HOUSE OF LORDS

Industry and Regulators Committee

Corrected oral evidence: Ofgem and net zero

Tuesday 16 November 2021

10:30 am

Watch the meeting

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

Evidence Session No. 16 Heard in Public Questions 167 - 175

Witnesses

I: Darryl Murphy, Head of Infrastructure, Aviva Investors; Simon Virley, Head of Energy and Natural Resources, KPMG.

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Examination of witnesses

Darryl Murphy and Simon Virley.

Q167 **The Chair:** Good morning and welcome to the 16th oral session of our inquiry into Ofgem and net zero. I am very pleased to be able to welcome Darryl Murphy, managing director and head of infrastructure at Aviva Investors, and Simon Virley, vice-chair and head of energy and natural resources at KPMG. Welcome to you both.

We have been focusing very much on the Government's ambition to attract significant private sector investment. We have talked to some of the main industry players and had their views. It is very interesting to be able to explore with you the views of financial investors. One concern put to us is that there is a lack of clarity around the Government's intentions and that, in particular, the incentives, the rates of return and the risk-adjusted rates of return are difficult to calculate in what I think the Climate Change Committee described as absence of targets with delivery policies.

Do you feel that that is a correct characterisation? Are you struggling to understand the market that you want to invest in? It will be helpful to know what you think you need before you can get your chequebooks out. Simon Virley, would you like to start?

Simon Virley: Thank you very much and it is good to be here. We have to credit the Government with the publication of the net zero strategy, which is a very helpful direction of travel on a number of areas. But given the amount of capital that we need to mobilise, which the Climate Change Committee you referenced has cited as being over £40 billion per annum for the next 25 years, we need more detail on some areas of the detailed policy and regulation in order to unlock that scale of investment. Perhaps we could go into some of those areas a little later on. But there are gaps that certainly the investors I advise want to see filled as quickly as possible if we are to unlock investments in the key low-carbon technologies such as hydrogen, carbon capture and storage, offshore wind and so on. So, yes, there are gaps. It is a big step forward to have an overall strategy, but it is all about delivery and implementation now.

The Chair: Darryl?

Darryl Murphy: Good morning and it is a pleasure to be here. It is a good place to start. We recognise that this is a long game in terms of investment. If we go back to government announcements and the 10-point plan, the energy White Paper and the net zero strategy, the direction of travel that we are going in is clear. There are clear signals to the areas of technologies that will be required. There is a lot more clarity on that side.

Echoing Simon's point, where we are next is really the detail of delivery models, and inevitably we end up having to get quite granular away from the overarching direction. We know what we are trying to achieve on net zero, but we have to be rather more granular on the particular

technologies themselves, and I am a great advocate of the view that no one size fits all. Most investors feel that they are in different places relative to each of those technologies.

To some degree I immediately fall into the detail. If we are considering offshore wind relative to hydrogen, we are in a different place and we need to understand some very different market dynamics. The really critical next stage is about delivery, the right delivery models and the right policy incentives to support that. We are very clear on the picture going forward. Now it is time for action.

The Chair: Just picking up on that, which areas particularly interest you? Have you identified those aspects of the investment portfolio that is out there that you want to follow up, and have you held discussions with BEIS or the Treasury about the concerns and ambitions you have for those investments?

Darryl Murphy: Yes. I would have to give BEIS a lot of credit. It has been very noticeable as an investor, probably best defined over the course of this year, that there has been noticeably more sustained interaction with investors. I have been involved with other peers in my area on calls with BEIS officials and Ministers to explain the background to the energy White Paper down to a level of looking at individual sessions on technologies—for example, carbon capture and storage or even nuclear. I do not think we would in any way question the engagement from BEIS on that side. We also acknowledge that it is having to deal with some very challenging issues individually in those areas.

In answer to your first point on where we are looking to achieve investment, I am at risk of going into detail again. Generally speaking, you will be aware that with core renewables, by which I describe onshore wind, solar and even offshore wind, well-tried and tested technologies, the models are available, albeit with certain changes in those markets, particularly in relation to power price risk, which means one has to look at the evolution of those sectors. You are looking at very established technologies through to areas such as hydrogen where we are collectively creating a new market; we are not sure how the technology will develop and what the demand will be.

Therefore, for an investor today, we would be very interested across a whole range of those technologies, but one thing that I have tried to advocate internally, if not externally, is that one has to be quite patient. You are setting a 10-year-plus investment horizon. It is really important to establish that, as frustrating as it is for me, we do not have immediate opportunities to invest in each of those technologies tomorrow. The capital is there, but those models are not yet ready to evolve to a state where that capital is going to be required. However, we have to believe that that moment will come and certainly it is important that investors are engaged at this stage to understand the direction of travel and the detail required in what that investment risk will look like come the moment when that capital is required.

The Chair: Simon, what are your clients looking at as of the greatest interest to investors?

Simon Virley: I agree with what Darryl said and would highlight a few areas. Hydrogen is a great example. The Government have given a very clear signal in the hydrogen strategy about the important role that hydrogen is going to play in getting to net zero, but my clients are still waiting for the detailed business models: ie, what is the subsidy rate that will be available to convert industrial plants to hydrogen? We have been waiting for that for some time.

