HOUSE OF COMMONS

Environmental Audit Committee

Oral evidence: Delivering the Government's climate targets, HC 493

Wednesday 27 November 2024

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Watch the meeting

Members present: Mr Toby Perkins (Chair); Olivia Blake; Julia Buckley; Ellie Chowns; Barry Gardiner; Sarah Gibson; Chris Hinchliff; Martin Rhodes; Cameron Thomas; John Whitby.

Bill Esterson, Chair of the Energy Security and Net Zero Committee was in attendance.

Questions 1 - 55

Witnesses

I: Professor Piers Forster, Interim Chair, Climate Change Committee; and Dr James Richardson, Director of Analysis, Climate Change Committee.

Examination of witnesses

Witnesses: Professor Forster and Dr Richardson.

Q1 **Chair:** Welcome to the Environmental Audit Committee meeting. I am very pleased to be joined by Professor Piers Forster, the Interim Chair of the Climate Change Committee, and Dr James Richardson, who was previously the Acting Chief Executive, recently relieved, of the Climate Change Committee. I am very pleased also to have, guesting with us today, Bill Esterson, who is the Chair of the Energy, Security and Net Zero Committee, and the other members of the Environmental Audit Committee.

If I could make a start, first, with Professor Forster and invite you to introduce yourselves, then we will get into the session.

Professor Forster: Excellent to be here today. I am the Interim Chair of the Committee. Of course, as you know, it is our job to advise Parliament and Government on how the Government are doing. In particular, we have just advised on the NDC target we are about to advise Government on the Seventh Carbon Budget.

Dr Richardson: I am James Richardson, Director of Analysis at the Climate Change Committee and, as you said Chair, until a couple of weeks ago I was the Acting Chief Executive.

Q2 **Chair:** Fantastic. As we are aware, Professor Forster has been in the role of interim chair for quite a long time. Can you just explain, Dr Richardson, why it was so long and any impacts that that had, having an interim chair for such a long period of time?

Dr Richardson: The appointment is made by the four Governments of the UK—the lead responsibility is with the Department of Energy, Security and Net Zero of the UK Government, but in agreement with the devolved nations. It is their process, as it were, rather than ours. As I understand it, they have tried twice to get that process to conclude but have not found a candidate that all four Governments would agree to. Therefore, it is now back in their hands to find a candidate. Obviously you have a change of personnel and that may make it easier to reach agreement.

In terms of the impact on our work as an institution, I would say that—thanks to Piers for stepping up—we have been able to continue unaffected by this. I do not think that Piers has been unaffected by it, having to do two jobs, but an institution we are able to continue working under this set-up. Thankfully the terms of the Act mean that this does not affect our decision making. However, now that we have a new Government, it would be great if they can get on and find a candidate who is agreeable to all four nations.

Q3 **Chair:** Do you think that that period of time—while accepting what you are saying, that it has not made a difference to what you are doing—has made a difference to how your work is perceived or the way that you are

able to operate? Has it made a difference in that regard and how urgent do you think it is that the Government get on with making a decision on this?

Dr Richardson: I would hope that it has not impacted on our ability. We are still producing the statutory reports, giving our advice, making our case, appearing in front of bodies such as this. There is certainly no sense from the Governments with whom we interact that they feel any different in their relationship with us. However, it is a question of good governance. The Act provides duties on the Governments to appoint somebody to this and it is their responsibility to be compliant with that. We hope that that is something that can be expedited. I appreciate that the Government have a lot on their plate, but it would be great to move that forward.

Q4 **Chair:** Earlier this month the Prime Minister announced at COP29 that the UK's 2035 NDC would commit to reducing territorial emissions by 81% against the 1990 target's baseline, in line with the advice that your Committee had provided. How far does this go towards re-establishing the UK as a climate leader internationally, Professor Forster?

Professor Forster: When we took our advice into consideration, the first thing that we did was to look at what is the right level of ambition to try to make a contribution to keeping temperatures to within that 1.5° target, as well as re-evaluating where we are with the climate science, which is my own area of expertise. We also looked at the deliverability of that 81% target.

To do that effectively we brought forward a report that we will publish at the end of February on the CB7 work. That will evaluate where we have got to as a society in the current economic situation, but it also looks at where we have got to with the different technological options across the economy for decarbonising. We did put a lot of work into it, and we would be absolutely delighted to come back to you in February to talk to you about it in detail.

