HOUSE OF LORDS

Industry and Regulators Committee

Corrected oral evidence: Ofgem and net zero

Tuesday 12 October 2021

10.30 am

Watch the meeting

Members present: Lord Hollick (The Chair); Lord Allen of Kensington; Lord Blackwell; Lord Burns; Baroness Donaghy; Lord Eatwell; Lord Grade of Yarmouth; Baroness Noakes; Lord Reay; Lord Sharkey.

Evidence Session No. 9 Heard in Public Questions 88 - 107

Witnesses

I: Dr Tony Ballance, Director of Regulation and Strategy, Cadent Gas; Guy Jefferson, Chief Operating Officer, Scottish Power Energy Networks.

USE OF THE TRANSCRIPT

1. This is a corrected transcript of evidence taken in public and webcast on www.parliamentlive.tv.

2. Any public use of, or reference to, the contents should make clear that neither Members nor witnesses have had the opportunity to correct the record. If in doubt as to the propriety of using the transcript, please contact the Clerk of the Committee.

3. Members and witnesses are asked to send corrections to the Clerk of the Committee within 14 days of receipt.

Examination of witnesses

Dr Tony Ballance and Guy Jefferson.

Q88 **The Chair:** Good morning and welcome to this the 12th meeting of the inquiry into net zero and the role of Ofgem. We have two witnesses today: Dr Tony Ballance, who is director of regulation and strategy at Cadent Gas—Cadent is the UK's largest gas distributor and covers 11 million homes—and Guy Jefferson, the chief operating officer of Scottish Power Energy Networks, which is also a distributor and a transmission network operator, operating Scotland, north Wales and Merseyside. Welcome to you both.

One of the recurring themes in the evidence that we have taken so far is the frustration over the absence of a clear plan. We hope that the Government will, before or shortly after COP 26, produce a plan, but many of our witnesses have said that it has been quite difficult, indeed impossible, to set out their own store and make their own investments and decisions in the absence of a clear plan. Indeed, there is considerable confusion among consumers as to what they should or should not do.

Do you think there is a clear policy insight that can help answer that question? Has the current energy crisis, in your view, added greater complexity to it and different requirements? It would be particularly helpful if in response you could say what your company is planning to do when it knows what the plan is, and what the priorities are for you. Guy Jefferson, would you like to start?

Guy Jefferson: I agree with your initial statement that there is a lack of clarity in government policy. There seem to be a lot of different organisations or bodies coming forward with policy, and it is confused. That makes it difficult for us as a regulated network business to have clarity from our regulator, which is obviously guided by government policy. If we got that clear line of sight from government, it would allow Ofgem to turn that on us as a regulated business and ensure that we are working closely and clearly against the required mandate. It would be helpful if, for example, as part of Ofgem's obligations, we had clear net-zero objectives within that, guided by the recently issued report of the Committee on Climate Change. That would give us a lot more clarity and I think it would give Ofgem a lot more clarity in its requirements.

The current energy crisis, if I can put it like that, should bring clarity. Whether it will or not remains to be seen. We will probably come on to competition in future, but competition has potentially caused a lot of the issues that we see today in the retail market. There are proposals to increase competition in the network area, and we need to be very careful. We support competition, but it needs to be introduced very carefully through consultation. We need to learn some lessons from that.

On what we need to do, we need clarity to invest. Our investor is a long-term investor. Obviously, price controls are only five years long, so it is difficult to get consistency in five-year chunks, but we can get that through signalling more effectively the incentives and returns that are

available to network investors. If we can get that continuity, clarity and consistency, it allows us to invest with confidence.

We have a huge agenda with regard to decarbonisation of transport and heat in particular. That will mean significant investments in the network. Indeed, we are putting forward a 25% increase in our totex plan in our current price control negotiations with Ofgem. Within that, there will be a significant requirement for us to use smart technologies, to use flexibility and to better utilise the network that we have to transmit the huge increase in electricity that we will see through decarbonisation of heat and transport.

To get ahead of that, we need to invest prior to need. We need to get the network ready so that, when that increase comes and that requirement comes from customers, we are ready to provide the infrastructure they will need to charge their vehicles or install heat pumps et cetera. We need to get ahead of that. One of our concerns is that the pace and agility have to move up so that we can invest ahead of need, in an efficient way, and not to get caught further down the line with bottlenecks on the network.

Again, and to come right back to the start, a lack of policy direction is causing us agility and pace issues. It is really important that we start to get clear policy to guide the regulator, which will then obviously help us in moving forward with our plans.

Dr Tony Ballance: I agree with much of what Guy has just said. The starting point for all this, particularly for a company that is transporting gas that is used principally for heating people's homes, is that there is a lack of clarity and consensus on future scenarios for domestic heating, particularly in my space. I think that is something we are all seeking.

I do not think there is a silver bullet that provides the answer. But more particularly in relation your question, we need to ask whether we have the right policy framework to deliver that. Again picking up on some of Guy's points about the need for much greater system planning and optimisation, I think that is potentially where there is a need to really strengthen what we have. We are doing the proper systems thinking across electricity and gas, and working out what will provide the least cost and best solutions for bill-paying customers. No doubt we will expand on that as the discussion goes on.

In terms of energy prices, that has shone a light on a few things, not least the security that we have previously had in our sources of energy. Ultimately, if the wind is not blowing and there is high demand for gas across the world, that can have an impact on customers, at the end of the day, somebody has to pay for things. It has shone a light on the way in which the market works and how that can feed through ultimately to an impact on customers' bills.

It goes back to the previous point about having that policy framework and the right planning framework around these things to determine what the right long-term answers are.

In my company, Cadent, we are very much thinking longer term about what all this means for us. Without natural gas, we need a new business model. We are very much centred on whether hydrogen can be a critical energy source of the future. We have a plan that we have just agreed with Ofgem for the next five years, but our thinking is going beyond that. A bit like what Guy was saying, we want to have the freedom to invest where it is sensible to bring forward investment at the right pace and in the right places, such that, as and when we have the production capacity and hydrogen becomes available, we are able to distribute hydrogen through our networks, either as a blended product or, ultimately, in its 100% form into customers' homes.

A lot of work is currently ongoing to get the network ready for hydrogen through the replacement of the gas network with plastic pipes, but there is more to do in that space. That is the space that we would like to occupy more, in the sense of being given more freedom to get on and invest in the right spaces for our customers.

Q89 **The Chair:** You have both referred to a five-year time horizon for the deals and, if you like, the certainty that you have with Ofgem. Is that long enough to make what are going to be multidecade investments to fund the transition to hydrogen?

Dr Tony Ballance: I have been in regulation for almost my entire professional career, as a regulator and then working in regulated businesses. The five-year and eight-year windows that we have had are good timeframes for looking at medium-term plans. They are good for driving efficiency into our businesses, which is what we have all been focused on, but they are less good at longer-term investment profiles and for understanding the incentive framework and how to go about planning and delivering plans for that longer term. I would very much encourage Ofgem and others to look hard at how to regulate for the longer term.

There is no silver bullet in this space. In the water sector, where I have worked, there has been the perpetual problem of how you balance the incentives between the longer and shorter terms. There is a need for longer-term planning, and to think about whether the framework for regulation needs to extend beyond the five years for some components.

In gas, we have just agreed price controls that have more regular interactions with the regulator to determine investment between price review periods. That is a good thing, because it allows you to take decisions between price reviews, but I do not think we have tackled the question of how we take decisions for the longer term of 10, 15 or 20 years. That is a perpetual issue for regulation in its current form in the UK, not just in gas and electricity but in other sectors.

Lord Burns: I want to follow up on Mr Jefferson's suggestion that

competition has caused a lot of the present issues in retail markets and that we should be careful about extending some of these areas of competition into networks. Could you say a bit more about that? What is it about the nature of the competition policy that has caused these problems?