There is an acknowledgement that the direction of travel—the strategy—is clear. It is all about the implementation that Darryl referred to—the detail now of those business models to unlock the investment. I think there will be willing investment, but we have to recognise that the UK is now in competition for that capital. Pretty much every country around the world has signed up to net zero. We have to remember that we are just one place that international capital can go to.

Pace is very important. I tend to refer to it as a wartime spirit. We need a wartime spirit in terms of pace of delivery. With all due respect to my former colleagues in BEIS, we are not set up yet for the delivery of net zero because of a lack of bandwidth in key areas, which means that we will just move too slowly in order to hit the Government's targets.

The Chair: You make an important point about different countries to invest in. Are some countries further ahead in their decisions on the type of government support that they will make available in the economic models? To what extent do you see other countries possibly leading the way in opening up the market to private investment?

Simon Virley: It depends on the technology. If you take hydrogen, for example, the Chinese are using hydrogen in buses at large scale and for heavy transport. They are already blending hydrogen into the gas network in Adelaide in Australia and southern Italy. If you take carbon capture, the Norwegians are already moving ahead with their projects. If you take electric vehicles, the Norwegians are ahead of us by a considerable distance. We have to have a degree of humility and look around the world at what is happening.

We have done well on offshore wind, as Darryl referred to, in attracting that investment, but even there I would worry about the huge ambitions the Government have set out for offshore wind. The problem is not so much the financial model now. It is the non-financial barriers; it is the grid problems; it is the planning problems; it is the consenting problems that my clients are worried about on offshore wind. China has just overtaken us with the largest deployment of offshore wind in the world. We held that record for a number of years.

It depends on the technology on where we stand relative to others, but it is important to recognise that pretty much every country in the world will now be putting policies in place to attract capital into low-carbon

technologies. We have to keep the pace up if we are to attract that capital at the required level to get to net zero.

The Chair: Just picking up on China, do your clients have an appetite to invest in Chinese energy infrastructure, and is there a significant subsidy element in the Government's involvement in those projects?

Simon Virley: Yes, there is an appetite. There is just the sheer scale of China's transition. They added more renewables to their system in gigawatts capacity than the total gigawatt capacity of the UK last year. They will now continue to do that year after year. So, yes, there is that appetite. That does, of course, depend on the policy frameworks in place in China.

The UK has some great advantages. Our geography and geology enable us to combine offshore wind with the production of green hydrogen through electrolysis and capture carbon from industrial sites close to the coast. We have a wonderful opportunity here to put together a net-zero energy system, but I do worry about the pace and the bandwidth to be able to implement the great ambition and the overall strategy.

The Chair: Thank you.

Q168 **Lord Eatwell:** Thank you. I am concerned with what Mr Murphy referred to just now as the market dynamics. It seems to me that markets are very good at managing the allocation of resources in a reasonably stable environment. They are not very good at managing major transitions, especially in major technological and social transition, as we are having with the movement to net zero. I am rather worried that we are looking for market signals such as subsidies as a way of getting the amount of investment that we will actually need. It seems to be a rather imprecise art. We do not know how much subsidy will yield how much investment. When you are thinking with respect to putting proposals to your investors, what sort of package of information do they need for you to be reasonably certain that the funds will become available?

Darryl Murphy: You will recognise particularly for financial investors that we are reasonably clear—obviously I can only speak for my client base—on the client outcomes that we are seeking to achieve. That defines your risk and return criteria. We are talking about a sector here, particularly in infrastructure and energy, that is classically about long-term certainty. You layer on that, trying to address your points.

First and foremost, of course, we would like to see long-term certainty—as best we can—in government policy and support so that you can take a long-term view, because we are talking about long-term assets. Then, you very quickly take a maybe painfully detailed look at some of the fundamental risk. Apologies for oversimplifying, but if you take any of those particular sectors, subsectors or technologies that you referred to, you have to get into the detail of some of the very high-level concerns of investors about technical delivery risk. Probably the two simplest ones

would be technical delivery risk and long-term revenue stability, and obviously any other overarching risks.

Your classic analysis for most infrastructure investors is: okay, can someone manage that delivery risk adequately, and, most importantly, what is the basis on which your revenues flow? I appreciate that that is simplistic, but it is a very useful framework for looking at the detail and amplifying my points. Each technology will have a very different perspective. I am very aware that one can comment that, historically, investors have recognised that in the energy sector we have been brought up on a diet of subsidies to some degree.

What has worked well are technologies that industry has been able to deliver, particularly offshore wind, which once upon a time would have been seen as a very challenging technology to construct, but if you ally that with the contract for difference approach you have a model that is readily deliverable. If you translate that model to something like carbon capture, usage and storage, or hydrogen, you have to deal with new concerns as to whether someone can deliver this technology and how, simply, I will achieve my return over time. What is the market revenue model that supports that? That is not necessarily code for, "Well, we have to have subsidies involved", but we have to have a clear line of sight of what the stability of that revenue stream looks like.

Lord Eatwell: Is it essentially that there is risk involved here, and the question is the apportionment of the risk between the public sector, which has to take some risk, and the investor, which takes some risk? Is the core issue how the risk is apportioned?