We put a lot of work into having a look at the economic implications and the implications on jobs and things as well. We are quite confident that, if we get this elevation of delivery, it is a deliverable target, and we can do it in a way that is good for jobs and is cost-effective.

Q5 **Chair:** To what extent, Dr Richardson, will individual behavioural change be needed if the country was to actually achieve those targets that the Prime Minister has set out?

Dr Richardson: Within our analysis—and without providing all the CB7 analysis that will come out in February but in terms of the analysis that we have done prior to that—about 10% of the emissions reduction to 2035, the year for the NDC, comes from what we would think of as behaviour change. That is predominantly around diets, flying and modal shift in public transport, although there are smaller things in there. That is on our pathway. It is important to recognise that we provide advice on

the level of carbon budgets and on the NDC. We set out how we think that would be achieved and what a feasible, cost-effective pathway would be for that, but it is the Government's decision as to how they seek to achieve that. Of course, if the Government wish to do it with a different mix of policies, that is their choice to make.

Q6 **Chair:** In terms of what you are setting out at this moment on those three key areas, if they followed the approach that you are talking about, what do you think would be the key behavioural changes that people would notice if they followed the path that you are suggesting?

Dr Richardson: Inevitably it varies a lot between different people. These are averages across the population and one of the things that is important for us in the work that we do is to recognise that different people have different abilities to respond to these things. The Carbon Budget 6 analysis was based around the citizens' assembly that this Committee and other Committees sponsored. We have also done a citizens' panel as part of the Carbon Budget 7 analysis. Some people would go further, and other people would go less far.

In terms of modal shift, the key thing there is provision of better public transport options so that people can choose different modes. It is something that you see in this city because there is excellent public transport and a very high proportion of journeys are on public transport or people walking and cycling, but you see much less of that in a lot of other parts of the country. If you compared the public transport in, say, Leeds to a similarly sized city in Europe, there would be a big difference in provision. You can make quite a big change by things like that.

On diet, we think that about half of the change that you would need to get to by 2035 is a continuation of the existing trends of people changing what they eat. If you took the trends from the last two or three years and rolled that forward, that rate would deliver all the change that we need, but there may be a cost of living effect in there that may not be a trend.

In terms of flights, it is about the rate of growth. It is not about saying to people, "You must stop flying". However, it is about saying that the rate of growth of flights that we think would happen if we did not take any action is not consistent with our pathway. Therefore, we would see a lower rate of growth. That is something where, when we talk to citizens, people seem to be very willing to accept that there must be some degree of constraint here.

Q7 **Chair:** That all sounds pretty benign. A lot of what we have been reading has suggested that the country has reached 50% and getting on to this next target is very ambitious and will require substantial behavioural change. I would say, on the difference between public transport here and constituencies like mine in Derbyshire, it is not just that there is greater public transport provision, it is also that it is so bloody impossible to drive around London that you are forced out of cars. You can drive around Chesterfield much more easily. To what extent, Professor Forster,

particularly with local transport, will people be expected to make substantial changes to their life, or do you think, like Dr Richardson, that it is not so much to expect from people for us to be able to get there?

Professor Forster: If you look at our report, it is more about enabling our citizens to be able to make green choices. This is why we encourage the Government to try to make just and fair policies to make these choices affordable and easy. Particularly with the cost of living crisis that we are in today, you have to try to make it easy for consumers to do the right thing.

This is why, if you look at the progress report that we published in June, our top recommendation in that report was to reduce the price of electricity because if you can reduce the cost of electricity you will make it more compelling for people to buy an electric car, for people to install a heat pump rather than a gas boiler and also for industries to make the necessary investment in electrification.

What we are encouraging the Government to do—and what we are doing a lot of with our carbon budget advice—is to look at the way that different policies affect different parts of society. What we would like to see, as a Committee, is some effective communication from Government to try to enable us all to make the right choices. It is not about trying to tell people what they must do and what they cannot do, it is about trying to make the alternatives as easy as possible.

Q8 **John Whitby:** Good afternoon to both of you. The 81% emission reduction from 1990s levels by 2035 is the equivalent of a 60% emission reduction from 2023 levels, which is to be delivered in just 11 years. The obvious question is: is this achievable given the difficulty the UK has had in reducing emissions levels in key sectors such as transport, buildings and agriculture?

Dr Richardson: It is important to understand that the process of emissions reduction is not a straight line. Predominantly what we are doing is replacing embedded fossil fuel technologies, which are not terribly efficient but which we are all used to, with fundamentally more efficient, predominantly electric, technologies. However, when those technologies are new, they are very expensive. If you roll back 10 years and look at the price of an electric car or if you roll back 20 years and look at the price of a solar panel, these things were extremely expensive. That is true of nearly all technologies when they arrive. A mobile phone cost £9,000 in the 1980s.

