



# Industry and Regulators Committee

## Corrected oral evidence: Ofgem and net zero

Tuesday 20 July 2021

10.30 am

Watch the meeting

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

Evidence Session No. 4

Virtual Proceeding

Questions 41 -54

### Witnesses

I: Sir Dieter Helm, Professor of Economic Policy, University of Oxford.

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## Examination of witness

Sir Dieter Helm.

Q41 **The Chair:** Good morning and welcome to the fourth oral evidence session for the inquiry into Ofgem and net zero. It is my great pleasure to introduce our witness today, Sir Dieter Helm, who is professor of economic policy at the University of Oxford. Perhaps I could start the questioning by asking whether you believe there is a clear plan for delivering net zero and what you believe are the key elements of that plan.

We heard from the Prime Minister, the Chancellor and the Secretary of State for BEIS in April that they were determined to publish a plan. This was in response to the sixth carbon budget, which called for the publication of a plan. A number of different elements of the plan have been promised but have yet to arrive, particularly the Treasury's net-zero strategy and BEIS's heat and buildings strategy. We are all waiting for the plan. It would be very helpful to hear from you your expectations of the plan and, in particular, the elements of the plan which you think are critical to its successful implementation.

**Sir Dieter Helm:** I think you will be waiting a very long time if you are expecting a coherent plan to address net zero. That is all the more pertinent because it depends, dare I say it, on what you think a plan is. If you think a plan is a collection of strategies and announcements about things that might happen in particular bits, that is not a coherent plan. That is a series of announcements about strategies, wish lists and particular support for particular technology.

A plan starts with the objectives. There are two objectives for the energy sector. The first is security of supply. If, bluntly, the lights do not stay on, we are not going to get a long way towards net zero, other than reducing our emissions by being in the dark. Security of supply has always been central to an energy system. That is why there has always been intervention and the state as the guarantor of that public good of security of supply. That will get more serious as we go on, rather than less. It has not been a binding constraint in most of the years post privatisation, but that is because we inherited the juggernaut power station building from the 1970s.

In the post-war period, from 1945 to the mid-1970s, every year there was 3% growth, there was 7% increase in electricity demand, and the state built the power stations to do that. When demand and the deindustrialisation of the economy turned in a different direction in the 1980s, there was a mass surplus of coal and nuclear power stations. There was not a problem and we could sweat the assets. We cannot do that any more. We have run out of mileage and the decades have passed.

The second objective is net zero. You have to be very clear about what this target is. This is a unilateral carbon territorial production target. The Climate Change Committee claims that, when we get to zero, we will be

no longer causing climate change. That of course is not true, because this is not a carbon consumption measure, so it is not measuring our carbon footprint. It is merely, and importantly, measuring carbon emissions by factories, buildings, cars et cetera inside the UK's territory. That is important, because climate change knows no boundaries. It does not matter a damn where the tonne of carbon is emitted, whether it is from a steel mill in China or a steel plant in Port Talbot.

That is our target. If that is what you want to do, a plan is about how to get from here to there. There are different kinds of plans. There are Soviet tractor plans, where the state picks the winners, or indeed the losers, as losers typically pick Governments, and prescribes each little or big group with the subsidies that its lobbyists demand. There is a market framework, just stylising this, within which the state sets the parameters, auctions what is required to meet security of supply and the net-zero target, and uses competition and market forces to find the lowest costs of achieving those outcomes.

That of course requires components. The first is to have a proper market. In a world where lots more technology will be at zero marginal cost, this is a world where it is a market in capacity, and capacity auctions are central. Since you wish to achieve security of supply, as I set out in the cost of energy review, this has to be an equivalent firm power auction.

That is the way in which you organise the security of supply on the capacity side. If you want those bids to reflect the cost of carbon, you need a carbon price. We have made significant advances on carbon pricing and have among the highest carbon prices in the world now. So you need a price and a market. That does the competition side of the game.

Then you need an infrastructure and systems. Those require to be designed and have an element of planning. That is where the planning bit comes in. You have to build grids capable of carrying electricity and heating demand. You have to build charging systems et cetera, and the market will not do those on its own. Then you need the R&D, the innovation support, for which you need an R&D innovation policy. That might be part of a broader industrial policy or elsewhere.

Those are the components you need. If you ask me whether any of those components are in place, there are some encouraging bits. We have a capacity auction. It is not equivalent firm power, but we have one. We have a carbon price. Actually, we have a series of carbon prices. So we have some good things in place. Is that sufficient? Should we rest assured now that, within 14 years, we are going to do 78% emissions, or in 29 years we are going to get to net zero? No, not a bit of it.

This is the greatest industrial transformation of the energy sector in the shortest period that anyone has ever come up with. The gap between what needed to be done, what we actually have and the delays that are taking place even to sort out the bits at the moment tell you that we are a long way adrift.

Q42 **The Chair:** I hazard a guess that you are not attracted by the Soviet tractor model, although the Government have recently shown an increasing readiness to invest and take part in helping to structure the economy that can deliver this. What do you see as the Government's role here? How do the Government marshal the other parties, namely the existing energy sector and new investors, in order to achieve the market and the industrial sector that you have just described, which will be essential to achieving net zero, or anything like net zero, by 2050?