Darryl Murphy: Yes, it absolutely is. We also have to recognise that that is not necessarily fixed in a moment in time. The relative weighting of that risk, if I can put it in those terms, between public and private can shift over time as technologies or markets mature. For new markets there will always necessarily be a little more weighting towards the public sector than the private. Perhaps frustratingly, there is broad recognition that one size does not really fit all on that basis. It will vary depending on the nature of the energy technology one is considering.

Lord Eatwell: Mr Virley, is there a different sort of investor who is interested in this long-term, relatively high-risk activity compared with traditional energy investors? Are we seeing a traditional group of investors who invested before in energy and are now puzzling about how they are going to face up to or take part in these new challenges, or is there a new type of investor entering the market?

Simon Virley: It is definitely a mix. You will have institutional investors, pension funds and others, who will be looking for that long-term certainty; and you will have venture capitalists, private equity and others willing to take a different risk profile and invest in some of the newer technologies that are as yet unproven with that higher risk but also higher return.

Just to underline what Darryl was saying, I think it is about risk allocation. In the early stages of a technology development, the state needs to play a role, as we did with offshore wind 10 years ago, but you can use market mechanisms to drive down the price that consumers pay. Hopefully, the state can back out and it can all be left to the market over time. I think we need to repeat the success of that with other new technologies, and different investors with different risk appetites will find their place in that transition. So, yes, there is a mix.

Lord Eatwell: Thank you very much.

Darryl Murphy: I was interested in the points about what one considers to be traditional energy investors, and a lot of these will be Simon's clients. I am very mindful that in a lot of areas—offshore wind is an example—what I would refer to as industrial sponsors have played a very big part. Financial capital has flowed. A lot of my peers would be rather offended by me saying this, but financial investors, by which I mean institutional investors and asset managers, are very good followers. I am not sure we always lead in some of these new technologies. There will be differences and there will be some who will claim that they have done things that are a little further ahead than others.

If you take offshore wind, from my point of view that technology was driven fundamentally from balance sheets of developers, utilities, in the early days. They were obviously the key investors. What that sector was able to do was generate interest from financial investors that gave an ability for utilities to recycle their capital away from the early stage of risk.

Therefore, if you look ahead, an important point to note is that in each of these new technologies the question for me is often: where are the balance sheets that are going to drive those technologies? Simon is probably better positioned. Utilities may find themselves in a different place, but we are seeing oil and gas majors. With EV charging, we are seeing car manufacturers. We are seeing new types of capital flow into this. Financial investors will follow through. Maybe I am wrong, but I do not think that people are leaning on financial investors to say, "You have to lead the way through those new technologies". It needs to be done hand in glove, and I always refer to a triangle between the public sector, what I would refer to as purely financial investors, and industrial sponsors. That triangle is critical for all these areas of technology.

Q169 **Lord Burns:** Thank you very much. I was very interested in what you said earlier about bandwidth within government and the relationship with potential investors. We have heard quite a lot of different views about whether there is sufficient co-ordination within government and, indeed, between government and some of the outside bodies. What are your views about any changes to the architecture of the co-ordinating bodies that you would like to see that would help investors make some of the decisions you talked about earlier?

Simon Virley: I do worry about bandwidth. I used to be director-general for energy in the old Department of Energy and Climate Change until 2015. That was a dedicated department working on this issue with four dedicated Ministers. We do not have anything like that level of focus and resource at ministerial or official level today. That is no disrespect to any of the hard-working civil servants involved. It is just a statement of fact about where we are.

The challenge is much greater now. Back then, we were largely focused on just the power sector and decarbonising the power sector as the first step in the transition to a low-carbon economy. Now, of course, we have to be thinking about the whole of the economy—the whole system that we talk about. Personally, I do worry about bandwidth, and the ability to follow through and implement the great strategy and ambitions that are being set out.

I have been arguing for some time now for the creation of an expert delivery body. I have been arguing for what I call a national energy agency but think of it as the Bank of England for energy, if you like: a clear remit from the public sector accountable to Ministers for the delivery of the net-zero energy system that we need, subject to keeping costs down and the lights on, and for that body to be set up.

You have the start of that if the Government follow through on the idea of a future system operator. The FSO, as we call it, could become the basis of that delivery body. It could become the expert institution advising government on how to get there—not the overall targets. It is the job of the Climate Change Committee to set the overall carbon budgets or advise the Government on them. It is the detail of how you get there. I would like to see an expert delivery body accountable to government for the energy system that we are going to need to get to net zero. I feel that there is a need to get on with that and make that happen now. We have great momentum with COP 26. We know where we are trying to get to. We now need to set ourselves up with the right governance to deliver.

Lord Burns: Are you implying that maybe we should go back to the arrangements where there was a separate department? I know there has been a bit of gossip about this over the past week.

Simon Virley: Personally I would, but that is not my decision.

Lord Burns: Do you think your investors would welcome that?

Simon Virley: Yes, I think quite a few of my investors would welcome that. Most of my clients and most of my investors would say that they welcome the strategy and the ambition. It is the detail they now need. They worry, given Covid, given Brexit, given all the other pressures affecting the Business department, that this is just a fraction of the Secretary of State's brief. For one person that is an awfully big agenda.

