpful guide on how you undertake that modelling. That can really then help clarify the situation, as I said, for local authorities but also for energy networks.

The last point I would make is that the DNOs, the electricity distribution network operators, really could do with some clarity in this respect. We did a survey of them as part of the sixth carbon budget. They have a lot more clarity in terms of transport electrification than they do heat. That is a real issue, as you mentioned in your question.

Q42 Alan Brown: James, do you want to add anything to that? I have a follow-on question in terms of governance. How effective do you see cross-Government co-ordination being in terms of heat decarbonisation, across different Departments such as BEIS, MHCLG and Treasury?

James Richardson: Let me try to pick both of those things up. In terms of how long Government can ride both horses, the answer is for some time longer, as long as that does not slow down the policy on both sides. In particular, pursuing the option of hydrogen is a sensible thing to do. It is something that we recommended; the trials are very helpful.



That is not a reason to go slow on heat pumps. For a start, there are plenty of buildings off gas grid, for which heat pumps are an obvious solution. Converting most buildings to heat pumps is going to be a low-regret solution, even in a world in which hydrogen is available. We can continue to explore the hydrogen option whilst pushing ahead as rapidly as possible on heat pumps, energy efficiency and district heating.

It may be that the solution does involve both of these options being available, certainly in some parts of the country, and enabling consumers to choose between them or to choose hybrids that use both in combination. There is plenty of scope to continue pursuing both of these, but at some point in the 2020s Government are going to have to make big decisions around the gas network. Are you going to keep it going and convert it or are you going to switch it off? What are you going to do in different parts of the country? You cannot leave those decisions to drift into the 2030s. We had said mid-2020s; that is perhaps being a little unrealistic with the pace of change that we are now seeing, but that certainly needs to be before the 2030s.

In terms of the governance question, we are some way off where we need to be. We have all pointed to this need for clarity on who does what. I am not sure that we have those structures in place yet to bring together BEIS, MHCLG and Treasury within central Government, as well as Ofgem, local authorities, energy companies and installers, which are a much more distributed group of people. You need to involve people like Citizens Advice, which can advise people in vulnerable circumstances and so on. That governance is not there to drive this through. There are several models, and we don't have a particular recommendation on how it should be done, but it is certainly something that we would hope to see move forward in the heat and buildings strategy. We need much more clarity on who does what and how that is all going to be co-ordinated.

Q43 Alan Brown: If we don't sort out this governance issue out very quickly, it will really undermine the whole concept of a coherent heat and buildings strategy. That will then move into the wider net zero strategy, if that governance is not in place.

James Richardson: Yes. If you don't know who is doing what, it is very hard to say that you have a proper strategy.

Polly Billington: I would urge that decisions on this cannot be delayed. Local authorities are making decisions and planning every day in terms of the standards of buildings and the infrastructure that will supply those buildings. We know that we are building homes at the moment that will need to be retrofitted within the next 10 years. If you are talking about inefficiencies, you have one right there. Based on what Jenny is saying about area energy planning, the earlier decisions are made, the better.

There needs to be, particularly, a better understanding about each other between the DNOs and local authorities. Local authorities have quite a lot of data about their own communities. They should be key players in



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designing those local area energy plans, even if at the moment they do not have an enormous amount of energy. It is not a statutory responsibility for them; it ends up being something quite technical and very deep in their planning regimes. In fact, it needs to be foregrounded.

Without an early decision made, like these no-regrets options, we are going to have bad decisions continuing to be made. We are going to continue to build in carbonised dependency in the homes that currently exist and ones being built at the moment, let alone any kind of town centre regeneration or any of those kinds of things. The earlier these decisions are made, the better.

I would say it is particularly important as regards off-grid. We have two examples—one in Cambridgeshire, Swaffham Prior, and one in Cornwall—where off-grid communities are finding ways of being able to decarbonise their own heat generation. Those things should no longer be exceptional. They are pioneers, but we need to be rolling that out. The earlier we get a clear signal from Government that this is where they want the electrification of heat to go, particularly for off-grid communities, the better.

Q44 Alan Brown: Just on that, Polly, is there anything else that needs to be done to allow effective co-ordination between local authorities, central Government and energy companies, the DNOs that you mentioned? Is it just the lead from central Government, or are there other things that need to be put in place?