**Sir Dieter Helm:** The main job of government is to set the targets and be absolutely clear what those targets are. We know now what its carbon targets are. The 2019 amendment to the Climate Change Act in particular is a very clear shift, as is the new target of 78% by 2035. It is pretty clear that it has done that bit. On security of supply, it is less so. That may be because it is not a matter of declaring, "Never have any interruption in supply". It is about choosing the balance between risk and cost. That is the job of government.

The job of making these things then happen that falls to government is where there are policy inputs and frameworks that only government can deal with, for example carbon pricing. That is for government to do. It is an essential role of the state, even if we do not consider climate change, to ensure that the basic infrastructures in the economy are fit for purpose, so that all citizens can participate in the economy, and firms and companies can compete.

Infrastructures do not happen by bottom-up private initiatives. Typically, when they do, they are partial and incomplete. As we know with the railways, what happened in the 1840s leaves us with gauges that do not even properly interconnect with each other a century and a half later. The Government have a dual role in infrastructure and, dare I say, in infrastructure planning, and of course they have a role in R&D.

The delivery of the detail requires a different institution. In the cost of energy review, I made absolutely clear that the main institution for that should be the system regulator/system operator, whatever you want to call it. I am sure we will come on to that later.

**The Chair:** As you say, we will come on to that later. Is there a case for the Government setting up an agency dedicated specifically to overseeing this transition and the creation of the complex economy that you have just described?

**Sir Dieter Helm:** The key word that you use is "overseeing". I have in mind implementing and meeting the objectives. That is not quite the same thing. Normally, if we look across the economy, the created body for that would be some kind of agency, not in the private sector but at arm's length from government. Way back in the 1990s, when Britain had its coal crisis, I suggested that there should be an energy agency to do that. I see that the idea has become fashionable again, although people have forgotten the past context. In those days, there was no Climate Change Committee.

We have to think about the institutional architecture in the context of what we have and what are likely to be what are called stakes in the ground. I do not see anybody trying to remove the stake in the ground called the Climate Change Committee. That performs a key function.

The other side of the function is the function performed by the system operator. The institution I have in mind to do the implementation of this is a version of the system operator or what I elsewhere call the system regulator. It is not Ofgem and it is not BEIS. It is a standalone agency, charged with achieving those twin objectives, one handed down from the Climate Change Committee and the carbon budgets, and the other handed down from BEIS, which gives clear directions on what tolerable security of supply looks like and what must be achieved by this system operator.

**Q43** **Baroness Noakes:** A lot has happened in the energy policy landscape since your report on the cost of energy back in late 2017. This morning we have heard more announcements from BEIS, including on the system operator. I wondered if you could reflect on the progress that has been made on your report since 2017 and what impact the other developments in the sector have had on the recommendations that you have put forward.

**Sir Dieter Helm:** The cost of energy review proposals were not set up to be dependent on what happens in any particular year. They are intended to be an enduring framework to see us through to 2050 and beyond. That is the first point to make. I would be amazed if something happened, or some announcement was made, that changed the architecture of what I proposed. I perfectly accept that people may not like the architecture of what I proposed, but I doubt there is any empirical thing that has happened that will change that landscape.

We have had the amendment to the Climate Change Act, the completion of Brexit, a whole raft of announcements and thousands of pages of government and Climate Change Committee documents. Looking at those does not lead me to change my views on the architecture. If I thought something like that was coming along, my architecture would crumble.

In terms of progress, my review followed what is almost the standard way in which reviews go. You stand back and put together an independent view. Of course, there will be quite a lot of losers in my scheme. If you are an intermittent producer, you will not like equivalent firm power. That is an example. If you are a polluter that is not paying the true cost of your pollution—a lot of agriculture—you will not like it either.

After an independent review comes out, all the lobby interests scream what they object to in it all. You have a perfectly understandable fight back from the vested interests that will be damaged by the coherent framework, or what I think is a very coherent framework, that is put in place. You then go through a process in which this lobbying takes place. The pressure on civil servants and Ministers takes place. All sorts of

consultants are hired to write reports justifying particular positions. Then you have the killer argument: "Now is not the time to change. It's too disruptive to do anything". That comes next.

All that happens and it takes about two years. At the end of the process, you come full circle back to the beginning point and ask, "Well, what are you going to do?" You do not like this. It is that old adage: you might like this, you will like that. You do not like this, you will not like that. We come full circle back and now the core components of the review have to be addressed.

In between, we have had one event, which was the extraordinary possibility, or impossibility, that one windfarm and one power station going down in the summer of 2019, causing a temporary loss on the system, could lead to chaos. That was a really big wake-up call to something that concerns me greatly, which is the digital world. A power cut is much more serious than in the analogue world of the past. That was a wake-up call and that happened.

Now we look at the component parts. The Government have had to define their carbon targets and have had to reach for carbon pricing, something I had advocated very strongly. We have not got to a carbon border adjustment yet, but I guess we will get there fairly soon. As I said earlier on in the hearing, we have about the highest carbon price in the world now, among developed economies at least. They have done that.

On security of supply, it is all quiet. Beneath the surface, I think everyone realises that running a decentralised, zero-marginal-cost, disaggregated energy system creates new opportunities and new challenges that were not there before. We come back full circle to how you are going to make sure the lights stay on. That is why a key proposal of mine, which is to take the system operator out of National Grid, is really back there. We have been through two years of thinking why it should not be done. The regulator came forth with an extremely good paper on this, and here we are: we are now in consultation to do it. It is three and a half or four years later. We would have liked it to happen earlier, but it did not.