The process then is one whereby deploying those you get learning by doing benefit and the prices come down. At some point you reach the point where it is cost-effective, regardless of government incentives, to deploy those technologies. We are now at that point with renewable electricity. We are within touching distance of that point on electric vehicles. We are further away on some of these other technologies. Once you hit that point, take-up with any technology typically rises very

sharply. It is termed an S-curve. Therefore, you should not expect to see these things happen in a linear way. As long as we can hit those inflection points in the S-curve that get you on to the steep bit, you should be able to do a lot.

I certainly do not want to underestimate the challenge here. Getting to that point, bringing all the technologies through industry, changing the way that they provide heat and so on, there is a lot to be done. However, we do see these pathways as realistic, but we do a lot of effort to model what we see in previous transitions, what countries that are further ahead than us have achieved in terms of rates of change of take-up and so on. Therefore, it is underpinned as far as it is possible with our best evidence.

Q9 **John Whitby:** Without transgressing on other questions, do you see some quick progress to be made in things like agriculture and buildings?

Dr Richardson: Those are two more difficult sectors because we are not yet at the point where the technologies are cost-effective compared with the old technology. Therefore, you do need more support from the Government. Particularly on buildings, the key thing is the point about the price of electricity.

We have seen in a lot of similar countries to us—like the Netherlands and France—that if you get the combination of up-front support, which we do now have, and the price ratio of electricity to gas being such that it is cost-effective to run a heat pump, you do see rapid take-up and we see that in a lot of other countries. However, we do not have that electricity-gas price ratio right yet, so it is more difficulty here.

Q10 **John Whitby:** What was the basis for the recommendation for the 81% emissions reduction?

Professor Forster: First, we have to look at our obligation as a country on the international stage under the Paris Agreement that we have signed up to. That tells us that because of our historical contribution to climate change we have to be as ambitious as possible, within the confines of what is deliverable in a cost-effective way. That is the benchmark that we are working to.

We have to go through the existing target as well, so that 81% is perfectly consistent with the CB6 advice that was legislated by Boris Johnson's Government. That 81% benchmark is completely consistent with that. Therefore, we are not asking the country to do anything different from what it already has signed up to do.

Q11 **Julia Buckley:** We are anticipating that early next year your Committee will be providing that advice to the Government on the level that you will set the Seventh Carbon Budget, that overall limit for UK emissions from 2038 to 2042. You have already mentioned this morning that you expect it at the end of February 2025, is that correct?

Dr Richardson: Yes.

Julia Buckley: You kindly offered that you would be willing to come back. We would like you to confirm that you will come back to this Committee and present the main findings of that advice?

Dr Richardson: We would be delighted to do that.

Professor Forster: It is an important thing to do, because we do need Parliament to give that advice.

Dr Richardson: It is ultimately you who set the carbon budget.

Q12 **Julia Buckley:** That brings me on to my next question: what would be the benefit to Parliament and the public if Ministers published a draft delivery plan for the carbon budget before asking both Houses to set the overall limit in law? It is about the sequencing.

Professor Forster: I think that it would be a good idea to do that, just because then you would be setting the carbon budget on your own pathway rather than the Committee pathway. Therefore, that is a good idea.

Dr Richardson: I totally agree. The more information that is available to you at the point when you are taking that vote, the better. We provide advice but ultimately the Government have to decide their pathway. As you say, it would have to be a draft, because if Parliament voted a different level of number than the one that it had based their draft on, it would need to come back and revisit it. However, knowing that this is how they would propose to deliver it would give Parliament full information at the point when you have to take that vote. It is a lot of work for our colleagues in government but part of the reason that we want to provide this early is to allow that to take place.

Q13 **Ellie Chowns:** Thank you. It is good to meet both of you. You publish a lot of very useful reports—thank you for your July 2024 report to Parliament on progress on emissions reduction.

I would like to start by inviting you to summarise how the picture has changed since your June 2023 report, perhaps over the last 12 to 15 months. How has the picture hanged on where we with greenhouse gas emissions? In particular, which of the sectors not on track are causing you the most concern?

Dr Richardson: There is a lot of good news, it is important to remember. The UK has met all three of the first carbon budgets. That is new since the previous progress report, and we have halved our domestic emissions, so there has been a lot of progress, and 2023 was a good year for emissions reduction. If we continued at that rate we would hit our targets.