Polly Billington: In this context, I occasionally reference Henry Kissinger saying, “When I want to talk to Europe, who do I call?” Sometimes national Government feel like that about local government. There are leaders in this space, and we stand by as absolutely the best partners that national Government can have in order to achieve net zero, because it cannot be done without local design and delivery.

What is really interesting in terms of the Whitehall choreography is that BEIS leads on heat and local energy and the Department for Transport has a decarbonisation strategy due, as I understand it, in the next few weeks, but MHCLG, which actually holds directly the relationship with local government, is focused on housing, communities and planning and yet does not really have quite the focus on decarbonisation and climate change that it needs. The key Department that would normally be liaising with local government does not have net zero, decarbonisation or climate change right at its heart. The ones that do, continue to struggle to identify what it is that local government can do, wants to do or should do.

That is really where the co-ordination needs to happen, let alone engagement with the energy sector, which I have always referenced in regard to DNOs and the role of Ofgem in creating both obligations and incentives for DNOs to engage with local authorities.

Q45 Alan Brown: I have one final question. James, are there any lessons in



delivery and co-ordination that can be learned in terms of the transition to low-carbon heating systems based on the roll-out and delivery of electric-vehicle charge points? I suppose that depends on your view of how successful or otherwise the roll-out of EV charge points has been.

James Richardson: Yes, the answer to that would have to be—

Chair: That is a cliff-hanger. The Wi-Fi has stopped.

Q46 **Alan Brown:** May I ask Jenny whether she has any comments on that?

Jenny Hill: I am not best placed to answer that, because my specialism is very much on the heat side. I will possibly defer to the other panellists on that. I would be very happy to talk about international comparisons, or indeed comparisons within the UK.

Q47 **Alan Brown:** Does anyone want to pick up on any lessons that can be learned about the roll-out of EV charge points?

Polly Billington: I would go again to the co-operation with the distribution network operators. We find that local authorities will say, "We would really like some EV charging points," and the distribution network operators will say, "Yes, you can have them here." The local authorities will say, "That is a dark and dingy carpark that nobody uses, miles from the town centre, not particularly where we have an enormous amount of residential demand." The DNO will say, "If you want it there, that will cost you," and the price of the connection goes up by two or three times. Co-operating and understanding the difference between how distribution network operators are trying to balance the grid and deal with grid constraint and local authorities, who are interested in designing services to meet the needs of their residents, is where we have a real challenge. I imagine that it will be similar on the decarbonisation of heat unless we establish the ground rules for that engagement early on.

Neil Kenward: This is a really important issue. Both in terms of the roll-out of EV charging and the roll-out of heat pumps, for example, there are, as you are identifying, some commonalities. As others have said, the role of those DNOs, the distribution network operators, is key. At Ofgem, we work very closely with the DNOs. We require them, in their business plans, to consult with local stakeholders and to take those views into account.

In terms of rolling out new infrastructure, we are introducing requirements to go quicker with connections and looking at how those connection charges are recovered. We are undertaking a lot of activity. As we go into the next network price control period for distribution, we will be ensuring that there is sufficient investment available so that the networks are not a constraint on the adoption of electric vehicles or heat pumps.

Q48 **Alan Brown:** James, do you want to make a final quick point before I hand back to the Chair?



James Richardson: Others have probably made the main points. The one thing I would add is that the EV network is very much demand-driven. There is a real consumer proposition in place around electric vehicles. That also clearly needs to be put in place around heat before you will start to see the same kind of take-up.

In parts of the country, charge points are popping up all over the place now because there is demand for them. You need to get that consumer pull in place around heat as well, because it does accelerate change very dramatically once you can get that in place. Others have probably covered the co-ordination points.

Q49 **Judith Cummins:** In July 2020, the CBI called for a national delivery body to oversee the decarbonisation of heat in homes. Is a national delivery body the right approach? If it is the right approach, how would this national delivery body need to function? What would it need to be effective? If it is not the right approach, how else could co-ordination between the various actors involved in low-carbon heat be achieved? Who should be responsible for this and how could they hold actors to account?

Polly Billington: It is going to sound a bit weird to hear somebody who is here as the voice of local government say that they are quite excited about the idea of a national delivery body, but I am. Having a delivery body separate from Government that can effectively say, "Look, Government, you have to do this; otherwise, your overall mission will not happen" is important. It can be focused on operationalising policy. What they will find is, if they try to operationalise existing policy, they will not get very far. There will need to be a feedback loop into changing policy in order to be able to rapidly adopt things.