On legacy costs, we wait until the bills start to register politically as we go forward. David Cameron started by taking £50 off bills because of the energy efficiency cost, but the legacy costs of the more expensive first rounds, particularly of renewables, continue to pile up in the bills. In my review, I pointed out that I have gone to 2025 at least, so we will have to have some social adjustment for the cost that is coming. That is there. There are a number of other components, the regional system operators and so on, within the cost of energy review.

I am always interested in knowing why I have got things wrong. I am always willing to change my mind when there are good countervailing arguments and evidence, but so far I have looked at this and I would write the same cost of energy review now as I wrote in 2017. I genuinely believe that that is the most competitive and efficient way of achieving

the twin objectives of net zero and security of supply. I believe that the institutional structure that I put in place is correct.

What I worry about is that we invent a new institutional structure and leave all the existing stuff in place. That is what we are doing in environmental areas. We will have an office for environmental protection grafted on the top of an environment agency and all the other component parts. The political economy of this is that you rarely abolish anything. You just add some more on top. Complexity of institutions is a very expensive thing to do when you have 14 years to get to a 78% reduction in emissions and only 29 years to get to net zero.

**Baroness Noakes:** There is nothing you would change from your report in the light of what has happened subsequently.

**Sir Dieter Helm:** No, actually. It is remarkable, but the answer is no. There were some bits in there that people seem to have ignored, but they will come back this year when people notice the electricity bills. That is what I would do with the price cap on supply and the margins that are being earned there, et cetera. That is an important part that is not much debated yet, but will be. Remarkably, I have very rarely written something four or five years in the past and not changed my mind about it, but this time around I am yet to do so.

Q44 **Lord Burns:** Good morning, Dieter. Could you set out for us how the UK's approach to decarbonisation and energy policy compares to other countries? Are there lessons to be learned from those countries? Are there examples of countries that have followed more closely your views on the architecture?

**Sir Dieter Helm:** The starting point is to make a distinction between the country that is normally identified as the leading green country in this area, Germany, and the UK. When it comes to a comparison, almost all the ticks are in the UK box and nearly all the crosses are in the German box. Germany closed or is completing the closure of all its existing nuclear power early. We have kept our existing nuclear power going. I will leave open the question about whether you build any more. If you want a starting policy that is likely to do the most damage to your policy of getting to your carbon targets, Germany is an example.

Worse still, Germany built 13 gigawatts of new coal from 2000 onwards. That is truly remarkable. We, in the UK, have got out of coal. That is a fantastic achievement and the best possible thing you could do for climate change. The way in which the EU ETS worked in Europe meant that, effectively, as the renewables were built, the room for coal increased in Germany and the increase in coal offset quite a lot of the growth of renewables. That is why, except because of the coronavirus, Germany got to the point of not even being able to get to its 2020 targets.

When we look out there, it is easy to say, "We've got it all wrong and everybody else has got it right" and, in the popular jargon, "Green

Germany, dirty Britain". It is completely the opposite. That is very important. The 20-20-20 target within the EU is much less than it seems.

Looking at particular countries, there are no countries that have some perfect answer. That is pretty obvious. You are trying to completely transform an economy in the presence of technical change and do it in a politics where—I know it is explicit in Britain—we want cakeism. We want to do all this lot and pretend that it is not going to cost anything, but that is a politics that also exists in lots of other countries. It is extremely unlikely that someone has come up with the perfect Gosplan to do this. Nobody will do that and there are no obvious cases.

The most recent development of that, which is encouraging, is the new package from the EU. This new package is altogether different from what was put together in 2007 and 2008. It has been a long time in coming. I once had the privilege of being a special adviser to the Energy Commissioner back in 2011 in the EU, when a lot of the things that have been proposed now were regarded as pie in the sky.

If you look at the EU proposal, the first thing is that it sees the carbon price as central to what it is doing. Given it has an EU ETS—I prefer a carbon tax—the plan is built upon expanding that and expanding into transport in particular, but also heating. It does not matter if the emissions come from heating, transport, farmers applying fertiliser or the stack of a power station. They are just carbon; they are just emissions. Broadening the base to bring this within the mechanism is an incredibly important step forward.

The second thing is to apply that price to the border, which is the so-called CBAM—the carbon border price adjustment—which I am strongly in favour of and have been advocating for at least a decade. I even advocated the application to precisely the bundle with which the EU has come up—no credit to me, but it is the right set of things to do.

If you contrast that with what we are doing, we go and invent a UK ETS. It cannot be an EU ETS because that would be European and, of course, we are no longer in favour of the Europeans or anything the Europeans do. We have our own system, wide open to domestic lobbying, as all such systems are.

Then we have the questions. Are we going to match the carbon border adjustment? "I don't know". Are we going to incorporate heating, transport and agriculture into the frame? "I don't know". We are still waiting for a strategy on heating anyway. We cannot tax farmers for the pollution they cause, even though they are, by proportion of the economy, by far the largest polluting sector in the economy.

We are faffing around, trying to create our own British-made policies, in a context in which we are hugely integrated with and linked to our European neighbours. You can see just how integrated that is by looking at the interconnectors that we are building. The European energy market, ultimately, is reflected by the European infrastructure. There is no

evidence that the English Channel is becoming wider. It is becoming narrower by the day in terms of interdependency. There are plenty of auction markets to look for. There are plenty of people who have tried various versions of capacity market. There are loads of things to draw upon. Not only is there no perfect solution to import to the UK, which would look like the cost of energy review, but I would be amazed if there was.