Guy Jefferson: One of the issues relates to new parties coming into the market that perhaps do not have the experience or the business nous, if that is the right word, to properly maintain a business plan. There has been a lot about companies in the retail market not hedging ahead for their energy, for example, and that is down to the fact that they probably should not have been given licence to work in that market. Reflecting on that, when we think about networks we would be concerned that we were introducing third parties into the competitive environment that might not have the necessary experience and that might distort the market.

Lord Burns: So this seems to be about regulators being tougher about who they allow to participate.

Guy Jefferson: Absolutely, but is also about introducing competition only where you can be sure that it will make a difference and will be better for customers, whether that is on price or quality. I do not think that case has been proven yet, certainly from a networks perspective. To take my own company, 95% of the work that we do in our transmission network is market tested. We go out to the market and contract for the services to deliver those infrastructure investments. We test the market. We have brought prices and costs down consistently since privatisation, and the cost to the customer has gone down in real terms, but the network security and improvement in service to the customer has improved by 50%.

You just need to be careful. We are absolutely happy to encourage competition, but it has to have a benefit to the customer in quality and price, and I am not sure that case is proven in some of the proposals that are currently being discussed by BEIS and Ofgem.

Baroness Noakes: I think both of you have talked about needing freedom to invest, but of course no one is stopping companies from investing. Are we clear that what you really mean is the freedom to charge customers for investment that may not in fact prove to be successful, or that customers do not see any benefit from in the short term? I just want to get our terms clear.

Dr Tony Ballance: Ultimately, the ability to invest and to pass on the cost of that investment to customers' bills does come into it. We have a regulatory regime that encourages us to do things at the least cost, to cut costs and to be efficient, but that does not necessarily have the long-term investment properties that encourage us to think, "Okay, we have agreed a set of parameters with the regulator, but if we wanted to invest more over here, we have a means of recovering those costs and ultimately getting a return on that investment through our customers' bills". That is exactly what I am talking about.

Q90 **Lord Allen of Kensington:** Do you believe there is sufficient clarity in the roles played by government, Ofgem and industry? I ask you to focus specifically on what I would call the energy trilemma: reducing to net zero, ensuring security of supply, and keeping prices down for the consumer. That is clearly a difficult trilemma to deal with. Do you think the present distribution of resources between government, Ofgem and industry is appropriate, well-understood and utilised? If not, perhaps you could give us some practical examples of how that could be improved.

Dr Tony Ballance: As with any regime that grows up over time, the roles potentially get a bit blurred between who is doing what. There is a real opportunity to look again at the roles—I touched on this in one of my previous answers—and who is responsible for planning the future systems out. BEIS and Ofgem are running a consultation at the moment about future system planning and operation. It is timely to have a good look at that and to clarify who is doing it.

You find instances where the regulator is trying to do some planning and instances where the Government are in charge of the policy framework, but sometimes it is not altogether clear who is taking the decision. To give you one little example, Ofgem encouraged companies to come forward with green recovery investment that would be done outside the price reviews. With regard to gas, there was little appetite to bring forward investment. We were at the end of our price review period, but there was uncertainty about the future direction of things like hydrogen, and ultimately a reticence on Ofgem's part to take decisions that had not been taken by government in relation to the future of hydrogen.

That contrasts with electricity, where there was an acceleration of investment to deal with electricity charging points in order to ensure that customers with EVs could get access to charging and more accessibility there. That gives you an example of where it is not quite clear who is making those decisions. Guy and I have both made points about long-term system planning issues. There is a lack of that in the sense of someone thinking about the capacity that we need in the electricity distribution and transmission networks and the equivalent on the gas side, and how we ensure that we get the right balance of scenarios there. That is where some new form of system planning needs to come in through the results of the consultation exercise that is currently being undertaken.

Lord Allen of Kensington: To pick up on the specific point about electric charging points, that was an Ofgem intervention rather than a government intervention. Is that right? I know it was not in your sector, but are there implications, problems or issues for your sector from Ofgem rather than government making those policy interventions?

Dr Tony Ballance: I do not know if it is right or wrong; it is just a fact. It is not entirely clear to me who in a gas network is the right body and who is taking those ultimate decisions.

The essence of your question is the need for greater clarity, and there is a need for that. It is not that anyone is not doing a good job—I can understand why Ofgem wanted to bring forward that investment for the betterment of customers with EVs—but there are longer-term questions about who should be taking those decisions in a more rounded, holistic way.

Guy Jefferson: It would be helpful to have a strategic policy statement from government telling Ofgem to align with the net-zero objectives, as I have said before, and to have that as a firm part of its obligations. That would bring clarity. The Climate Change Committee has done a lot of good policy work and given good advice to government. There are lots of elements in there. One of them is EV charging, which, if adopted as policy, would give clarity to Ofgem, which in turn would give clarity to us.

I understand the point that Tony is making about the green recovery investment. That ended up as £300 million worth of investment during the period of our current price review—it was outwith our price review control, if you like.

It is about recognising that, at the end of the day, we need to be moving more quickly in order to deliver against our customers' requirements. I am always focused on our customers, and our customers are starting to pick up on EV. It is important that we try to deliver against those objectives but at the same time try to provide a fair balance across all parts of our communities so that everyone gets an opportunity to potentially gain from electric vehicles in future. Those green recovery investments were very helpful and a good signal of how we are going to move in future.

We come back to the agility point. Because we already had shovel-ready projects, and we have customers who have not been able to connect to our grid or EV-charging customers who have been unable to afford some of the infrastructure costs, having that socialised in these projects—once we deliver them in 18 months' time, which is a very quick schedule—will prove to be invaluable and a good test of the uncertainty mechanisms that will be in these regulatory agreements. That was a positive step from Ofgem, and I would like to see that built into the future price reviews so that we can react at the pace that we need in order to deliver against the Government's net-zero objectives.

Lord Allen of Kensington: Do you think there was a proper cost-benefit analysis of investing in that rather than in other options? Clearly this has many facets and there are many ways in which you can make multibillion and, as the Chair said, multidecade investments. What analysis do you think was done? Was there sufficient cost-benefit analysis?

Guy Jefferson: Probably not. It is difficult. I come back to the pace of change: sometimes you just have to take a leap of faith. There was a requirement for this, because there was a pull from customers. For example, one of the projects was a new primary substation here at the Caledonia depot in Glasgow for First Bus, which is now electrifying its bus

fleet. It had a real requirement and we were able to facilitate that through the green recovery challenge fund.

We can do post-investment analysis and look at that very question. To roll this out further, we need good pilot projects to base those investments on in future. They will give us the opportunity to do that. We can deliver them quickly and there is a definite need for them. This will go a long way towards decarbonising bus public transport in central Glasgow and all the benefits that that brings to public health such as in the low-carbon-emission zones that are here in Glasgow and other cities around the UK.

It is important for us to take these projects and do that post-investment analysis, and to understand the benefit of this for our customers and how that stacks up against other investments. It is the right thing to do, but I take the point that we need to do more on understanding the value of that investment.

Q91 **Lord Blackwell:** What is your view of the way in which the move towards a renewable energy system will affect the security of the UK's energy supply? Is there an appropriate strategy to address that? For example, should we be planning, and is there a clear plan, for ongoing fossil-fuel or nuclear energy to provide baseload demand, or will mechanisms such as producing green hydrogen off peak mean that we do not need that? Is there a clear view of how this is going to work out?

Dr Tony Ballance: It goes without saying that the expansion of renewable energy is an excellent thing, but it brings greater intermittency in generation. We have seen that in recent times when the wind has not been blowing. In the gas sector, having natural gas has been a great buffer when it is really cold but the wind is not blowing and the sun is not shining. You can rely on it as a source of energy to provide an underpinning back-up supply.

In the longer term, we need to be cognisant of the fact that we will have a system with less storage in it. That is where hydrogen has a role to play. There have been technological advances in electrification through battery storage, too.

One of the distinct advantages of hydrogen will ultimately be through so-called green hydrogen. This will use renewable energy to produce hydrogen using "spare" renewable energy, manufacturing that hydrogen and then storing it, for example, in old salt caverns. You can then use that hydrogen at times when it is cold and the wind is not blowing in the winter. That is the longer-term goal, particularly for a company such as mine.