Ultimately, a national delivery body will need to work really closely with local authorities in order to be able to provide that local delivery that we are talking about. For example, Stoke is not one of our members but was an early adopter of using spare heat, because of their local industrial processes. There are completely different demands, opportunities and challenges about decarbonising heat there than there are in Nottingham. Southampton still goes on about its award-winning geothermal district heat networks in the middle of Southampton. It is more than 30 years old. Yes, they have a unique situation because they have a geothermal resource that other people might not have. Other places are reclaiming the heat from disused mines.

The idea that we can have a national delivery body that will be able to go, "Yes, do it all this way" is a classic Whitehall roll-out disaster waiting to happen, unless there is an acknowledgment that what we need to do is to be able to design these things locally through the area energy planning that Jenny was talking about.

I would also just say that I spend most of my time saying to my members, "I know you think you are all unique, but actually you have



more in common than you realise." I am not going to be one of those advocates for everything being bespoke. There is generally a lot that we can all learn from each other that a national delivery body should be able to share and roll out, but what I am concerned about is, if it is a Whitehall-dominated one, you will iron out all of the possibilities of locally generated heat and resource and fail to build on the innovations we already have, and we will miss out. The reality is that the local authorities will go, "Hang on a minute. I know how that estate works. We are planning to build more in there. We need to have more district heat network extensions." That gets fed back into policy: district heating networks need to enable extensions and be able to provide beyond immediate need, for example. All of those things need to be built in.

I am slightly anxious that a national delivery body will just go, "Right, okay, let us roll out retrofit everywhere." What was the best bit about the green homes grant? It was the local authority delivery element of it. It was massively oversubscribed and massively successful. Let us learn from those things that go right as well as those things that go wrong.

James Richardson: There are a number of different ways in which you can organise delivery. We do not have a particular preferred approach as the NIC, but a lot of what Polly said is very important here. You cannot do it all nationally, and you cannot do it all locally. However you organise this, you clearly need proper co-ordination of the central Government elements. You need MHCLG; you need BEIS; you need Treasury. They need to connect with Ofgem, obviously respecting Ofgem's independence. You also need a very strong local element here with local government and potentially other local players. You have the regional element, particularly for the regional distribution companies, which are bigger than all local government outside of London but smaller than national. They are going to be very significant players.

You need a system that will be able to co-ordinate activity at all these levels and decide what is best done at those different levels. A lot of energy-efficiency work is clearly best done at local level; district heat is best done at a local level; but the decision on the future of the gas grid can only be taken by central Government. You need to know who is responsible for which elements of this, how those actors will be co-ordinated, how you co-ordinate within central Government and then how you co-ordinate between central Government, the regulator and the companies and with local government. All those pieces of the framework must be in place for this to work. That may involve a new national body, but that is not the single answer, as it were, to the governance challenge.

Neil Kenward: Everyone is agreeing that we need the right combination of activity, direction and decision-making at the right levels. We probably need a national framework and for certain decisions to be made nationally, but local planning and local delivery are clearly key to delivering this whole agenda. Would a new body put into that situation be the answer on co-ordination? There are lots of different options. I could



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see a new body being useful, but getting existing bodies to work together effectively might be the best route forward.

Jenny Hill: I should declare an interest: I was a part of the CBI's Heat Commission work that came up with that recommendation. That being said, as the CCC we do not have a formal position around a delivery body. We see part of Government's role being to clarify what the route here is.

That being said, I would just say that I really agree with everything that has been said by my fellow panellists. To build on that, my perspective on this is that in the UK we are missing that middle tier of governance between central Government and local government. That is an issue if you want to have a mix of solutions that are regionally and locally determined. That could be heat zoning, but we have also talked about gas-grid conversion being both a national and a regional interest.

Polly will probably want to come in on this, but one of the big issues that we are seeing at a local level is that we really have a multi-speed process. You have had these unitary authorities, these combined local authorities that have emerged, which have the resources to put together bids for, for example, the public sector decarbonisation scheme, but you are seeing a lot of local authorities that don't have that capacity being left behind. We need to get to grips with this challenge. It is about capacity and capability as well as funding.

Q50 **Judith Cummins:** Is a heat regulator needed? If so, how urgently? What key principles should shape the regulation of the heat sector?