Q45 **Lord Eatwell:** Hi, Dieter. The issue of security of supply, this sort of systemic risk issue in regulatory terms, has rather exercised me. I was wondering what you thought were the significant risks to security of supply today and over the next 30 years. What are the key points where the risks appear? I would like you also to reflect on interconnections. Interconnections seem to be developing a security of supply strategy that depends not only on the UK but on a whole series of other international partners. One would then think that there should be some form of analysis of the risks involved within that context, let alone the risks that were suffered by the island of Jersey for 24 hours. I wonder if you could reflect on those two dimensions.

**Sir Dieter Helm:** In the old days—ie the energy system up to about 2000—all the 20th century, security of supply was pretty straightforward. Basically, you built big power stations around a centralised grid. You built a margin of additional capacity to absorb the shocks that you modelled. As the stations aged, they moved up the merit order and became used more as flexible load rather than baseload. Into the 1990s, you would build a gas power station, run it baseload flat out, recover your capital costs and then, as newer stations came on to the system, yours would be historically of a less-efficient vintage and you would move up the system.

It was pretty damn easy in theory. In practice, of course it was very difficult, because electricity demand was growing at 7% per annum, so you had to build that juggernaut of power stations, get on with it and do it. We used to be very good at that, and so were the French actually. The French were building six nuclear reactors simultaneously at one stage. We built coal power stations, the last of which was Drax.

Into the 1990s and the days of privatisation, there were so many power stations surplus on the system because energy demand was not growing any more, because we had deindustrialised and because, for regulatory reasons—namely, acid rain and sulphur—we had built new gas stations on top. There was a great surplus of power stations in the 1990s, so nobody had to bother very much. It was not until relatively recently that anyone would think that capacity had come to an end.

The world we are in now is almost completely different. Instead of passive demand, we have active demand. Instead of no storage, we have a whole host of these storage opportunities out there. These two assumptions, passive demand and no storage, are what led to that 20% capacity margin or whatever and the power stations built. We also have a lot of intermittent, low-density, disaggregated renewable power on the system. That is not a criticism in any form whatsoever. It is all zero

marginal cost as well. It is just to say that our system was not designed with that in mind. If it went up to about 20% of the system, the system had so much resilience built into it that it could cope. That will not be true in the future.

In the past, we might have needed 70 or 80 gigawatts to cover our security margin. We are now up to 100 and beyond, because you need a lot more power stations, even if the wind farms deliver for example 40%, which is on the upside. You need a lot more storage and active demand. Frankly, you need a very different kind of grid as well. We have built all these bilateral links to each windfarm in the North Sea. We have no North Sea offshore grid. We still have a grid focused top down. There will have to be substantial bottom-up bits.

That is why, when I proposed taking the system operator away from National Grid and making the system operator/system regulator the key pin of the system, what I was really concerned about was the regional system operators, taking this out of the DNOs—the distribution companies—and setting up this regional frame. It matters for cities, local areas and decentralised power. Of course, there are lots of opportunities where you could build a wire and it might be economically attractive to the company to stick it in the RAB, but you could auction instead, meeting the same increase in security by building a couple of wind turbines, sticking some batteries in the system and putting in some other bits.

The game has changed from the old one to the new. This creates new risks but fantastic opportunities. My equivalent firm power market was designed to incentivise intermittent generators to find ways of making their power more reliable by investing in demand side, storage and other component parts, and to open up these networks to challenge as to when we need wires and when we need other alternatives. It is a new game, which is why I proposed the architectures there.

The decentralised bit is incredibly important. You still need the centralised bit, particularly if you are going to build nuclear power stations and other large plant, but you need the other bits.

When it comes to the interconnectors, these are large-scale power stations. That is the way to think about them. The original idea of interconnection in Europe was a really good one. The way you need to think about this is to think about why interconnection is a good thing per se. It means that the amount of spare capacity you require to meet any security of supply requirement goes down as the portfolio increases. It is like in investment theory: if you diversify your portfolio, you reduce the total risk of the portfolio. If something goes wrong in one country, you have back-up from somewhere else.

In the days when I was involved in the internal energy market, this seemed to be the greatest economic benefit to Europe of the internal energy market, which was to connect up all the countries together, so the total amount of power stations required in Europe would be a lot lower

than currently required. That is what interconnection does. All that is premised on being a member of the EU and sharing the benefits to the EU as a whole of the interconnection that you bring. It is not just us that benefits. It is other countries that benefit, and vice versa, from the interconnection.

We have chosen to be outside the internal energy market—what a mistake. Instead of being part of this world in which our interconnectors would play, and therefore part of the rules that mean that if something goes wrong we are not discriminated against and are treated as level playing field members, now we are on the outside. Let us just imagine that there is a cold weather period of high pressure and dark clouds over continental Europe that spreads across to Britain in, say, February. The heat pumps are not working very well on the houses. The power sector is not delivering very much because the wind farms in some areas will produce, but it will be a lot less. There will not be much solar power, and let us assume there is not much nuclear either, because let us suppose that we have not built the nuclear power stations.

We say, “Don’t worry about it. We’ve got 20% of our capacity coming through the interconnectors into Britain. We’re going to suck it out of Europe when we need it”. Are we really? What happens when they need it in Europe? What happens when that same cold weather is having the same impact in Europe?