Lord Burns: Thank you. Darryl?

Darryl Murphy: I have a lot of sympathy with Simon's view on this, but I may have a simplistic view trying to represent the whole of the finance industry, if I could be so lacking in humility. In trying to do so, investors are quite simple in that response. They just want clarity around a pathway. Not many investors like me will say, "Well, okay, what's the solution to address that?" The concern comes when there is tangibly some stasis in the movement towards a delivery plan. What would definitely be felt by investors is the frustration that, "We hear the strategy. We know where we are trying to get to", but, fundamentally, it will come back to the fact that it is increasingly difficult to see how one puts one's capital to play in these areas. It is back to the point about the urgency and the delivery body. Anything that is offered that is streamlined and clear has to be welcomed.

Lord Burns: You mentioned earlier that we should be looking at what is happening elsewhere in the world. What are the models of government and Governments' relationships in the rest of the world that you think work better? Do they basically have something that is like a separate government department and something like the future system operator?

Simon Virley: Yes. Australia has a delivery body of this nature. A number of the US states have an independent system operator that is responsible for effectively running the energy system. There are a number of examples around the world of this kind of set-up. I would also look to examples in other sectors within the United Kingdom. The Bank of England is a good example of that. National air traffic control does it for aviation. Transport for London does it for multimodal transport in London. There are lots of delivery bodies established. My concern at the moment is that on the current timetable I do not see the FSO being up and running fully before 2026, which is five years.

Lord Burns: Why is that? What are the obstacles?

Simon Virley: Primary legislation, secondary legislation, set-up times, separation from National Grid of the current system operator. That is just my estimate. I do not think we have five years. Personally I would advocate setting it up now. I would set it up in shadow form. There are plenty of precedents; we set up the Olympic Delivery Authority in shadow form two years before it was put on a statutory footing. I would then put it on a statutory footing when the first parliamentary opportunity arises.

Lord Burns: I think we did the same with the FSA, if I remember.

Simon Virley: I referred to wartime footing. My own view is that this is so urgent that we need to get on with this. We need to get the delivery mechanisms in place to do this. There is something of an irony about net zero. You need all the creativity and markets and innovation the private sector can bring, but there are some things—a limited number of things—that only the Government can do. The Government have to take responsibility for those monopoly networks. Whether that is planning the offshore grid to deliver 40 gigawatts or 75 gigawatts of offshore wind, whether that is the future hydrogen network we are going to need based

on the industrial clusters that we want to decarbonise, there are some things the market cannot do and you have to have a government body to do them. In my view, that needs to be an expert delivery body designing that future system.

Lord Burns: Do you have any comment, Darryl?

Darryl Murphy: I would certainly agree with that. The urgency of the situation that Simon has underlined is critical. I recognise that, historically, we have had a desire for more of a laissez-faire market in the energy sector and that is what the Government have tried to achieve. We have never quite achieved it, because we recognise that it does not really work—you have to intervene. So we have had this middle ground of balance of policy, intervention, et cetera, but I think that the guiding mind, particularly around delivery, will be welcome.

To accentuate the point I made earlier, if nothing else it is about that single voice on what the objectives are and how they are going to be delivered. Investors would recognise that as being quite important so that there is absolute clarity; the policy is clear but the delivery model that follows is clear, and there is a body that is responsible for that.

Q170 **Lord Curry of Kirkharle:** Thank you. Good morning. I would like to follow, if I may, the line of questioning that Lord Eatwell was pursuing and drill in a bit more to the process of investors. On the one hand we have government's ambition, which you have referred to, Mr Virley, and the reality of the world we are living in and the risks that investors are willing to take. How do we persuade investors to move away from traditional energy generation forms, whether it is in nuclear or even coal? Despite the decisions reached last week, coal is going to be around for a while yet. As the International Energy Agency's world energy investment report stated, coal is not out of the picture. How do we switch that investment and how would you advise your clients on the mix of energy options that they have to invest in?

Simon Virley: One of the biggest challenges I face at the moment is advising clients on what the carbon price is going to be over the next 10 or 20 years. Currently, in every budget, we hear about the carbon price for the year ahead, but, unfortunately, energy assets usually last for 30, 40, 50 or 60 years, so my team is left working out what that carbon price assumption should be over the longer term.

I am rather puzzled as to why the Government do not use green taxes more in providing a clear price signal, particularly on carbon, which of course would be a key determinant for a number of these technologies. If we had a clear carbon price signal, suddenly the conversion to hydrogen from methane makes sense. Similarly, carbon capture and storage becomes less reliant on direct public subsidy. That is a big challenge at the moment when I am advising my clients on their low-carbon investments, and it is a big gap.

Lord Curry of Kirkharle: I am sorry to interrupt, but do you think

government should go it alone in trying to manage the carbon price here in the UK?

Simon Virley: I definitely think we should have clearer signals from the Government about the future trajectory for carbon prices, because I think that will ensure a lower cost delivery ultimately. Carbon prices are widely recognised as a very efficient and effective tool in incentivising low carbon investment and essentially leave a price signal for investors to make up their minds on which technologies now make sense. I have been arguing for some time that we need more than just one-year-ahead forecasts of what the carbon price should be in the UK, which would help my investors considerably.