Neil Kenward: Chair, at the beginning of this session, you asked me what Ofgem currently regulates. We do already regulate the gas networks, and we would regulate the gas networks by default if they were converted to hydrogen. We also regulate electricity supplies. That is the other most likely vector for heat decarbonisation and, of course, the heat networks that we have already been talking about with other panellists this morning. As you know, Ofgem may be appointed the regulator for heat networks.

That covers the three key vectors through which we expect British homes and buildings to be decarbonised in the future. By default, Ofgem probably is the future heat regulator. We are obviously very happy to talk about how we can be the best possible regulator in this space and to talk about what the best and optimal institutional arrangements would be for the future, because we recognise that there probably need to be changes in some areas, but the default heat regulator probably is us.

Q51 **Alan Brown:** If we look at alternative approaches and how some of the different Governments within the UK are looking at decarbonisation, this Committee in a previous Parliament reported that the Scottish Government were doing much better in terms of the roll-out and installation of energy-efficiency measures, for example. If we look at that



and the wider policy development, is there a disparity in progress across the nation, between the Scottish Government and England and Wales?

Jenny Hill: This is something that I have been speaking to on an international basis, engaging with other countries around the world. This national dynamic that we have in the UK, which also plays out as a regional dynamic in other countries, is really useful for spurring competition.

We really welcome what the Scottish Government are doing in this space. There are a couple of areas where they are moving things forward and really moving the discussion forward. One is around standards. They have talked about introducing requirements for homes at point of sale to be upgraded to EPC C from, I believe, 2024. That is something that is not currently, necessarily, being discussed by Government but is being discussed more broadly as being a key tool in the toolbox, so it is really helpful to see the Scottish Government coming forward with proposals in that space.

Similarly, in Scotland there is this 75% target by 2030, which is incredibly ambitious. That means that in the draft heat in buildings policy that they came forward with earlier this year they have actually committed to consult on regulations that require the installation of zero or near-zero-emissions heating in existing buildings at trigger points from 2025, with a backstop of 2045. The 2045 date is clearly five years earlier than anyone is currently discussing at a UK-wide level. It is really helpful to see them set out what a backstop means when you actually look at the tools you have in place as a Government to try to enact that and the kinds of dates that you might need to look at in the 2020s and in the 2030s that get you on track to delivering that.

The other thing that I mentioned briefly is heat network zoning. Again, we have seen the Heat Networks Bill progressing through Parliament in Scotland, and that has been really positive. That is holding BEIS's feet to the fire with the progress of heat networks in the UK.

Q52 **Alan Brown:** Polly, is there anything that you want to add or any lessons that you think could be learned from how the Scottish Government are tackling things?

Polly Billington: I would endorse what Jenny said, particularly about the EPCs, that pathway and a backstop. That is really important. Again, local authorities quite often just want to know what they are supposed to do. Once they are given a target, they say, "Okay, how do we get there?" If they don't have in-house capacity, a target can sometimes just be something that is either unenforceable or unenforced. They can also get into trouble for something that they don't have the capacity to do.

What is interesting about what is happening in Scotland is not only around whether you have the legislation but whether you have the



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resource to back that up. Otherwise, those backstops will just be missed in the same way that targets will be.

Neil Kenward: I do not have much to add. We have a great relationship with the Scottish Government. It is really useful, as Jenny was saying, to see different authorities approach things in different ways and to get the understanding and the learning from those. That is the main point I would make.

Q53 **Alan Brown:** James, do you want to add anything in terms of the different approaches?

James Richardson: No, not particularly. Our remit does not cover the devolved issues. We try to learn from what is happening in Scotland just as elsewhere in the world, but we don't typically comment on what the Scottish Government are doing because that is outside of our remit.

Q54 **Alan Brown:** Jenny, you mentioned international comparators before. Are there any lessons that can be learned from international comparators about the transition to low-carbon heating?

Jenny Hill: We commissioned some work from the UK Energy Research Centre back in 2016, which was published alongside our heat report, which I can share with you. Subsequently, Vivid Economics and Imperial built on that with another study. You also see a lot of great case studies from the likes of the IEA.

There are a couple that I would pick up on. One is the case of Sweden, which has seen a really significant growth in its heat pump market. There is a really compelling story here. Sweden had quite a few problems initially with the quality of installations and consumer protection. Government worked together with industry to put in place, essentially, better standards around heat pump installation as well as some of the consumer protections that we have been talking about this morning. That then provided the solid ground from which to build up to the high level of heat pump penetration they currently have.