Take a drought, high pressure and still air, like we have in Oxfordshire at the moment. What happens when the nuclear power stations are short of water in France, cannot generate and go off system, but we need to draw some power in, because in the future we might find that peaks of demand are really serious in summer as well as autumn? Where is the protection?

I like interconnectors. They are important, but you have to make sure that you can rely upon them. That is not just about whether the cable might get snagged or break, or some system might go wrong. It is about the politics, the economics and the law that governs the relationship between the members of the integrated system. We have chosen to be outside. That may be okay, because there may not be these simultaneous problems in the future, but it is not something that I would rest easy about.

Therefore, if I were the system operator or system regulator, I would want to derate that power by the political and economic risk of being outside the internal energy market. If you want independent energy policy, independent security of supply, et cetera, the corollary is that it will be more expensive. Fine, that is a choice, and I perfectly respect the choice that people make, but do not delude yourself that everyone on the other side will play by the rules as if you were in the internal energy market, when you have simply turned your back upon it. That will not wash.

**Lord Eatwell:** Following up on the first bit of my question, are there any particular risks to security of supply associated with the policy of the

movement to net zero? Are they covered by your first answer of the interrelationship between the intermittent producers and the core, if we call it that?

**Sir Dieter Helm:** They are generic. If you have a system in which the two key parameters, passive demand and no storage, are reversed, you have opportunities to improve security, because you can now use storage and active demand management. Remember all the IT too. We still have an analogue system. Imagine a world where this is really a data problem. These are extraordinary opportunities.

If you also have more intermittency and a zero marginal cost on the system, in order to manage that security you have to recognise that electricity generation is now more like a utility. It is more sunk capital cost, capacity, not so much energy, which is a zero marginal cost for a lot of this stuff. In that world, the wholesale market prices will fall too. It is not that it is more or less difficult. It is that the architecture we have is not the framework within which to solve these issues.

Q46 **Baroness Donaghy:** Good morning, Sir Dieter. My question is about current and possible future regulatory bodies. How do you believe the transition to net zero should be regulated? Is a new regulatory body required? I think it was Catherine Mitchell who called for an energy transformation commission. What role do you think Ofgem should play in the transition to net zero—a bigger role or a diminished role?

**Sir Dieter Helm:** Energy transition commissions are not the way to go. They are precisely the wrong way of dealing with this problem. The problem remains that we need to ensure that we meet the net-zero target and have security of supply. We already have the institutions to do those. They are just a little disparate. We have the Climate Change Committee to set the targets, and we have the carbon taxes, carbon pricing and so on around that. We have the system operator, which is supposed to ensure that the security is delivered. I want to move the system operator out from National Grid, and I want it to have responsibility for the delivery of the targets. In that world, Ofgem can largely be abolished.

Actually, the network stuff might need to be done. It is important stuff and Ofgem does it very well. We just need an overarching network regulator to do that for water, transport and energy networks. It is about the cost of capital; it is about efficiency and efficiency numbers. We do not need a whole Ofgem to do that. Indeed, a lot of this is already happening. Ofgem does virtually nothing on the generation side any more. It has no role that I can understand in terms of capacity auctions and so on. This has all moved across to the system operator anyway. If you go back to the 1990s, OFFER and then Ofgem spent almost the entire time on electricity generation.

The migration has already begun to happen, and grafting on to Ofgem a system operator with these roles as well just adds to the complexity of what is already there. The example that comes to my mind is reading in

the paper that Ofgem had decided that X million ought to be spent on charging networks. I am sure it did a great piece of work and I am sure the charging networks are really important, but is it really Ofgem's role to announce how much will be spent on charging networks? That is for the system architecture, and for the combination of BEIS and the system regulator.

In my world, it is an existing player put on an independent basis and one out. It is not another one in and a commission and Ofgem on top. That is the kind of muddle people get into when they think, "All hands on deck. Let's have somebody else who will also pursue the outcome". We have enough institutions. In fact, we have too many. In my world, Ofgem withers away.

**Q47** **Baroness Bowles of Berkhamsted:** My question really was about the role of the energy system operator in the future energy system, and the benefits of an independent system and regional operators. We have obviously strayed into that quite a lot already. I am just wondering whether you can elaborate a little more on how the role operates, as between a system planner or a guiding mind for the whole energy system. Is it just electricity? Is it gas as well? How does that work out?

**Sir Dieter Helm:** I do not see this as a guiding mind. That is just a little too close to Soviet tractor plans to me. I am half East German and I have an appreciation of Lada plans, for everyone to have identical cars. There are many reasons why that does not work. This is a delivery body, or an implementation body, that ensures that the Government's set targets are translated into practice. I have regional system operators as well as a national system operator because of the decentralised nature of the systems. You can see that reflected too in the number of cities and regions that want to declare themselves net zero and want to work out how to do that.

There are some areas where this will be incredibly important. Take district heating. Anyone who genuinely believes that we will solve the heating problem in Britain by fitting heat pumps to all or most of the houses really has not begun to understand the practicalities of what this means and what it means in terms of the services that people get. I am not against heat pumps, but in most European countries we have district heating systems. We integrate waste with energy. We have 80% of the population in urban areas where we provide concentrated heat and power. There are special problems.