In the medium term, fossil fuels certainly have a role through so-called blue hydrogen, which uses natural gas and captures the carbon through the process. Again, that produces hydrogen that will ultimately be used by heavy industry but could also be blended into the networks in the medium term. That provides a segue from the current paradigm to the

future one of green hydrogen, which is ultimately where we want to get to, but using hydrogen as part of that transition while we decarbonise fossil fuels like natural gas.

You asked about nuclear. I am no expert in that field, but I suspect that in the longer-term scenario there is a role for nuclear providing an underpinning back-up capacity to the network.

To wrap up, it goes without saying that in a renewable world we are more reliant on something that is more variable and there is less security. We therefore need to explore other sources of energy, not least hydrogen, as part of the long-term energy mix that will be the best solution for our customers and for society at large.

Guy Jefferson: I agree with everything that Tony has said there. The whole system needs to be considered, and he has eloquently described that, so I will not repeat it.

I would add that renewables bring another technical engineering issue that we need to deal with. Traditional rotating plant to enlarge power stations also bring what we call megavars, which allow energy to be pushed through the system. Renewables do not bring the same amount of generation of megavars, so we need to put new technology on the network to bring that stability artificially through power electronics.

That is another area where we need to make sure that our colleagues in Ofgem are giving us agility of decision-making about where we connect those new technologies to replicate that system push, if you like. Again, we are seeing a lot of competition in connection, which is fine, but we need to make the decision-making process as quick as possible. We are absolutely committed to renewables. We have technical solutions to the engineering issues, but as part of that we need to have fossil fuel, but clean fossil fuel. Cleaning the carbon dioxide from the fossil fuel is vital, but it will need to play a part—as will nuclear, probably. Obviously the concern is that these plants are being decommissioned at a quicker rate than was envisioned a few years ago, so we need to make some policy decisions about those sources of energy and how quickly we can bring them to fruition.

Q92 **Lord Blackwell:** On the timescales for this transition, we have some ambitious government objectives—2035, 2050. It is possible to imagine that the development of green hydrogen and nuclear fuel will mean that we can completely dispense with fossil fuels at some point, but is there an interim problem? Do the Government have a strategy that enables these transitions to take place in the timescales they are setting out?

Dr Tony Ballance: I think they do, but we would probably like to see a bit more pace, particularly on hydrogen. There are some critical things there. There is the promotion of the so-called industrial clusters, and decisions on those are expected soon. As part of the blue hydrogen transition, we need a workable model for hydrogen production that

includes carbon capture and storage and a regime that will support that as well as support the production.

It goes without saying that time is of the essence. It is not like we have all missed the boat on this, but in the next two or three years those decisions will be really important so that we can drive the hydrogen agenda, rather than letting it evolve to some extent. There are important decisions about getting blue hydrogen under way, which is the segue, as I said, to green hydrogen longer term. If we crack that, it paves the way for the UK to take a leadership position on the whole hydrogen economy.

Lord Blackwell: Do you put the same emphasis on hydrogen, Mr Jefferson?

Guy Jefferson: I am no expert on hydrogen. I know that it will play a part, but we do not know 100% what part it will play. From an industrial point of view, for example driving HGVs, I can see that it will provide a kind of load-shifting capability when we have green hydrogen from generating excess renewables as a sensible thing to do, but again I think we are very early in that.

I absolutely support the investment in researching that and bringing more clarity to that question, but I guess my view is neutral at the moment. We are investing heavily in wind, offshore and onshore, which is very positive. It will give us baseload availability, but again we need some quick decisions on alternatives and I am not sure they are forthcoming at the moment.

Colleagues in the National Grid in the east are probably better placed to talk about the margin that we have at the moment and moving forward into the next 10 or 15 years, but obviously there are concerns. Again, not to sound like a broken record, but I stress that pace and agility are important here, and we need to see more of that.

Q93 **Lord Eatwell:** I have been asking questions consistently on this committee about systemic risk. There has been systemic risk with respect to moving towards the environmental targets, but of course we have suddenly discovered that we have systemic risk right now. It seems that we have inadequate storage, that our interconnections are not as entirely risk free as we might have thought in the past, and that our system is not as systemically stable right now, let alone as we move towards more reliance on wind, solar power and so on.

I would like you to reflect on the system as a whole and the risks inherent in that system, some of which have been rather forcefully revealed over the last couple of weeks. I would like you first to reflect on right now and then to do what we were doing in the past: talk about the movement towards net zero and, if they are different, the risks that emerge then. I wonder if Dr Ballance could begin.

Dr Tony Ballance: I agree with much of the thrust of your question. Recent events have revealed those systemic risks. One is that we have in the UK pursued competition policy with regard to utilities with some

vigour, so to some extent we are at the mercy of competitive forces within that market.

For example, we have far less gas storage in the UK than in mainland continental Europe, so when there has been a huge increase in gas demand, not just in Europe but elsewhere in the world, restricted supplies from Russia and a whole bunch of other factors, that has been revealed in the way we have historically and in recent times relied on the market to fix that.

I will not stray off piste too much, but if you combine that with a price cap to protect customers, and one can understand why that came about, you have the kind of perfect storm for revealing those systemic risks in quite a painful way, as we are all experiencing them, and working out how to fix that.

If one casts one's mind forward and thinks about how we avoid this—Guy talked about this—it is about getting the balance right between where we want to have competitive markets and competitive forces against a more planned-for way of doing things. That is where these whole-system plans and the need for some form of system planning done at quite a high macro level will be hugely important for the future resilience of our energy supplies not relying wholly on a market being the panacea. I say that as an economist who has been a regulator and who understands where markets and competition can work. If you overdial on these things—particularly when, in the current situation, you mix the market in with bits of regulation like the price cap—you can create systemic risks that are then very difficult to cope with in the moment.

In short, the answer is to get that future plan and the institutional framework right in order to plan in a way that gives us that security and does not make us so beholden to the market forces that you might find in the short term.

Q94 **Lord Eatwell:** Thank you. Mr Jefferson, taking up the same point, what has gone wrong now, and how do we prevent it going wrong in the movement towards net zero?

Guy Jefferson: I will answer that from a network perspective; obviously that is my area of expertise. I do not think that the issues now are an issue with networks. Given the integrity of the network, if the energy is available we currently have the capability to transmit it around the country in an efficient fashion.

Moving forward, the dynamics of the network are changing significantly as we bring on more renewables. The north-to-south transfer of electricity is much greater. One clear target that we do have is for onshore and offshore wind. In Scotland, that could be 20 to 30 gigawatts available, most of which needs to be transferred down to the load centres in the south. Our existing capacity is 6.6 gigawatts for transfer. By 2030, we will require somewhere between 15 and 20 gigawatts of transfer

capability. It is a potential risk, a systemic risk, if we are unable to do that.

I come back to my point about the agility of decision-making. We have projects under way. Four east-coast HVDC links are being proposed to help us towards those targets. We are in the middle of developing one of those through our current regime and working with Ofgem with regard to having it approved at some stage next year. A nine-month delay for whatever reason in making that decision could cost our customers £300 million in constraint payments for those renewables being built in the north of Scotland. A short delay in decision-making can cost the customers a lot of money, so I guess there is the systemic risk of increased costs and the ability then to transfer that energy to the load centres in the south.

I apologise for defining my answer to that question in networks terms only.

Lord Eatwell: No, that is fine. That is very helpful, actually. Dr Ballance, if I can paraphrase what you said, essentially resilience requires redundancy, and competitive markets do not like redundancy.

Dr Tony Ballance: That is part of it, yes. For example, we have relied on the interconnector to bring gas from Russia and Europe into the UK. We have dialled down on our storage, because in some sense we have worked in a market economy. That is not a bad thing, but it brings those risks and makes us privy to how that market works. Guy made a brilliant point, which is that, from a network point of view, they are not the issues. We are able to move the gas around; we are just reliant on a market that, to some extent, we expect to be fluid and to provide the product as and when we need it. Obviously, the laws of supply and demand kick in when we do not have those storage facilities.