The other example that is really interesting is the case of the Netherlands. The Netherlands is interesting, because it currently has 95% of its homes on gas, so an even higher rate than we have in the UK; we are at around 85%. Similarly, they have this issue with low-carbon heat trying to compete with cheaper gas. They have had to move faster than us. Their policy is really being driven forward by concerns around supply. Their major gas field, Groningen, is due to cease production in mid-2022, and they are looking at moving the whole of the building stock off gas, to 50% heat networks plus heat pumps and hydrogen.

What is interesting there is that they are taking a neighbourhood-based approach. The key national policy tool is carbon taxation on gas, but then they have this neighbourhood process in place, which involves all of the key stakeholders, including bodies like Citizens Advice and water boards as well as people, importantly. They are really having a conversation



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around what people want from their future energy system as part of this broader question of what people want from their local area. It is really making this more meaningful and connected to the kinds of priorities that people have. Those two really come to mind.

Q55 Alan Brown: Effectively, in the Netherlands the Government have decided what they want to do in the big picture, which is come off the gas grid. They have worked out how to pay for it, and then they are delivering localised solutions. They actually have a pathway.

Jenny Hill: Yes, that is right. There will be a role for the gas grid, because they are looking at hydrogen. They are currently investing hugely in electrolysis. They are helped by the fact that their networks cover both electricity and gas. They can actually work closely with the networks without there being these vested interests that we see in the UK.

Q56 Chair: Neil, I have a quick follow-up question. The delivery of heat infrastructure is devolved, but consumer protection law is not devolved. Does that pose a problem, from your perspective, if you become the regulator for other sources of heat beyond the power and gas grid?

Neil Kenward: For heat networks in particular, we are talking to the Scottish Government about the role we could play there. Ideally, they would be developed in parallel north and south of the border, so that we have a common standard that would be easier for us to deliver, if we are chosen by the Westminster Government. It is an issue, but we are looking to solve it sensibly in a discussion between ourselves and both Governments.

Chair: It is to be resolved. Thank you for that.

Q57 Mark Pawsey: We have already heard in this session some reference to the decarbonisation of transport. People know that there are electric buses around; we know that people who are choosing to buy a new car have the option of buying an electric vehicle. Many of them are choosing not to and are sticking with internal combustion engines, but they know about it. There is a high degree of awareness about the possibility of change. Are there any lessons to be learned from the approach that the Government have taken to transport when it comes to the decarbonisation of heat? James, I wonder whether you might like to comment on whether there is anything to be learned there.

James Richardson: There are things to be learned. The consumer proposition is easier for vehicles than it is for homes. It is less intrusive, and buying a new car is a decision that people naturally take time over. It is less of an emergency purchase than replacing a boiler often is. It is not quite the same, but the simplicity of things like the plug-in grant is important here. The consumer does not really have to know anything about the fact that the Government are making those vehicles cheaper; it just kind of happens behind the scenes.



Part of the challenge with things like the green homes grant and so on is that it has been quite complicated for people to engage in what is already a complicated set of transactions around improving your home's energy efficiency and changing your heating system. You are layering further complexity on, whereas in vehicles a lot of that complexity sits with the car companies and other more sophisticated actors who can manage it. That is an important thing for Government to learn from.

The other thing is that there is pretty close working now between the Department for Transport and BEIS on this. That has not perhaps always been true, but it is increasingly true. There is real alignment there. Again, as we have heard, the importance of getting alignment between BEIS and MHCLG on this agenda is absolutely crucial. There probably are lessons to be learned from how that developed in the electric vehicle space in terms of how you co-ordinate it here. I would not overstress the synergies, because these are quite different kinds of policy challenges, but certainly there are some positive things that have happened that could be read across.

Q58 Mark Pawsey: James, you have mentioned the plug-in grant. Despite that Government subsidy, electric vehicles, if we are honest about it, are really only being taken up by wealthy people, are they not? The car itself is £10,000 more than its internal combustion engine equivalent and many of the electric vehicles are very expensive. When it comes to the decarbonisation of heat and the decision about a new system, the price difference between replacing a gas boiler and introducing a heat pump system is massive. Are we content for the decision to do the right thing to be left only to those with means? Do we have to have some other forms of intervention?

James Richardson: Clearly, to get to 2050 you will have to bring everybody along. People who cannot afford this will need financial support to do it. It is not necessarily problematic if you start with people of means, as has happened with electric vehicles. Those people can afford to put some of their own money in alongside the Government money. That helps with the part of the process where you are bringing down the cost.