Darryl Murphy: If I take your question in a slightly different dimension, I think it is very important to be clear—and I appreciate it is very difficult to define all the financial markets—that certainly for large, private institutional investors like us I do not think we need very much encouragement to go toward energy transition in that sense. We are not alone on the basis that we have an absolute policy against investing in coal. Most of the institutional investors in the UK, I am reasonably sure, would probably have a similar policy. Gas is interesting. There is actually not that much opportunity to invest in gas. It is seen as an important transition sector, but clearly the institutions are at a point where they will consider very carefully the long-term risk to gas investment.

You will be aware, and I have to raise the ESG point, that for most institutional investors the environmental, social and governance requirements of our investments have become absolutely integrated to everything we do. As Aviva Investors, we have a very clear net zero 2040 strategy and we have very clear targets in the near term for investments into clean energy. We are not alone on that point. The capital is willing and looking to opportunities both in core renewables sectors that everyone is familiar with and these new developing sectors. The problem you do not have is investors who are actively willing to consider those sectors. But, as we have said at the outset, the next challenge is: what do those opportunities look like and, to the point, what is the risk and return that is being offered on those early-stage opportunities?

Simon Virley: Following up on that point, I think the new requirements on all companies as to climate risk disclosures—the so-called TCFD agenda—are hugely important. The Chancellor's announcement at COP 26 that every listed company will have to produce a net-zero transition plan will be important, as Darryl referred to, to give investors clarity about whether there are credible transition plans to net zero for each of the companies affected. I do think that climate risk disclosure will help with this and will help to direct capital effectively towards companies that have credible transition plans to net zero.

Q171 **Baroness Donaghy:** Good morning. Quite a bit of what I was going to ask has been covered, particularly in the first question from our Chair about the appropriate policy and regulatory conditions in the place of investment. You have already stressed the urgency of making moves as

soon as possible.

National Grid's Claire Dykta told the committee earlier on that the enabling conditions that need to be met are very urgent, and Tim Lord from the Tony Blair Institute said that we do not have investable business models.

If you were to enter a room and be told that your list of, say, four—the first being urgency and the second being the biggest impact—would be granted by the Government, what would your top four be? For instance, storage, which never seems to belong anywhere, and connectivity, which only half belongs to various organisations, seem to me to be particularly urgent and not very attractive to investors. Would you say that that is an area where the public sector really could make a huge difference?

Simon Virley: Getting it down to four is quite challenging, but I will have a go. First, move ahead now on the future system operator. Do not wait five years to do that. Set it up in shadow form today. Secondly, give clarity to investors on long-term carbon pricing. Do not go through every budget saying, "We'll tell you next time". Thirdly, get hydrogen business models out ASAP, because I have lots of investors that want to invest in hydrogen but they do not know what the business model is yet. Fourthly, I totally agree with you about long-duration storage. We all know that we are going to need more storage capability. That could come in a number of different technologies. There are regulatory models that have been successful in other areas such as the cap and floor regime that has been helpful in getting interconnectors built. A cap and floor regime could work for long-duration storage and enable investors to move ahead. Those would be my four, if I am only allowed four.

Darryl Murphy: If I may, I will just pick up the point from Simon. The point about carbon price will be very helpful generally. It is no coincidence that I would also focus on hydrogen. My perspective, as you probably gather, is very much at the granular revel of looking at different technologies, because you are looking at where this capital can be directed. If I look across the different technologies, they are at different parts of their natural evolution. So we look towards offshore wind. My focus is more on when the next auction is coming. We know, as Simon said, what the financing model looks like. Onshore wind and solar, again, is an interesting proposition. How much do we need to start recognising the world on a subsidy-free basis and how do we get comfortable with that risk and return?

At the other end of the scale is definitely hydrogen. I live in a world where, rather like Simon said, you can attend a seminar or discussion on hydrogen every day of the week, it feels like, but there is very little tangible opportunity certainly for investors of my nature to access that sector. This looks like a sector for tomorrow. Either we can accept that and say, okay, it will take some time to develop, or it can be accelerated, and to some degree government can play a big part in that—in the theme of a wartime push to say, "This needs to happen quicker". I get the sense that everyone is interested in this, but it is a little bit hobbyist at the

moment in that the real opportunity is going to come some way down the track.

In between, we have other sectors that are heading in the right direction; carbon capture, use and storage being a good one, where models are being developed and BEIS is a little bit further ahead. Every technology is at slightly different points. We could discuss nuclear, which has had the clarity of "This is the model. The next step is: can we actually attract the capital"—certainly in the context of Sizewell—"based on that model?"

Interconnectors are a very good example, as Simon has indicated, where a regulatory model can really get capital flowing. The concept of an interconnector will be very challenging for many investors, but put the cap and floor in place and suddenly you have something very attractive.

They are good practical examples of the point I was making earlier: every sector needs a different solution, and the appetite and natural maturity are at different stages. I always like to see very clear, prescribed means of saying, from a government point of view—I know it is controversial to discuss having to back winners—that certain technologies are important, so we need to put the right mechanism in to develop tomorrow.