Q95 **Lord Eatwell:** As a follow-up, I want to focus on interconnections, which seem to be very fashionable these days. We have the interconnections with France, which has provided us basically with nuclear-generated electricity. There are also gas interconnections. Should we be thinking in environmental terms about what is on the other end of the interconnection—in other words, whether what is on the other end of the interconnection is renewable? If we think in those ways, are interconnections available that will provide us with some systemic stability? Dr Ballance is looking rather puzzled.

Dr Tony Ballance: This is probably more for Guy. It is more about electricity than about gas, I think. Longer term, we will not be transporting natural gas in gas pipelines unless we are using blue hydrogen, but we want to get to a world where we are using green hydrogen through renewable energy. That is why I was looking—not puzzled—more to Guy to provide the answer.

Lord Eatwell: Right, Mr Jefferson, should we be thinking seriously about the environmental issues at the other end of our interconnections?

Guy Jefferson: Absolutely. Philosophically, yes, if we are serious. Our company, the ScottishPower group, is 100% green when it comes to generation, and all our generation sources are renewable. If the Government are absolutely serious about net zero, which I believe they are, we have to consider what is at the end of the interconnectors. I cannot comment on what is coming through the pipe at the moment, to be honest, but it is absolutely right that we should follow that path.

Whether we have the interconnection is probably a question for National Grid, because it manages most of the interconnectors. We have only one interconnector, across to Northern Ireland, and it is relatively small compared to the large connectors to Norway that went live a couple of weeks ago and the interconnectors to France. Interconnection is an important part of the mix in terms of alternatives to get us to net zero, but it does that only if what is at the other end is renewable.

Q96 **Lord Reay:** Good morning, gentlemen. I want to address the role of the gas network in a net-zero energy system. Can you talk about the clarity you require on the future of heat, including hydrogen, and how soon the decisions are required in order to meet the net-zero targets? The *Sun* newspaper is reporting that the heat and buildings strategy, which apparently is coming out next week, is delaying the decision on replacing the network to hydrogen. I wonder if you could respond to that. Perhaps Dr Ballance might start.

Dr Tony Ballance: There is a need for greater clarity. We have been awaiting the heat and buildings strategy for some time and there has been a lot of speculation about what it might contain.

In relation to hydrogen, we need more certainty about things like being able to install a hydrogen-ready boiler. A mandate from government is needed. It has been mooted in the past; it was mooted in the hydrogen strategy but not until 2026. An earlier decision would send a signal in particular to boiler manufacturers, which have prototypes (and more) up and running in terms of being able to produce hydrogen-ready boilers, but there is an unwillingness to go into full-scale production until they get a signal from government that it is worth getting their manufacturing capability to produce them. We need to look to that.

Obviously, we are a little reticent to get decisions—for example, that would ban the gas boiler—until such time as we have that mandate for hydrogen-ready boilers. We certainly do not want decisions that come too quickly that will not be in the best interests of the consumer base, who rely on their gas boilers today. There is wholesale replacement of gas boilers every year as they break down and need to be replaced. There is a need for clarity in that space. The hydrogen strategy gave a bit more clarity in relation to things like hydrogen production, which is obviously the other part of this.

We yearn for clarity that enables people to take decisions, particularly on boilers and the like, that will be in the best interests of customers in the longer term.

Lord Reay: Could you talk a bit about the lessons you are learning from the pilot projects on hydrogen that you are currently running?

Dr Tony Ballance: There are a number of them. We ran a trial project at Keele University on blending hydrogen. We successfully blended 20% of hydrogen on the Keele University campus, a few hundred properties. That has now been extended. A second phase of that project is blending to the village of Winlaton near Gateshead. That is a small urban conurbation. We are blending, in Northern Gas Networks, up to 20% hydrogen there. So we are learning a lot about blending.

Two houses have been constructed on the edge of Winlaton, again on a Northern Gas Networks site, which have full hydrogen appliances in them. You can go into those houses, switch on the cooker hob, and it burns a nice bright orange rather than blue, but to all intents and purposes you can see a house that has hydrogen connected to it and how the boiler, the cooker and the gas hob work. When I went there, people said that it was going to be underwhelming, but it was overwhelming in how underwhelming it was, because it was just like your normal gas system in your house. So that is going on.

The next trial is up in Levenmouth in Scotland, which is SGN's network, where they are building the first hydrogen network—dual networks are being constructed, one for hydrogen and one for gas. That is green hydrogen. It is expected that, of the 300 properties that they are converting, around 100 will convert on to hydrogen so that you can see it working at scale.

The next big one that the Government want to run is a hydrogen village trial of 2,000 to 3,000 properties. The various gas networks are working together to put forward propositions to BEIS in the next couple of months for it then to decide, with Ofgem, where the location of that will be. That one is pivotal. We want to get on with it, because it is crucial to show the technical and safety case for hydrogen, and we expect it to be successful.

The last one that I should not miss out is that BEIS has been spearheading its programme on safety in houses, where testing has been done in conjunction with the gas networks and hydrogen is shown to be as safe as natural gas in the home. So a lot of work is going on in that space.

Sorry to give you a fairly long-winded answer, but they are all pieces of the jigsaw that in the next few years will give us the confidence that we can show that hydrogen is technically feasible and safe.

Guy Jefferson: My biggest concern about the heat policy is in the supply chain. We are pushing forward in our business plan and we expect to connect 1 million heat pumps and 1.5 million EV chargers in our networks by 2030. That is what is in our future energy scenario and what we are planning for. I expect that to come to fruition. We cannot be in a bottleneck here, so we are pushing on with that.

My concern is about heat pumps in particular and making sure that the supply chain gets the right messages that the Government are committed to this area so that we can start to see an economy of scale and deliver that number of heat pumps on our network. We are just 15% of the overall electricity network. Multiply that by five or six and that is the kind of volume that you are looking at by 2030, so you really need a policy commitment underpinning that in order for supply chain partners to get up to that level of economy of scale.

Q97 **Lord Burns:** Could we turn to your assessment and view of the operation of Ofgem's price controls for energy networks? I would like you to say a bit about what the changes have been with RIIO-2 and the whole question of how Ofgem is going to cope with the uncertainty, as we have been hearing this morning, with the network companies.

Dr Tony Ballance: Maybe I will go first, because we have just done our price review while Guy is in the thick of theirs. To stand back from it, I think that to some extent the RIIO price control was typified by Ofgem seeking to redress the balance between customers and investors, if I can put it that way, because it had observed, through the course of the eight-year RIIO timeframe, that the networks had outperformed. Maybe that was expected in the way the price control was constructed. Nevertheless, it caused Ofgem to think about getting that balance in a different way, so it has removed quite a lot of the incentives in the RIIO-2 price controls to outperform. There are still some incentives on performance, but there are a lot fewer performance incentives there that allow companies to make returns over and above the base level cost of capital.

Within that, Ofgem took a view on the cost of capital to reduce returns, and that matter has been appealed through the Competition and Markets Authority. The starting point is a construct of wanting to restrict the level of outperformance and restrict the level of returns that might be made. I am not making any pejorative remarks; I am just trying to be factual about it.

The second feature was then to introduce quite a lot of mechanisms. We have something like 15 so-called uncertainty mechanisms that operate between price control periods, which allow in particular the ability to look at investments that you may need to make and not have to wait until the next price review period. There are some positives in that. There are certain mechanisms that allow you to get on and spend money on innovation and the like without having to go back to the regulator. There is an inherent risk in that, in the sense of having the capacity to do it and potentially unwittingly becoming more short-termist because you start to review things more systematically on a shorter timeframe than even a five-year or eight-year price control period.

That goes back to my previous point about thinking about some of those longer-term investments so that you do not have to take decisions in the shorter term or indeed take them at price reviews. The regulator does not have to try to second-guess every last bit of investment that you might need to make over the next five years. They can have a framework that

allows, with some controls, the ability of network companies to seek to bring forward or accelerate investment in particular areas without having had it prescribed by Ofgem.