There are reasons for this, and the distribution network operators, mostly owned by private equity, do not have an incentive to drive for the public good and the public interest in a world where their investment is based upon the regulatory asset bases that they have in place. That is not to criticise them. It is simply to say, "This is a confusion of public and private roles". For the national bit, you have to make sure that the whole thing adds up, and the balance between the national bit and the regional bit depends on how the systems go. Imagine a world where the Government mandated 10 nuclear power stations or, maybe like France

not that long ago, 50 of them. That is a very different security of supply system from a world where there are none or virtually none going forward. That is the trade-off.

There also needs to be the architecture of how this thing is co-ordinated. I am somewhat open-minded about that in the cost of energy review, but we had an institutional structure under the old nationalised system, which brought the regional electricity boards together with the CEGB under the Electricity Council, and you can think of a number of ways that might operate. That is the framework.

The more controversial bit is precisely what you think you are taking out of National Grid and, indeed, of the DNOs. There are two versions out there. There is the version which I think is preferred by Ofgem, and there is the version that I would prefer. In the Ofgem model, you take all the system operations away from National Grid, the day-to-day business of operating the system, as well as the capacity planning stuff, the implementation of objectives, et cetera. It is what I call a very big system operator.

I am not in favour of that. I am in favour of a small, focused transfer of the job of auctioning and modelling the systems, and inviting the various players to come forward with options in order to achieve those objectives. I want the auctions to be run by this body. I want the grid plans for networks to be sent to this body. I want them posted up on a website so that anyone can offer to do renewables instead, demand side management, et cetera. Anyone can offer to provide alternative ways of achieving the same security of supply objective. I want that open, but the day-to-day running of the system is not a sensible thing to transfer.

This is one of the very few places where not only do I think that the ownership of the wires should be put together with the running of the wires, but I think that the difficulties and dangers to the system operator of doing that are very considerable, because the system operator then becomes responsible for what are essentially operational activities. That is a step too far. It should be focused on public duties to ensure the public goods of security of supply and of achieving the carbon targets.

**Q48 Lord Blackwell:** Sir Dieter, obviously there are huge costs involved in this and the question is how it should be funded, whether by the bill payers or the taxpayers. Do you have a view on that?

**Sir Dieter Helm:** The statement you make is both true and highly contested. There are a lot of people out there who think that it will not cost very much at all to decarbonise. They think that you can take an entire economy, an entire energy system, an entire agriculture, transport and heating system, and convert them from an overwhelming dependence on carbon to net zero in 29 years and it will not cost very much. Indeed, in the interim net zero review from the Treasury, it says that it might cost 1% of GDP and, indeed, it might not cost even that. That is nonsense.

By the way, the Treasury in that document assumed that government policy will be executed perfectly, that there would be no government failures in the policy. Just think of smart meters if you want to think about how government might not quite function as people imagine. There are high costs, and the recent example of the difficulties of coming up with a heating strategy reveal precisely what happens. When you work it out, it might cost £10,000 per household to convert to a system of heating that is less impressive, in the sense of being responsive and able to deal with winters, than the current system. It is an illusion. It is very expensive to do this and very important that we do it. The costs cannot be abolished by pretending that they do not exist.

Then someone has to pay. I have always argued that the Government need to be up front with the public and tell them. If they do not want to pay, the corollary is that they do not want the Climate Change Act. You cannot have it both ways. You cannot have cakeism: this belief that somehow you just sign up to loads of targets and tell them it is not going to cost anything. Can you imagine that because you tell them it will not cost anything, it will not cost them anything? It is just nonsense.

As for the balance, there are very important distributional issues. The electricity customer base is not quite as distinct from the tax base as you might imagine. There are quite a lot of egalitarian features of the electricity base. Richer people use more, as an example. My fear is that the Government promise all sorts of things, announce 10-point plans, et cetera, tell people that their bills will not go up, and then say, "Oh well, the Treasury will pay". The Treasury needs to look quite hard at the public expenditure things coming in front of it and to realise that, as it is discovering in social care, if you want the Treasury to pay for this, taxes will have to go up. Then you have to choose which taxes you want to go up.

There will be a balance here. The R&D is much more a public policy tax issue. Some of the systems costs are about spreading the costs more equitably across the various customers. Government is involved in that. As for the energy itself, customers paying for energy seems to me a rather important principle. The worst bit is cakeism.

**Lord Blackwell:** There is a competition issue if the cost falls on the industry in the UK and that makes the UK industry less competitive. Should we try to avoid loading it on to industry?

**Sir Dieter Helm:** No. The answer is a carbon border adjustment, which is what the Europeans are pursuing. It should cost the same amount for the pollution you cause producing steel in China as in Port Talbot. If you want to get rid of the emissions, the people there are the polluters. Actually, you and I are the polluters, because we buy their products. Polluters should pay.

One of the things that people find so hard in the climate change discussion is that, if you are not paying the costs of pollution, you are living beyond your sustainable means. The idea that you will be better off

if you have to pay for the pollution you cause, at least for the next 10, 15, 20 or 30 years, is nonsense. We are living beyond our environmental means more generally and beyond our carbon means, and we know that because we are not paying the price of the carbon pollution that we cause.

CBAM, the carbon border adjustment that the EU has come up with, is an excellent way of making sure that ultimately we pay for our carbon consumption wherever it is produced, rather than kidding ourselves that pursuing a territorial carbon production unilateral target in the UK will somehow crack climate change. That is nonsense.