My last point is on storage, which is a very good example. The models for storage and investment in storage are quite difficult, and the one thing investors are most concerned with is volatility over time. Depending on what we are referring to when we talk about the nature of storage and the technologies evolving, there are concerns of that first-of-a-kind risk and whether new technologies are developing. Moreover, to my earlier point, the revenue model is very unclear. As a long-term investor, storage, as at today, is a very difficult proposition. Most of the storage opportunities we see are very short term in their nature.

Baroness Donaghy: Thanks. In a way, you have indirectly identified that the public sector would be doing a good job if it decided to invest in storage or give pretty solid assurances to private investors. Or am I putting words into your mouth?

Simon Virley: I am very supportive of the Government putting in place the right regulatory frameworks to get investment in storage. We are going to need lots of storage.

Q172 **Baroness Donaghy:** Thank you. My final question is on your triangle, which talked about the industrial sponsors.

Simon Virley: Yes.

Baroness Donaghy: It would be interesting to know, without revealing secrets, how far you think those industrial sponsors are up to scratch on making the developments that you would like to see, and what level of liaison you have with them?

Darryl Murphy: On that basis, it is useful to differentiate between pure financial investors and industrial sponsors, as you indicate. It provides a

bit of clarity around the market. Simon will be able to comment, because many of those industrial sponsors will be clients.

In most cases we have a combination. I can speak generically. If you look at oil and gas majors, you can see that this is part of their general strategy to look towards the green energy transition as being very important and wanting to deploy capital. Importantly, in many cases they have the delivery and ability, particularly for certain of those technologies, to deliver at the scale required. Utilities have always played a big role in the energy sector. However, collectively, their balance sheets are constrained.

From a financial point of view, as an investor, one sees that relationship, over time, as a risk and return balance. They would actually be taking risk, in many cases, on delivery, on wanting to mobilise capital, probably on wanting to ensure that there is liquidity in the market. Financial investment coming in to support their efforts is very important. Those conversations are very active on that basis. I do not know if Simon wants to comment further, but certainly that dynamic is good.

I often find in that triangle a series of bilateral conversations, but it is quite rare that all three have a natural forum to be discussed together. Simplistically, it is a challenge to get all three to be speaking together in the right way.

Simon Virley: All my energy and utility clients are very engaged in this agenda and looking to invest. They all have their own net-zero targets, some of them even more ambitious than the Government's overall target for the UK. They are absolutely ready to invest. They need the details of regulatory and policy design now to unlock that. In many cases, of course, we are talking about global companies that can invest their money in any number of countries around the world. This comes back to my point about us keeping up the pace of delivery. If we do not, the money will not flow to the UK—it will flow elsewhere.

Baroness Donaghy: Thank you.

Q173 **Lord Reay:** The IEA states that approximately 20% of our energy requirements will have to come through oil and gas in 2050. I was interested in a comment that you made, Mr Murphy, relative to your ESG commitments and whether now every large investor that signs up to ESG is not investing in any fossil fuels at all. Could you clarify that and whether it is starting to become industry-wide or not, and how it relates to Aviva?

Darryl Murphy: As a general statement, it would be incorrect to say that everyone has switched off their appetite into fossil fuels today, particularly if one looks across investments in the public markets and private markets. The recognition is that, if we look at it from our institutional point of view, and we have had this discussion fairly recently, we have a 2040 strategy, so we need to be very clear about what our pathway is. Net zero does not happen tomorrow, but we need a very

clear pathway to get there. In my area, we invested in a gas power station in the UK recently, which had a long discussion, but there was recognition that we are not switching off totally our investment into those sectors. We are very mindful, though, that we have a pathway to achieve in the longer term. This is going to become more and more accentuated over time.

Inevitably, one has to recognise that the strength of feeling from investors will do nothing other than increase over a period of time. The appetite you see to invest today in fossil fuels will inevitably change over that period. Every oil and gas asset today will inevitably be scrutinised as to whether it meets the ESG requirements. That is generally not a blanket yes or no, but over time the challenge will come. Particularly as you get to 2030 and 2035, those discussions will inevitably change. So we have to be ready for that on that basis.

Simon Virley: I very much agree. Oil and gas will play an important role in our energy mix for many years to come. It is about having a credible transition plan, and the Government have now asked every listed company to produce a credible transition plan consistent with net zero.

In the case of oil and gas, of course, it relates back to what we were talking about earlier: the role that hydrogen might play in the future. We may still be producing methane and converting it to hydrogen and capturing the carbon through carbon capture and storage, and that is absolutely a credible part of our future energy mix. This is not going to happen overnight, as Darryl says. It is a 30-year transition, and now it is all about having the credible transition plans in place.

Q174 **Lord Blackwell:** We do not have a national energy agency at the moment. In between the Government and their aspirations and the market is Ofgem, which clearly has a big impact on existing networks, producers and distributors. Various of our witnesses have talked about the fact that Ofgem and the regulations it operates may not encourage long-term investment. There may be an overfocus on short-term consumer protection or asset-based returns. I would be interested in your views on the role Ofgem plays and the impact of the current regulations, and the way they are enacted, on the ability to invest in the future. Darryl, would you like to start?