I have come from the water sector, and the energy sector feels a bit more restrictive in terms of what has been "funded" by the regulator. There is an essence of the regulator seeking to get the right answer in those price controls and predict, with a reasonable level of accuracy, what it thinks an efficient company should provide. In one sense that is fine, but in a world where the paradigm is quite different and you want to encourage investment in these uncertain technologies, we might need to take a bit of a backward step in order to move forward: we might need to spend money on certain things that do not happen to become the right solution, because we do not know what that solution is in the longer term.

To what extent is hydrogen going to be a real feature? I have of course been an advocate for it, but there is no magic answer to getting the balance right between electricity and hydrogen. We have to commit investment in a number of areas and learn as we go through. You cannot do a 50-year plan now and say, "These are the answers". We are going to have to learn to be more speculative in investment. That argues for a regulatory regime that needs to have a bit more flexibility and long-term thinking, and a somewhat different sensitive set of incentives longer-term to encourage that investment.

Guy Jefferson: That was a great answer by Tony, and I echo the vast majority of it. Investors need certainty, especially when they are looking at returns over 40 years on those investments, so we need certainty as much as possible. Tony's statement about the returns for network companies was spot on.

On the point about incentives, by all means challenge us to come up with solutions to some of the problems that we have been talking about today, but it is important that we are given incentives to do it. RIIO-2 has taken away some of the initial incentives that were put in place in RIIO-1. That is unfortunate, and perhaps we need to try to build that back.

Looking forward, the net-zero challenge will make a huge difference. The other point to make is agility around uncertainty mechanisms. By their very nature, they might bring in delays while decisions are made. For example, in transmission, where we have been through the same process as Tony, uncertainty mechanisms are built into that. Some of them are fine at low level and allow us to crack on, but for others, when expenditure gets higher—over £100 million—there is another process to go through. That is fine. I have no problem with that. We should be challenged, but we have to make sure that that is done in an efficient way.

At the moment there is a £600 million project being done in Shetland on LOTI, a new transmission mechanism, by our colleagues at SSEN. That could be delayed; it could take over a year before that project is

eventually given the green light. That kind of delay in certain parts of the network could cost customers quite a lot of money—for example, in the constraint payments for renewable energy. We need to make clear—the broken record again—that agility and pace are important.

Lord Burns: It looks to me that, in some ways, you are looking for certainty in an area where there cannot be certainty. There just is uncertainty; you have spent a lot of time this morning telling us about the uncertainty that is endemic in so many of these projects. Is this therefore really an issue of how far you have to get the approval of the regulator beforehand to spend these sums of money and how far this can be assessed afterwards? Is there is a certain amount of trust and confidence in what the regulator's response will be to the investments?

Dr Tony Ballance: There is a distinction between the certainty of return versus the certainty of what is being prescribed. There is a tendency in regulation for the regulator to try to work out the solution, the specific investment that is required upon which you earn a return. I think what Guy and I are both trying to say is that you might need to become more outcome focused: "This is what we want to achieve, and this is the money that we spent".

This goes back to the thrust of Baroness Noakes's question: we are asking to be able to spend the money not on the prescribed output that Ofgem has determined, and to get a return on it. That is different from saying, "Here's this scheme that we've funded and you can spend the money and earn a return on it". That is what we are trying to say. It is a different construct. It is probably where regulation was 15 or 20 years ago, with less specification about what you were going to deliver and more degrees of freedom to do that.

That comes with risks, and I get where Ofgem might come from, which is, "Well, is that a licence for you to make lots of money, because you're going to spend stuff on things that are wasted?" There are other ways of ensuring that that does not happen. We can have mechanisms for restricting overall returns and so forth. We need to take some of the shackles off some of these things to allow more latitude for the network companies to do the thinking and the planning of these things, recognising the thrust of your question, which is that no one really knows what the right solution is, so we are going to have to invest in a number of different things to work out what the solution is.

Q98 **Baroness Donaghy:** That leads nicely on to my question about whether Ofgem needs to give greater consideration to the risks of underinvesting in the transition, and to stranded assets in its regulatory framework. The Sustainability First report called for this, and Adair Turner said that there would be significant investments in the transition and distribution grids, but if one waits to approve the necessary investments until the demand is there, it could be too late.

Your company, Dr Ballance, has called for the regulator to be rewarded for being bold and encouraging investments in such a way that they can

resolve uncertainties as soon as possible. Would you like to elaborate on that?

Dr Tony Ballance: Your question is an excellent one. We are in a different paradigm now. Going back over the previous 20 to 25 years, there was always the risk that companies would seek to overinvest and get rewarded for it through the returns that the regulator set. We are now in a different world where we risk underinvestment and we get behind the pace of these things, and we have regulators that have probably grown up that are quite cautious and want to make sure that customers' money gets spent on the right things.

I suppose what I am espousing is the need to think differently. To borrow Guy's phrase, we need more agility in the system to be able to take decisions and say, "Actually, we're not sure that that investment is the right one, but we'd jolly well better get on and invest in it, because if we don't do it, customers will be worse off by not spending the money". That is the paradigm shift.

That is where I talk about regulators becoming bolder, because it is quite a bold step for organisations that tend to be risk averse and want to make sure that money gets spent judiciously and on the right things so that whatever customers have paid for they get the right thing, but that might be the wrong construct for the world in which we see ourselves where we might need to invest in more things. We should be able to do that in such a way that if you provide investors with the returns to do it, you can do it at lower risk. It might be a lower-cost overall solution anyway, because you get more certainty over your investment and the returns that are commensurate with that, rather than higher-risk but more defined outputs, as it were.

There are ways around this to get to a different regulatory construct that allows you to do that without, as I say, companies winning out massively as a result of this. That is where the hesitancy comes in on the part of regulators. Perhaps quite rightly, they fear that customers will be penalised in some way through excessive returns, but there are ways of mitigating that, I think.

Guy Jefferson: I agree. I would maybe approach this from a slightly different angle. The pressure that will be brought to bear on infrastructure companies, and electricity infrastructure companies in particular, is that we will not be able to deliver enough infrastructure to meet the requirements of our customers. We are looking at alternatives, such as flexibility, smart use of energy, and better utilisation of our network in order to balance that risk so that, through a blend of investment in our assets and the utilisation and building in of flexibility through third-party providers, we will be able to deliver against our customers' expectations. I cannot see any way in which we will have stranded assets because of the level of investment required over the next 15 to 20 years. On that basis, it has taken away that risk.

I am being very high level and strategic, in that you might find that there is an issue in pockets, but generally the risk of stranded assets is reduced significantly, I would suggest, for the next five or 10 years. I agree with Tony that we just need to move on to a different set of constructs.

Q99 **Baroness Donaghy:** Thank you. You have both mentioned the importance of local and regional initiatives. Adair Turner certainly made a big point of that when he came to our committee. Would you like to take the opportunity today to develop that and to give Ofgem some hint about how that would be welcome?

Guy Jefferson: I absolutely agree. In the different areas where we operate we tend to find that regions go at different paces and have different priorities. In some cases that requires subtly different infrastructure requirements, and in other cases it requires completely different infrastructure requirements. It is important for us in future regulatory agreements to ensure that we take account of regional variations.

That is certainly what we intend to do; we have put forward a number of initiatives in our latest business plan to try to help that but also to help local authorities, for example, which have been somewhat hollowed out in some areas over the last few years and perhaps do not have the skills and knowledge, particularly in energy planning. We can provide more support in that area. That is important in order to get the right solutions in those local areas.

I agree 100% that that is a focus for us moving forward. We have taken account of 15,000 stakeholder views in our new business plan. A lot of them are obviously local, and we have built that in. That is a really important dynamic.

Dr Tony Ballance: I very much agree with Guy. This is going to be a huge feature of price reviews, however regulation takes place. It will be a much bigger feature.

In recent times we have seen regulators dialling up the need for consultation with customers, but we are now getting to a more micro level of planning. We have to plan at that level. There will be a need for UK-wide plans, particularly for transmission and whatnot, but—and here I am talking particularly about heating—the question of whether the solution is going to be hydrogen or electrification needs to be solved at a town level.