**Q49 Lord Reay:** Good morning, Sir Dieter. How would you assess the performance of Ofgem's environmental and social programmes? How effectively does Ofgem manage regulatory complexity, such as in its licences and codes?

**Sir Dieter Helm:** Ofgem does a pretty good job as a regulator with the duties and obligations that it has. It is very professionally run. It has done some excellent work. The problem is not that. It is that the outcome of that is what you would expect it to be, and it is not what is required to meet the overall objectives. Five-year periodic reviews do not make much sense in a world in which you are trying to make an energy transition of this scale. It is true they have added some flexibility into it, but it is still a traditional RPI minus X type framework—RIIO or whatever it is called.

On the environmental side, why is Ofgem doing this? Where is its environmental expertise? Is the environment not a matter for environment regulation? This has been going on since 1990. We keep adding duties to them: "Let's tell them to do net zero. Let's tell them to be sustainable. Let's tell them to look after particular customer groups. Let's tell them to do innovation". In the end, they do the best they can, but it is not their role. That is where I come back to this announcement. They have decided that X million should be spent on the charging scheme. I am sure it should, but it is not for them to do it. They have been pushed aside a bit by the system operator, but that is why I want to abolish Ofgem.

It is not that Ofgem is not doing a good job in its remit. It is that the remit and the institution are no longer fit for purpose in a world where we have these twin requirements and a huge transition in a very short period. This is about investment. This is not about asset sweating any more.

**Q50 Lord Reay:** Following up on your comments about the carbon border tax, it has been suggested that this could create trade problems with some partners such as China and in completing post-Brexit trade deals. Do you accept that could be an issue?

**Sir Dieter Helm:** If I was China or Russia, exporting carbon-intensive goods to other countries that have put carbon costs on their domestic producers, this wonderful world that has been created for me is not one that I am going to be entirely excited about getting rid of. The important

point is that not to price carbon is to distort trade. We are giving an artificial subsidy to Chinese, Russian and other producers, where there is no appropriate carbon price, to essentially take market share beyond the efficient, competitive level from British producers.

If they did not object, it would seem to me that there must be something wrong with the argument. It is almost axiomatic. You see the vehemency with which the Russians have objected to the CBAM proposal from the EU. They are right. If you look at the US vis-à-vis China, they are less important now but carbon and energy-intensive exports have been the backbone of the great Chinese transformation. Those goods have been sold to Europe and the US predominantly, both of which have been deindustrialising.

That is why, if you look at climate change, every single year since 1990 two parts per million were added to the concentration of carbon in the atmosphere. That is the only number that matters. We have not done anything to slow down that process. We even added two parts per million last year during the coronavirus. You can kid yourself that you want free trade and all the rest of it, but free trade really means fair trade. It means no distortions, and the absence of a carbon price is a distortion to trade. It happens to disadvantage British industry, what is left of it, and it advances these.

If you want to achieve the net-zero territorial carbon production target in Britain rapidly, the best thing you can do is to close INEOS's Grangemouth plant, get rid of the other five refineries, close down the rest of British Steel and hope Brexit kills off the car industry. That shows how absurd this is. That is the biggest contribution you could make to getting carbon territorial production down in the UK fast. That is a nonsense in climate change terms, because that will make global climate change worse.

That is why the CBAM is essential. If we have to strike trade deals that discriminate in favour of countries exporting to us because their pollution is higher, that seems to me not to be what I mean by an open global trading system on a fair basis.

Q51 **Lord Sharkey:** Good morning, Sir Dieter. I was going to ask you about RIIO, but in your last set of comments you made it clear what you think about RIIO. Instead, could I ask what you think should be done to encourage investment in energy companies and financial institutions in the transition to net zero?

**Sir Dieter Helm:** The answer for investors is to have clear contracts that enable them to earn a reasonable return on their investment. The transition and the role of the system operator in organising auctions, which has been done as CFDs elsewhere, is precisely to achieve that outcome. One of the most interesting things about this transition is that it is not a problem of there not being enough investors. It is a problem of whether the framework is credible to deliver that outcome. That means not just offering ex ante contracts, but sticking to them. For example,

reneging on solar subsidies, which were pretty excessive but in Spain, does not exactly fill anyone investing in this space with confidence.

You see it in fibre too. It is extraordinary how much money is being thrown at fibre, because a framework is actually in place to do it. A clear system operator with clear rules, where the objectives are clear, there is a degree of independence from government, and there are proper auctions on a fair basis done at local and national levels is the bit that does not bother me.

**Q52 Lord Grade of Yarmouth:** I am absolutely overfed on the extraordinarily detailed knowledge that you have and are sharing with us, for which I give many thanks. I have two quick questions. First, is it a pipe dream to believe that more competition can effectively be introduced into the market to help reduce the consumer prices? Are we just chasing an impossible dream there? I will come to the second question afterwards.

**Sir Dieter Helm:** It is absolutely imperative that the system is made as competitive as possible. Indeed, where we have seen really exciting forms of cost it is precisely because it has been very competitive. The whole point of my equivalent firm power auction is to maximise the amount of competition that takes place. There is this whole idea that you have either laissez-faire or the state. The way to make a market really sing is to have a clear role for the state, clear definitions, clear contracts and then get the private sector to bid for them. That is why I want to put the grid plans up on a platform, on a website, for people to bid against. I want to know whether there are alternative ways of achieving the same outcomes.