Darryl Murphy: It is a very good point. I know that Simon has some clear views, as I know from his previous discussions.

We do not invest directly into utilities regulated by Ofgem on a private basis, but I spend quite a lot of time with investors who do, so I think I can characterise the relationship, or the perception, of the regulator, particularly Ofgem, with private investors having been a little strained. Their frustration is the balance of the desire and messaging of investing in the long term into such utilities and how that plays out, fundamentally, against the regulatory settlements that Ofgem has put in place. One can accurately identify that there has been a degree of a strained relationship.

We have been discussing for a fair part of this session how to mobilise capital and what the correct regulatory or policy models are to encourage that flow. The regulated asset-based model that affects transmission distribution companies and regulated companies generally in the UK has probably been the single, biggest success in mobilising private sector capital. If there is a desire to put that long-term investment in place, particularly into transmission or distribution, you have a ready-made model that can do that with investors very willing to invest.

From my perspective, it is really important that that is probably, relatively, one of the easier ways of getting that capital mobilised and using those ready-made entities to enact the investment levels needed in transmission and distribution. To do that, the regulator has to be supportive of encouraging that long-term investment. That should be the single goal. The question is: what is preventing that going forward? Maybe Simon wants to pick up the point about how Ofgem might achieve that.

Simon Virley: I have a lot of sympathy with Ofgem in the sense that it is trying to balance competing priorities, keeping current bills down while securing the investment we need to get to net zero, and that is not an easy task. Undoubtedly, there has been a shift from what used to be ex ante price regulation for seven years to, essentially, rolling price reviews that, in the words of one of my clients, never end. You are constantly in discussion with the regulator, which I think remains to be seen; can it secure the investment we need for net zero?

Personally, I would like to see a change in Ofgem's formal remit. It may be a point of semantics. You could argue that its current remit of protecting the interests of current and future consumers enables it to think about the future as well as the current, but there is a certain inevitable default to focusing on current energy bills.

I think there is a case for moving to a more explicit recognition of the role of net zero, so a remit along the lines of "to ensure delivery of net zero at least cost to consumers while keeping the lights on", or some words to that effect, would be a welcome change, and one that I think would be welcomed by many investors. But it has to go hand in hand with what I talked about earlier, which is the delivery body helping to design the future networks or plan the future networks that we are going to need, which in my opinion would defuse the current head-banging between investors on the one hand and the regulator on the other that always seems to end up at the Competition and Markets Authority. If we had a way of bringing investors, the delivery body and Ofgem together to work out what is in the national interest, we could defuse some of the tension that currently exists. That is why the change in the remit would go hand in hand with the setting up of the delivery body that I referred to earlier. I would love to see those two things announced tomorrow by the Government. That would be very welcome.

Lord Blackwell: To be clear, Simon, if you had a national energy agency that was looking at the long-term strategy and what needed to be

achieved in government and networks, et cetera, what would the role of Ofgem be? Would it be bigger or smaller?

Simon Virley: It would be smaller. There would be some functions that would transfer from Ofgem and some functions that would transfer out of BEIS, as currently configured, into that body.

If we start with the system operator that currently exists, which mainly focuses on power of course, I would want to see the agency or the future system operator looking at the whole of the energy system. You have to look at all the different components together now—power, heat, transport and industry—and think about the system we are going to need for the net-zero economy of the future.

It should only do the things that government has to do. I do want to stress this point. I am absolutely in favour of using markets, the private sector and innovation as far as possible, but there are some things that I referred to earlier that we are going to need, such as the offshore transmission grid and the hydrogen network. We do not want 650 expert bodies in every local authority trying to decarbonise their heating system. We need one expert delivery body advising all 650 local authorities on how best to do it depending on their housing stock.

There are some things you have to do at a national level, but it should be a limited number that should go into that delivery body. That should be their task. Ofgem's remit would be smaller. It would be to ensure value for money from the delivery of those infrastructure investments, which may involve the role of competition. You could have your plan for the transmission grid. You could still compete for who was going to deliver that plan, with Ofgem making sure that it was delivered in a way that ensured value for money. But I think we do need a strategic plan for those monopoly elements of our energy system.

Lord Blackwell: If you took as a specific example a decision that it would be helpful to enable the gas network to transmit hydrogen, presumably the Government would have to set out the subsidies or price mechanisms that would take public sector risk in that. Your energy agency would set out the strategy for how that was going to be achieved, and the regulator would then have the remit of regulating the specific prices or returns on assets, and they would all be joined up.

Simon Virley: Exactly so. Somebody needs to be tasked with working out the future shape of the hydrogen network that we are going to need. We hear that the Government want to have up to 35% of our total energy coming from hydrogen by 2050. That is an awful lot of energy, and we are going to need some way of transporting that hydrogen around the country, presumably from the industrial clusters where hydrogen is going to start. We know where they are going to be because the Government have announced the initial ones. So let us start planning that hydrogen network that we are going to need. I do not see that being done at the pace that is needed if we are serious about net zero at the moment.

Lord Blackwell: Is there any focus where that planning is happening at the moment?