We did a lot of work for Greater Manchester Council, in conjunction with Electricity North West, on its decarbonisation pathways. That proved to be a successful exercise. It was very resource-intensive, and to replicate that right across our region would be a major undertaking. Nevertheless, we are going to need to do that. We are doing similar work with SPEN to work out together where these decarbonisation pathways are at a local level. That is another feature of the way in which regulation needs to think: you have to get the high-level macro picture but also the local

picture. You have to encourage and nurture the ability for companies to work together but at a local level to produce plans.

I will not go on too long, because we could spend all day talking about it, but how do you regulate those plans? What capability do you need in the regulator? I would not be a proponent of saying that you therefore need to massively increase the size of the regulator to review all these plans. Quite far from it: you place reliance on the network companies to do that micro planning robustly, and then the regulator challenges whether those plans have the efficient level of costs within them to deliver the right outputs with the degrees of latitude that I have talked about that provide the right incentive framework for investing at the right pace.

I make it sound easy, but it is absolutely not—people think long and hard about how you design regulatory mechanisms—but in answer to your question, which was another great one, an awful lot more work needs to be done at the local, and local authority, level.

Q100 **Baroness Donaghy:** My next question is going to sound like a contradiction in terms. It is about whether more competition should be introduced into the energy market, including energy networks. You have already referred to the BEIS consultative document, which explores onshore electricity networks. Earlier in the session you both seemed to be lukewarm on the issue of competition. I am wondering whether that is a case of "You would say that, wouldn't you?", or whether your point about the right people being admitted to the club is a genuine concern.

Guy Jefferson: It is definitely that, but also—to return to one of my earlier comments—where it offers value for money to customers is really important, and I am not sure that in the discussions and consultations so far that has been proven. Some models in the US have been used, for example, but that is a completely different market from the UK in the way it is regulated.

I have no problem with competition. As I said, in our transmission business over 95% of the work that we do is tested in the market; it is competed for by a contract workforce, so it is competitively tendered. We think we deliver good value at the moment, and I think that is proven by the fact that our cost to serve has dropped in real terms over the last 10 years. The quality of customer service that we have delivered has also improved significantly. I have yet to see the proposition that says that will be bettered by introducing this.

The risk—to go back to my broken record—is that we introduce time, and we do not have time. That is not to say that I do not think we should be challenged. We have no fear of that, given the robustness of our plan and its cost-effectiveness for customers, but introducing a two to three-year delay into some of these projects would cost a lot more money than we would save by putting it into a competitive environment.

Dr Tony Ballance: That is a good answer. For me, it is horses for courses. Yes, competition has a significant role to play and we should not

be scared of it, but, equally, if the desire is to have competition everywhere, we will not get on with the things that we need to get on with. Competing out and having auctions in the right space is a great thing to do in order to market-test things and make sure that we are procuring things at the right cost, but, as Guy said, we already contest out most parts of our capital programmes to make sure that we are getting value for money.

It is horses for courses. There will be areas where competition will make sense, but do not underestimate the benefits of planning, co-ordination and in some cases allowing the network companies to do some of that investment, because they can do it in a way that joins into their wider planning and probably delivers best value for money for customers. Selecting where competition is going to be appropriate will be the key to this.

Q101 **Lord Blackwell:** I want to go back to what you said in response to earlier questions about dependence on the regulator underpinning investment decisions. I could take the view, Dr Ballance, that your investors are invested in a dying business; it is staked on natural gas, and that has a finite lifetime. However, you naturally want to build a new business that has a future. Why should you not find investors who are prepared to fund the future business in the same way that oil companies are finding investors to back their move into renewable energy, rather than assuming that investment has to be secured by charges on existing customers? What is wrong with that argument?

Dr Tony Ballance: I would start by saying that we have investors who want to invest in the future. They believe in net zero and in investing in the right kind of assets beyond Cadent—other things where that investment is to some extent more speculative, such as hydrogen or wherever else.

I start from that premise. They have invested in our business where there is a certain risk profile and they expect to earn a certain return. While there is an existential threat to the business—we do not have a business unless to some extent we get hydrogen as a major fuel source under way—they want a bit more freedom to be able to invest in our networks to make them hydrogen-ready. That can be done within the current regulatory framework with the returns that are commensurate with that, as opposed to the returns that might be commensurate with a more speculative investment in something else where they are taking more risks. It is about getting that risk/reward balance right but giving more freedom, rather than just waiting for the regulator to prescribe what we should invest in.

Lord Blackwell: I am just not sure why you cannot invest in that outside the regulatory asset base, as it were. Why should your investors necessarily have their returns secured?

Dr Tony Ballance: Okay, I will clarify that. It is probably because I am talking about regulated assets and the pace at which we invest. Take our

network, for example: we might want to get under way and start bringing forward investment into, say, the north-west of our region, because that is where we see the industrial cluster for hydrogen; we can see hydrogen developing and we want to make sure that the network there is ready for hydrogen to be blended into it. You could say that we could do that under the current regime, but the incentives are not particularly strong to do that and could be stronger in order to get it under way.

Q102 **Lord Sharkey:** In a way, this question goes right back to the beginning of our conversation. We have heard concerns that the policies and decisions relating to decarbonisation have increased costs for consumers, with the potential for that to occur again in future—perhaps the very near future. As the Centre for Competition Policy has noted, the potential for conflicts between the duties of the regulator requires compromises and generates ambiguities about how the regulator in fact trades off the priorities that it has been given. The centre has suggested that there is a need for the Government to simplify Ofgem's duties and to communicate explicitly about the trade-offs between its different policy goals. We have had witnesses suggest to the Committee that Ofgem should be given a principal duty to deliver on the net-zero target.

Do you think that Ofgem's remit and statutory duties are appropriate to enabling a net-zero energy system? Should the net-zero target be made more explicit in Ofgem's remit? Should it be the principal objective of Ofgem? Does this conflict with its other objectives, including, of course, affordability to consumers?

Dr Tony Ballance: Having grown up with regulation, I can attest to the fact that there is a propensity to give regulators more duties to some extent to try to define what they do. As a personal view, I am not sure that that is the solution to everything. Giving regulators a sustainability duty probably did not change what they did very much, but it might sharpen up their thinking a little bit. I am not a huge fan of just extending that long list of objectives, because it can blunt the purpose that the organisation is there to serve.

I would not be against a net-zero duty, but, again, it would add to the list. If one were to decide that that should be the principal or primary duty, it would change the nature of a regulator that was designed to do different things, so it needs careful thought. I would be more of a proponent of sharpening up what the regulator is there to do, which in essence is to ensure that customers get best value for the outcomes that the regulated utilities are supposed to deliver.

In adding to the duties, we have probably to some extent moved away from the original construct of what the regulators were there to do, and I think we could sharpen that up. We could give Ofgem a duty on net zero, but we should not lose sight of what they are there to do. Without giving you too long an answer, that relates to the whole-system planning and who does all that versus the somewhat ambiguous policy structure that we have, where we could do with a bit of sharpening up of what Ofgem is there to do.

Lord Sharkey: I will explore in a moment what the difference between "sharpening up" and giving a remit might be. Perhaps Mr Jefferson might like to come in.

Guy Jefferson: My view is slightly different. I would probably put that net-zero requirement in there, but defining it might be quite difficult. Tony said a very important thing value. How we measure value over the long term is important. Ofgem has been asked to be a little bit short term on the cost to customers, and it needs to think about the value proposition in the longer term, which is slightly different from what it is asked to do at the moment.

There are some important things in there about protecting the most vulnerable customers and so on that need to remain. That becomes even more important in a net-zero future, because the concern is that we need a fair and just transition and everybody should have the same opportunity when it comes to net-zero benefits. That is still very important.

On what terms the net-zero objective would be put into the obligations, that could be consulted on and debated, but it is important that it is prominent. If we are to have Ofgem as the independent regulator in future, which is perfectly fine, it is important that the net-zero element is in there.