We care only about the security of supply and the carbon objective. We care about other things, but those are our main things. If someone can offer a better option, good on them, let them come forward with it, but do not have it as a closed game. My system is not only very competitive in generation and encouraging flexibility, and balancing much more than we have at the moment. It is also quite competitive to the network companies themselves, because they will be challenged by having to explain what they want to do and having others coming in.

For example, in the same model for river systems, in Oxford, where we are having a canal built to avoid the probability of flooding in Botley, I wanted my Wildlife Trust and others upriver to be able to bid against that canal in storing the water on the fields up stream. It is a small example, but you can see what I mean. If you do not have competition, we will have Gosplan and tractors. You have to look at the scale of the vested interests lobbying for subsidies. We do not want this to turn out like agriculture, where you have fantastically efficient lobbying organisations such as the NFU. We want this to be open, and the only way of doing that is to maximise competition. That means a strong, central role for the system operator, not laissez-faire.

**Lord Grade of Yarmouth:** On present progress and with the present

faffing, to use your word, which I love, we do not have a hope in hell of meeting this target, do we?

**Sir Dieter Helm:** I agree with you, at two levels. Nationally, the faffing is about telling people the truth about the cost. It is about cakeism. It is about getting to the next election and the election after that. That is why we will have a much more expensive process than we previously had. God forbid there is an economic downturn and interest rates go up, et cetera. The consumers will find out, and I fear that.

It is true globally. What exactly is COP 26 going to do to stop two parts per million being added to the concentration of carbon in the atmosphere each year? There is no evidence whatsoever that the Kyoto, Copenhagen, Paris process has made a single dent in the two parts per million per annum. Really look at the scale of the issues out there and what is required. It is great to announce all sorts of targets. You have a wonderful occasion where 20,000 people turn up and politicians declare that the problem is solved, it is a turning point in global history, et cetera. If only.

Net zero carbon is deadly serious. I do not like the word "crisis" and that kind of thing, but it is deadly serious and we should address it. We cannot go on like this. Let us get this clear. If you had a water fight, you would set up the organisation to do it and you would get on with it. Here we are. It is four years since my cost of energy review and that is a small part in this frame. Where is the rest of it? In 10-point plans? The first one in the 10-point plan was the green energy homes efficiency thing. It lasted six to eight weeks. It is gone. Where is the heating strategy? Where is the energy Bill? That is what I mean by faffing.

The root cause of faffing is the political problem of coming to terms with the fact that this will be painful and costly, and someone will have to pay. To be fair, no politician in the last 20 to 30 years has been willing to tell the public that, which I regard as a fundamental truth.

**Lord Grade of Yarmouth:** At the risk of giving Terry Burns indigestion, one solution to the cost is a one-off hypothecated tax. That of course would be anathema to the Treasury.

**Sir Dieter Helm:** I am with Terry on that, if that is Terry's view.

**Lord Grade of Yarmouth:** I am putting words into his mouth, but he would hate the idea of hypothecation.

**Sir Dieter Helm:** Yes, I agree. This is not a one-off. This is a permanent shift in the cost structure of energy, and that requires a permanent shift in the way the prices and the public subsidies come into this thing, so absolutely not.

Q53 **Lord Eatwell:** There was a hypothecated tax in Germany to pay for the big reconstruction of East Germany. That seems to have been accepted and worked rather well.

**Sir Dieter Helm:** The reconstruction of former East Germany involved, the argument was, a one-off investment. It has turned out not to be true, by the way. It has turned out to be a permanent cost. You can go around East Germany and see just what has actually happened as a result of the monetary union that has taken place. If you have a wartime levy, you can see that, but this is about the permanent revenue stream of the Government and the permanent payment requirements of the citizens.

In the end, the way to get behavioural change, which is not sufficient but is normally a necessary part, is to have that reflected in the prices of polluting and less polluting things so that people can make choices. I am not in favour of hypothecating. At the rate we are going at the moment, we will hypothecate all sorts of stuff. If I was in the Treasury thinking about how we would deal with the £400 billion just from the last year or so—I would never aspire to be in the Treasury—and then seeing people come up with proposals to hypothecate everything from the NHS to social care to carbon et cetera, I would worry a lot, rightly, about the future stability of the country.

Q54 **The Chair:** Dieter, on that note, thank you very much for what has been a bracing session, a very interesting tour de raison with a diversion to East Germany at the end. I have one quick question, if I may. You have shared your insights with senior members of the Government. Is there any recognition from them that the challenges are as great as you have set out?

**Sir Dieter Helm:** I am loath to comment on how Governments recognise things, faced with such a group of people who have a lot more experience than I have. What I try to do is make sure that choices cannot be made in ignorance. In other words, I try to spell out the arguments and the consequences, and many people disagree with me extensively. Are Ministers aware of that? They claim to have read the cost of energy review. You will appreciate much more than I do the extent to which politicians are conflicted in all sorts of different directions and pressures.

In the end, it matters enormously what the top of the Government thinks. I worry a lot when the Prime Minister explains to Biden and the Chinese leader that this is not about bunny hugging and sends the signal that this is not going to cost very much. I perfectly understand why the cakeism position is there, but nobody has articulated cakeism with quite the panache of our current Prime Minister. If the Government's policy is cakeism, I sadly reflect that the objectives are not going to be achieved.

**The Chair:** Thank you very much indeed for that.

**Sir Dieter Helm:** Thank you very much for listening to me.