Simon Virley: There are discussions in BEIS and with Ofgem, but, as I say, on current plans, decisions on, for example, the role of hydrogen heating are not due to be made until 2026, which is five years away. The future system operator will not be set up until 2026. I l come back to the point I made earlier: I do not think we are moving at the pace we need to if we are serious about hitting our net-zero targets.

Lord Blackwell: Darryl, if I understood you, you said you do not invest in the existing utilities. Is there a very different approach to investing in the regulated entities versus some of the newer technologies?

Darryl Murphy: I should clarify. I was referring implicitly to equity ownership. We do invest debt in some of those entities but it is fairly straightforward. I was thinking more from an ownership point of view.

It really comes to risk and return, and scale. It is just a function of the capital that we have particularly around infrastructure and energy investment on the equity side. As you are well aware, some very large global investors are invested in regulated utilities. The risk and return is clearly very different. We can come back to offshore wind, or, if we are looking ahead to whatever a hydrogen investment opportunity looks like, or carbon capture and storage, that will have different risk and return criteria and a different scale.

But the regulated model in the UK has been very successful. I would argue that it has driven down the cost of capital, and it is seen as very much core infrastructure for infrastructure investors and has been very successful. Obviously, the pressure has come through the success of the regulated model driving down the cost of capital and therefore oddly constraining the attractiveness for new investments into those entities, and that is what one has to modify.

Lord Blackwell: Those utilities are obviously public companies with shareholders, many of whom at the moment have invested because they like a low-risk, high-dividend yield for pension funds, et cetera.

Darryl Murphy: I should clarify. This market is very confusing. There are, of course, public and private entities. National Grid very clearly is public on that side and there are listed equities on that side. I represent the private side of the markets and not the public side. In a private ownership, obviously there is a whole range of distribution companies and some transmission companies are owned by infrastructure funds, so there is a mix of investors, whether it be private or public.

Lord Blackwell: Would those investors support companies and management of companies that take more risk in investing more in future networks and future technologies?

Darryl Murphy: I think via those companies, yes. We are back to the risk and return point. It is really then a question of whether the risk is

done within the regulatory model within which they are operating or whether they want to operate outside their regulated model, and again that is a balance of their risk and return. Probably more relevant for some of the listed entities is whether they see that as the right balance for financial investors in their core regulated business versus what would be their unregulated business.

Lord Blackwell: In response to Baroness Donaghy, storage is not adequately captured within the current regulatory framework and returns.

Darryl Murphy: I would agree. We are not seeing high volumes of capital flowing into that area. There is a lack of an agreed solution. What we are seeing, therefore, is in my view relatively small-scale opportunities in storage. It is not being looked at on a macro basis. It does not strike me as a pivotal part of the overall energy strategy in that sense. It is an area that we see developing further, but there are large concerns about the technology risk and, as I said earlier, the business model risk. Where is that long-term revenue certainty from those assets?

Q175 **Lord Grade of Yarmouth:** Given the very long-term nature of the investment required to effect this transition, how do investors price in the political risks? There are bound to be changes of government over the next 20 or 30 years. Is that a concern? How do you take comfort?

Darryl Murphy: It is a very pertinent point, because it was not so long ago when this was very high on the agenda for investors when we were leading up to pre-election. The narrative about nationalisation was very much at the fore. It is very important to reflect back on those times, because it is very easy to forget that that was not so long ago, but we seem to have moved on quite considerably to where we are today. I do not think investors have forgotten that and are therefore cautious, but there is no lasting impact of that.

If we go back to that time—it is even more apparent now—the concern and the argument at that time was that we have a lot of investors who have invested into entities that were openly being discussed around nationalisation. There was no detail on whatever compensation or otherwise might be payable. It had the impact for one or two international investors of starting to show the UK as maybe not the priority destination of their capital. It very much comes to Simon's point that you are in danger of providing investors with reasons to invest in other countries as opposed to the UK.

The UK political, regulatory and legal environment has been one of our great strengths, which is really why most global investors have come into the UK. At that time, we started to see the perception and relationship fracture slightly. We have moved on from that, but I do not think investors have totally forgotten, and we have to accept that politics will change over time, so that debate may or may not come back. We have to be very careful, though. The capital is fragile, so whatever decision has been made will have a lasting effect on what we are desperately seeking

now, which is new capital. We have to ensure that the foundations that UK investment is built on around regulatory, political and legal risk are maintained, otherwise that capital will simply go elsewhere.

Simon Virley: I have one point to add, which is that the Climate Change Act and the five-year carbon budgets are extremely helpful when it comes to reassuring international investors,, because we are one of the few countries in the world that has a legal framework like that for carbon reduction. Investors take some comfort from the fact that only a handful of MPs voted against it and, indeed, only a handful of MPs voted against the net-zero legislation. That is a source of comfort because it provides a long-term, legally binding framework for carbon reduction in the UK.

The Chair: Gentlemen, thank you very much for joining us today. Your message is loud and clear: get on with it.

Simon, would you just send us a note with your suggestions for the remit for the delivery body that you referred to on a number of occasions? One issue that we are looking at is who is responsible for what and whether there is a clear delineation. Given your background, it would be helpful to have your views before we see the Secretary of State in a fortnight's time.

Simon Virley: I would be very happy to.

The Chair: As I suspected.