Electric vehicles are still more expensive than internal combustion engine vehicles, but most analysis suggests that that price gap will be closed by the mid-2020s. Then, of course, more middle-income and then lower-income consumers will start to be able to come on board without having to pay more. Starting these things with higher-income consumers can be quite a good way of getting the ball rolling, but of course over time you need to bring everybody with you.

You also have to look at this somewhat differently from energy efficiency, where clearly you do want to target people who are struggling to heat their homes. You want to target that more towards people at middle and lower incomes, because it is generating immediate savings for people. Bringing in something like a heat pump is generating savings for society



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in terms of carbon, but it is not benefiting the individual consumer directly in quite the same way, so it matters less if that starts off with people on higher incomes.

Q59 Mark Pawsey: Do those people on higher incomes effectively get the market rolling to increase volumes of production so that unit costs will then start to fall?

James Richardson: That is what we normally see with new technologies. That is what is happening with electric vehicles. It is what happened with smartphones, computers and all of these new technologies. The early adopters come in; they put their own money behind it because they want to have the new technology. That gets the cost coming down, other people come in and then adoption starts to take up much more rapidly at some point. We are about to see that point for electric vehicles over the next few years. Adoption will take off really quite quickly, and these will become much more of a mass-market product as prices fall.

Polly Billington: It is great to hear James say that about retrofit. You can see it simply as a consumer issue, but we also need to see this as an industrial strategy issue. Therefore, you need to combine retrofit with the decarbonisation of heat and use the levers that Government have at various different levels to be able to shape the market, create a supply chain, train up your workforce and so forth.

Rather than leaving it to the able to pay, for a start you need the infrastructure so they can tap into it, particularly if you are talking about retrofitting heat networks, making sure the grid is big enough and so forth. There are loads of things that Government need to do even to enable the most able to pay to be able to do it. We know that, at the moment, one of the reasons that it is only the rich who have EVs is because they are the only ones who have off-street parking. In London, you can have a £1.5 million house but you don't have off-street parking. How do you have an electric vehicle? There are some of those things around infrastructure that are important.

In decarbonising heat, we need to be combining that with retrofit and using the levers of local and national government to be able to create that supply chain and that workforce. If you prioritise retrofit and social housing, you can do that. What you also do is you create a pathway from comparatively low-skilled work in retrofit to being able to learn the other skills that are required for the clean heat kit. You will develop a workforce so that when the able to pay say, "I simply cannot get a good workman," they absolutely can, because we have been able to train up that workforce.

As much as I understand the importance of making sure that you harness the able-to-pay market—for example, Octopus have said that they can get heat pumps down to £5,500 from £15,000; they will corner the market for the pioneers who want that—there is a difference between



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being an entrepreneur that wants to corner the market and being a Government who want to be able to shape and mainstream that kind of technology.

Mark Pawsey: There is still a big difference between that sum and the cost of replacing your old gas boiler.

Polly Billington: Absolutely, yes.

Q60 **Mark Pawsey:** Jenny, we have spoken about the success in automotive, but the automotive sector had a sector deal. Arguably, that has helped drive that. Should there be a sector deal for heat?

Jenny Hill: That is a good question. We don't have a position on that, although I do note that the Scottish Government have looked at a heat pump sector deal. I am part of a working group at BEIS that is to do with the electrification of heat where you have a lot of the key actors that are working together on things like skills, scorecards and so on. Collaboration is key, and sector deals are definitely one way to get there.

If I may just comment on the broader question on the total costs and who pays, we did put quite a bit of thought into this for the sixth carbon budget. Clearly, we need to take into account the impacts on households, and in particular the fuel-poor, as part of our duties under the Climate Act. The annual costs for decarbonising homes, energy efficiency and heat work out at just under £9 billion a year. Of that, around £2 billion a year is for the fuel-poor. There is a really compelling argument for that to come out of taxpayer funding.

Q61 **Mark Pawsey:** So the £2 billion comes out of taxpayer funding.

Jenny Hill: Yes, as a minimum.

Q62 **Mark Pawsey:** Not the entire £9 billion.