Lord Sharkey: Could I come back briefly to the question of sharpening up? Dr Ballance, in your written evidence, you suggested that, as an alternative, changes to the institutional framework of the sector or the use of a strategy or policy statement might also be appropriate. Could you expand on that and on the sharpening-up question?

Dr Tony Ballance: On sharpening up, I am alluding to the fact that simply adding another duty to an already quite long list of duties in some sense blunts it. It is a bit like when you set objectives for anybody. If you give someone 12 objectives rather than two, it waters them down. I am absolutely not against saying, "Yes, we want Ofgem to have a primary duty on net zero", but it probably requires looking at those other duties and asking what we want Ofgem to focus on, rather than it being one of 10 or 12 things. It already has quite a long list of duties compared to the original duties that Ofer and Ofgas would have had back in the day.

The strategic policy statement is another means of saying, "How do we sharpen up"—to use that phrase again—"the government position on what they want from Ofgem?" It is an alternative to saying, "We're going to change the statutory duties", which takes time; you have to change the legislation as opposed to using more "direction" from government to articulate what the priorities are and what is expected from Ofgem, and to do it precisely so that what is desired is clear and unambiguous, while preserving, obviously, Ofgem's arm's-length distance from government and the people it regulates.

Lord Sharkey: I hear that neither of you believes that Ofgem should be

given a principal duty to deliver on the net-zero target. Is that right?

Dr Tony Ballance: If someone said that we should do that, we would need to look at the other duties and ask what we want Ofgem to do. Its processes, systems and the way it regulates have grown up over a long period. If that is what we want it to do, it requires a more fundamental look at what it is there to do and what the duties are, rather than simply sticking that at the top and saying that this is now the principal thing.

Clearly, we do not want that delivered at the expense of protecting customers, making sure that things get delivered efficiently, bills are kept down for customers and all that stuff that we have grown up with. It is hugely important that the regulator is seen to protect the best interests of customers, but the conversation that we have had is that, in this new world, protecting customers is not just about giving them the lowest bills but about delivering that net-zero investment. It requires quite a lot of thought to get the balance of those duties right.

Guy Jefferson: Again, I do not think that I have a firm view on this. It is vital that the net-zero objectives are aligned into Ofgem in some way, shape or form, perhaps in an impact assessment. We talked before about impact assessments and value. We need a better assessment of that over the longer term. We are a relatively small part of the bill—about 16% in distribution terms or maybe £100 per annum.

A huge difference can be made in the investments we can make for a relatively small increase in the bill. I am careful with my words here, because I know from a vulnerability perspective that that is really tough for some families and households across the country, but having the ability to spread that cost over 40 years and the difference it can make in the short term to allow us to get towards net zero is significant. That illustrates that an impact assessment and allowing that value to be brought out as part of Ofgem's obligations is important, so it needs to play in in some way, shape or form, whether it is principal or part of the wider remit.

Q103 **Lord Grade of Yarmouth:** To follow up on Lord Sharkey's question, can I stretch your imagination? I want you to imagine that there is a plan, a policy, in place—this is going to require quite a stretch on your part. Who should project manage that, because there are so many component parts and constituencies? Obviously, there are the consumers, there is the demand side, the distribution side and so on. In an ideal world, how would you see that being project managed to make sure that we get to the target on time and on budget?

Dr Tony Ballance: It is an interesting and quite testing question. I am not sure there is an individual who should project manage such a thing. It is about getting the institutional framework right and getting the right players doing the right thing. One of the strengths of the UK model is that it is not all vested in one individual or single body that can do the masterplan. I know that others have said in evidence that what we do not

want is some kind of Russian Gosplan, and I firmly agree with that. There is no single answer to this.

An awful lot could be done through getting the system planning right. That is probably the essence of the answer to your question. It is probably where it starts. Who is going to produce that overarching plan from which you can then work out how you get the network companies to produce to it? You can compete things out, and all of that. Quite a lot of work needs to be done in that space, because in some senses that is where, to use your phrase, the project management probably has its core.

Lord Grade of Yarmouth: If you are doing a big building project with a lot of contractors and something goes wrong—because things do go wrong, and something will go wrong on the way to net zero—the whole project stops while everyone blames everyone else: the plumbers did not turn up, or the supplier wire did not turn up. There are a whole set of lawyers who sit down and see who is to blame. Someone has to be responsible for keeping the thing co-ordinated, keeping it on track: you deliver what you are supposed to deliver, and so on. There has to be somebody.

Dr Tony Ballance: Yes, I think that is ultimately the Government, but I do not think they are doing the project management. The Government are ultimately accountable; they have to get the right institutional framework.

Lord Grade of Yarmouth: They will want somebody to blame, will they not?

Dr Tony Ballance: There probably is a system planner who is responsible for that plan and its delivery, and then the Government can, as you say, blame or poke them or whatever. To extend your analogy, if you are building a city, you do not vest somebody as project manager. There is probably somebody who is head of the city council who says, "Right, we're going to put this into defined blocks and people have accountability for delivering their components of the thing". That is what I am saying.

What we do not want is government doing the whole of the planning. We probably all know that government is not best placed to work out what the absolute long-term solution is. There will be network companies such as ours that are better placed to do the planning at the micro level to work out what the long-term solutions are and how you utilise and garner those in how the framework works so that you make the best use of it. I talked about local area planning. That is not done at government level; it needs to be done by us together. How you ensure that gets done effectively through that system planning role is crucial.

Guy Jefferson: Perhaps I can again talk about networks, which is my area of expertise. We should not undersell the fact that we probably have one of the best networks in the world here in the UK. That has built up

over a period of time. Over the past 30 years in privatisation, we have built up a really strong way of managing and building our network. Obviously, we face new challenges now with net zero, and I cannot comment on generation and the margin there, but we have always managed to build a network that is fit for purpose. I remain confident that that will be the case in future.

In your challenge, if we have clear policy from government, I think Ofgem can then translate that into a set of price controls in negotiation with the distribution, transmission and gas companies to come up with a solution that will be fit for purpose. It is about getting clear policy and then Ofgem being able to translate that.

We already have fantastic people who can deliver this for our country. I am a bit more concerned about some of the margin issues, the generation and supply issues, but from a network perspective, where I have my expertise, I think we have the people to do this. We just need clarity from the top and we can crack on and do it. Again, I go back to my broken record: we need a little bit more agility here, we need some decisions made, and then we will build it.

Q104 **Lord Grade of Yarmouth:** Thank you. My second question is slightly more topical but hopefully quite far-reaching. I have been hugely impressed sitting on this committee and coming to this sector completely fresh—it is not my area of expertise—by the quality of the brains that work in it across all the different component parts, today being no exception. How come nobody foresaw the energy crisis coming?

Guy Jefferson: I will let you go first, Tony.

Dr Tony Ballance: I used to play a lot of rugby. That is called a hospital pass.

Lord Grade of Yarmouth: Once the media, always the media, I am afraid.

Dr Tony Ballance: It is a jolly good question. I wish I knew the answer. If we wound back the clock—it is a bit like the financial crisis—we would probably see that there were enough signals for us to have worked out that something like this was going to come.

The fact is that we are reliant on a market and we have a price cap. I am not casting aspersions on decisions behind those things, but there are factors in place. It was not envisaged that the price cap would sit below the wholesale price. You have scenarios. If you did risk planning, as we would do in our companies, you would probably have tested some of those things and properly evaluated them. I think the signals were there.

My previous answer was about some of the conditions that we have with a system that is heavily reliant on market forces without thinking through what that would mean for customers' bills, and then you lay on that price cap. You would like to think that we were able see these things better in

future than we have done hitherto. That does not quite answer your question, I know, but it is a challenging question.

Lord Grade of Yarmouth: It was a politician's answer.

Guy Jefferson: I can only come back to what I said before about competition. When we introduce it, we need to be absolutely sure that it will provide value for customers, not only today but in the longer term. If we went back and looked at the very start of introducing competition into retail, then potentially, with the benefit of hindsight, there may have been a different answer.