Jenny Hill: No, for the £2 billion there is a pretty strong argument. There is pretty strong consensus on that. The other side of the coin, though, is the running costs. Really important discussions are going on at the moment, which you picked up on in your last session, around rebalancing the policy costs so that you do actually see a cost saving from switching to a heat pump. We are currently in discussions with Treasury, BEIS and others around how you could design that and, in particular, how you could answer some of the tricky questions around—

Q63 **Mark Pawsey:** How is running a heat pump ever going to be cheaper than a current gas boiler?

Jenny Hill: It definitely can be. That is because heat pumps are more efficient than gas boilers to start off with. The heat pump should have at least an efficiency of 250%. We think that 300% is definitely doable. That is for an air-source heat pump; ground-source heat pumps are higher. A gas boiler is around 85% efficient. Immediately, you can see that the fact



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that electricity is currently four times the price of gas is partly made up for by the fact that you have these very different efficiencies.

There is still an increment, and a lot, if not all, of that increment can be dealt with by looking at how we currently recover the policy costs for the decarbonisation of the power sector along with a few other policies. Those costs are predominantly levied off electricity bills.

Q64 Mark Pawsey: How are we to persuade consumers that this much more expensive heat pump is an investment worth making? We have managed to do it on vehicles, have we not? Whilst people know that their electric vehicle costs them significantly more than a vehicle powered by an internal combustion engine, the cost of the power, particularly if they buy electricity at home on a smart meter when energy prices are low, and the costs of running the vehicle will be lower. Nobody seems to be making that argument on heat pumps right now. Who should be making that argument?

Jenny Hill: That discussion is ongoing. Something that I am expecting as part of the heat and buildings strategy is this commitment to rebalance policy costs such that running a heat pump is cheaper than having a gas boiler. You cannot do that overnight. Essentially, we need Government to come out with a commitment to do this by, say, 2025, so that all policy that is developed now can be done on the basis of having that new cost balance across fuel prices by that point.

That will deal with the running costs, but you are right that there is still a capital cost component. That is really where we come back to some of the options I was talking about before. If you have total costs of £9 billion, if you look at some of the results that are coming out of the citizens' assembly, over 60% of the citizens' Climate Assembly were interested or supportive of socialising the costs of heat decarbonisation.

Essentially, what that might look like in practice is extending the current funding envelope. We spent around £4 billion on buildings over the past year. You could increase that to £7 billion a year and alongside you could introduce some landlord regulations that place some of the costs on landlords. That would basically cover the entire cost. We are not saying that this is definitely the way to go, but it is an illustration of what the other side of the scale looks like. There could be £2 billion on one side for the fuel-poor and £7 billion at the upper end of the scale, if you were to socialise the total costs.

To put that into perspective, currently the levy control framework is £7.6 billion in 2020 or 2021 with costs that are set to increase somewhat over the next 10 years or so. We are looking at the total cost of heat decarbonisation, which is basically the most expensive part of the economy to decarbonise, coming out lower than power sector decarbonisation overall.

Q65 Mark Pawsey: We are the business Committee, and we would like to see



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some of that spend with UK manufacturers. We failed to do that on electric vehicles, interestingly, because the majority of electric vehicles running around on our streets were manufactured outside of the UK. Is there any action that your Committee would like to see to incentivise the delivery of these heat pumps and the big expenditure on it? What can we do to ensure they are manufactured in the UK? Are there policy signals that would enable that to happen in a way that has not happened in other areas of decarbonisation?

Jenny Hill: Yes, absolutely. There are a range of different policy tools that you could use. One of the ones being discussed is some kind of carbon obligation. There are, of course, other options. You could look at low-cost loans; you could look at some partial grant funding to cover the cost.

The other issue that we should probably acknowledge up front is that when people discuss heat pump costs they are often not clear about the component that is actually the heat pump versus the level of upgrades in the home. That is a significant part. At the moment, if you take an illustrative 11kW heat pump, it might be £7,000 for the heat pump, but then you have an extra £4,000, which is a £2,000 radiator upgrade, your hot water cylinder and decommissioning your gas boiler, which is £500. You have to really look at what all the cost components here are and think about how you design policy for those.

Chair: That brings us to the end of our time for today. Thank you to Jenny Hill from the Committee on Climate Change, Neil Kenward from Ofgem, James Richardson from the National Infrastructure Commission and Polly Billington from UK100 for your time and your evidence this morning. We have one final session on heat decarbonisation with the Secretary of State in a few weeks. We wait in anticipation for the heat and buildings strategy, along with everyone else. For now, I will bring this session to an end.