Lord Grade of Yarmouth: One of the issues for us, looking back with hindsight at the crisis, is reduced storage. How did that come about, and why did Ofgem or somebody not see that that was a very important hedge in the event of a massive market spike? Whose job was it to see that? Is that the politicians, or Ofgem? Should Ofgem have been banging on the politicians' door saying, "The risk of an energy crisis is always there. We really can't afford to reduce our storage capacity"?

Dr Tony Ballance: I do not know who bears the accountability. Ultimately, it is the Government, because we have designed a market-based system. As I said earlier, we have far less storage in the UK than we used to have and far less than is in Europe, where there is a more planned system. Out of that comes a lesson, not that I am at all anti-markets and competition: be careful what you wish for if you have a market that works like that, because, under certain conditions, the laws of supply and demand throw out the fact that if supply is constrained and demand is high, prices will go up.

What does that mean? We have probably had a bit too much faith in competitive markets delivering the right outcomes, but, in extremis, they deliver things that in the short term are very painful, particularly with a political hat on. Perhaps not enough thinking was done about where the customer and the consumer were ultimately going to be. There are a number of lessons with regard to retail competition in energy that you look at and think, "Well, have consumers really benefited from this?" In certain ways, yes, they have, because there has been some innovation, but in many ways it has benefited people who are best able to switch rather than those who are more vulnerable who do not have the ability to switch.

From a market movement point of view, there are a lot of lessons in this about price but also about who has benefited ultimately from a market-based system.

Lord Grade of Yarmouth: Anything to add, Mr Jefferson, other than that we need more flexibility?

Guy Jefferson: I am a networks expert, not a storage expert, so I will have to pass.

Q105 **The Chair:** Dr Ballance, to what extent did your company do due

diligence on the retailers that you supply, many of whom have now gone out of business?

Dr Tony Ballance: Our relationship is principally through the shippers. Again, they are regulated through Ofgem, so they have to have the resilience there, to some extent. Using Guy's line, we are a network company. Our thing is to ensure that we can transport gas—in Guy's case, electricity—through the networks. The market side of these things and whether the players in that market have adequate financial resilience is, ultimately, governed by Ofgem.

The Chair: Do you know whether Ofgem performed any due diligence on their financial and operational liability before they licensed them?

Dr Tony Ballance: I am not an expert on that and would not want to comment. Ofgem has said publicly that it would want to look more closely at this going forward. What it has done historically is a matter for it to comment on, rather than for me.

The Chair: Mr Jefferson, you were shaking your head.

Guy Jefferson: I was nodding my head at some of it. On Ofgem, I have no idea.

The Chair: You do not think that Ofgem did any due diligence of that nature.

Guy Jefferson: I have no idea.

The Chair: No idea? Okay.

Q106 **Baroness Noakes:** I should tell the committee that Dr Ballance and I sat for a number of years as board colleagues of Severn Trent Water.

Dr Tony Ballance: We did.

Baroness Noakes: I reflect that water is somewhat simpler than what we are dealing with now, not least because there is only one kind of water. Here, we have two streams of energy, gas and electricity, which historically have been very distinct and probably not very co-ordinated.

My question is therefore about what form co-ordination should take as we move towards net zero, and who should do that co-ordination. If you could, please combine your responses to that question with any comments on whether the Government's future system operator proposals are the appropriate forum for co-ordination and whether the Government are heading in the right direction. We will start with you, Tony.

Dr Tony Ballance: I have been in this sector now for 18 months, and I can certainly attest to the fact that it is a lot more complicated than water. You have put your finger on one of the complexities, which is the co-ordination between what, up to this point, we have been able to consider as separate sectors. These sectors now have to be involved in

working out the solution between them. We cannot see them as separate any more.

There are two answers to the question. The first is local-level planning. More onus needs to be placed on the network companies working together to work out their plans. They are best placed to work with local authorities at that micro level, and government institutions of any kind are not best placed to do that.

That needs to be coupled with the second part of the answer, which you touched on, which is about the role of the system operator, the system planner, going forward. It is crucial to put the more macro-level plans together that are saying, "This looks likely to be the kind of macro solution to these things", whether it is transmission capacity or where hydrogen is going to work more effectively than electrification, and vice versa—all those kinds of things. You want to see that happening.

One of the things that we have said in relation to the planning of a system operation is to be really careful that we do not chuck everything into a new organisation that combines strategic planning at one end and hour-by-hour balancing at the other, operational, end, because they are essentially quite different functions. What is behind that is a plea from me to get that system planning, that long-term thinking, right so that it can straddle both sectors.

Baroness Noakes: What are your views on the government proposals for the future system operator?

Dr Tony Ballance: We would be in favour of a system planner. We fed back into that consultation exercise that we would be in favour of a more defined organisation that would not necessarily seek to do all the system operation stuff as well. Just taking the electricity system operator today, moving it and then adding gas in could bundle it up into an organisation that is a bit unwieldy and not as focused as we would like, I think.

Guy Jefferson: I agree that co-ordination of whole systems is important. I use the phrase "whole systems", so gas absolutely but also other vectors such as transport and making sure that that is taken account of, especially given that, from an electricity point of view, it may give another flexibility resource. There are other elements that we need to keep in mind when we come to whole-system co-ordination.

I agree that we have operated in silos in the past and, given the challenges ahead of us, it is important that we co-ordinate our activities. Hydrogen is a great example. If that comes on stream, I can absolutely see that having an impact on heavy industry and heavy transport, which could take a lot of pressure off the electricity network in those areas. So working more in a co-ordinated fashion will definitely have a benefit.

My view on the future system operator is slightly different. Absolutely there is a co-ordination role, but from a planning perspective there is expertise in all the transmission operators and distribution operators. We

have that capability at the moment, and I do not see that replicating it in an FSO would necessarily be very efficient or effective. It would also perhaps come at an extra cost to the customer. Again, going back to previous comments, we should always bear the customer in mind here. The expertise out there is quite rare at the moment. That is a big challenge for us in resourcing what we have at the moment, and we cannot afford duplication in this area.

There is lots of consultation to be had on this, but it is absolutely our view that, from a co-ordination point of view, we need more detailed planning, and I think we would still look to reserve the right to complete that within our current organisation.

Baroness Noakes: Do you think the Government are going in the right direction, or are they potentially going in the wrong direction?

Guy Jefferson: The main thing is to keep consulting. I do not think any decisions have been made yet, but again I would have concerns if we ended up in a situation where we were duplicating effort and potentially incurring extra cost. Consultation is good at the moment. We just need to make sure that that continues before any decisions are made.

Q107 **The Chair:** I would like to come back to one point you made earlier, Mr Jefferson, about looking after the customer. You talked about installing a large number of heat pumps. I think one thing that is spooking a lot of households is that they will have to fork out something like £10,000—that is the number that is banded around—to put a heat pump in.

In your view, is that a fair estimate of the cost? Can it be brought down by significantly increased manufacturing numbers? When you are putting these heat pumps in, do you offer financing so that the cost can be spread over a number of years? How do you approach that looming problem for the consumer?

Guy Jefferson: The cost is a fair estimate. For some systems, it costs £10,000. We have not really mentioned this yet, but in setting policy it is a very important not only for the UK Government but for the devolved Governments to have their say in building the policy that will ultimately drive Ofgem and the other businesses. I mention that partly because some Governments are better than others at providing grant funding to make that cost more acceptable to customers.

I think there is a short-term requirement to provide that for customers in order to allow this to get some momentum. Again, I go back to one of my previous comments about the overall policy on heat and how important it is to give certainty to the supply chain. If the supply chain has more certainty, economies of scale start to kick in. When that happens, obviously the price comes down. So I do not doubt that, as in most walks of life, the more volume you have, the greater the likelihood that the cost will come down. I do not think that will be any different for heat pumps, but we need to give that confidence to the supply chain and have a clear policy in order to see that going in the right direction.

The Chair: Thank you very much for your answers. It has been an extremely helpful session. If you could come up with a longer, fuller answer to Lord Grade's question about why we missed the energy crisis, we would be very grateful.