However, we are concerned that some of the reasons for that good progress probably will not last. Part of it is almost certainly to do with the very high cost of gas at the moment, which will have suppressed demand. Part of it is due to the interaction with the electricity market.

In 2022 the French nuclear fleet went offline. We produced electricity by burning gas in the UK and sending electricity to France. In 2023 the fleet came back on, so you had two years of electricity progress in 2023 instead of seeing it split across the two years. Therefore, we are worried that that underlying rate of progress is not strong enough, particularly outside the electricity supply sector. Electricity has been the hero sector of this as renewables have pushed off particularly coal bills and some gas.

However, we have now closed the last coal-fired power station, so although there is still progress to be made on electricity—and it does provide about a quarter of the reduction in our pathway to 2030—we now need to see an acceleration of that progress; I would say particularly buildings and surface transport industry and agriculture, and particularly around things like tree planting, which have a long lag. It takes a long time for a tree to put on weight, so if you do not start soon, you do not get the benefits downstream. Therefore, there is a need to accelerate across a wide range of sectors.

Q14 **Ellie Chowns:** We will follow up with some of those specific sectors. I would like to dig in particularly to the surface transport sector. There is any number of telling graphs, but one of them is on page 22 of your report, which shows that surface transport is the biggest sector, the most problematic sector. It has been the stickiest sector and the reduction in emissions from that sector has been less than two-thirds of what was predicted 15 years ago. This is in the news today. Why has the reduction in that sector been less than was predicted, planned for, hoped for, and what can be done to alter this trend?

Dr Richardson: It is a combination of different things. One of the effects that we did not expect is that the size of cars has got larger. Although petrol cars and diesel cars have become more fuel efficient for any given size of car, people have started buying bigger cars, which has undone a lot of the effect that we thought would happen early in the transition about greater efficiency of the vehicle fleet.

In a sense, we are now moving past that as a main driver into electrification. The key issue for us now is the rate of take-up of electric vehicles. We are below where we had hoped to be but some of that is because the overall vehicle market is smaller than we expected it to be. That is almost certainly linked to the cost of living crisis and some lingering effects of covid where vehicle sales were very low for a period. That is very difficult for the vehicle industry, and we see challenges there. They are finding that the overall market that they are selling into is suppressed because of these effects. Hopefully, though, that market will return. That is what we have seen in the past when car and van markets

have been suppressed by economic circumstances; they typically come back, and when it comes back it will be coming back in a market where electric vehicles are more developed, there are more models on sale and prices are lower.

We do expect to see price parity within those new vehicle markets within the next few years, based on the falls in battery price that we are seeing. We are already beginning to see price parity in the second-hand market, which is where most people buy their cars, so there is scope for a rapid take-off there. However, undoubtedly the last year has been difficult for manufacturers, and we have seen a pause in the take-up. That seems to have accelerated back again in the last two or three months, so it does feel like it is coming back, but we definitely saw, from about last October through until July that sales were pretty flat.

It is difficult to know exactly what is going on with that. Some of it will be cost of living. You can easily put off a purchase. Some of it will probably be that people can see that if they wait a year or two there will be new models coming that will be even cheaper. Ironically, a falling price can sometimes lead you to delay a decision.

It is also possible that there is an effect from the reversals that we saw under the previous Government on the timing of the phase-out for petrol and diesel vehicles. I cannot point to any direct evidence that shows that, but there is a coincidence around the timing of when sales slowed down.

We do think that that should come back as prices fall. The electric vehicle is inherently a much better car. It is much cheaper to run, it is cheaper to maintain, it is quieter, it is easier to drive, and you do not have to go to the petrol station to fill it up. Obviously there are issues with charge points in some parts of the country, so we are not 100% of the way there yet, but it is inherently a much better piece of technology and as the up-front price falls you would expect to see people taking them up.

We have recently seen a campaign by the SMMT to try to bust some of the myths out there. That is a great initiative from the industry to try to get over some of the misinformation that there is on electric vehicles, and we welcome that from the industry.

Q15 **Ellie Chowns:** Could I ask about two specific policy levers? In the news today some parts of the industry are putting pressure on the Government in relation to the zero-emission vehicle mandate, which your report makes very clear is a very important policy lever. Would you care to make any comment on that particular policy?

The second one is on charging infrastructure, which you referred to. Your report says that we are on track to roll-out, but it has to treble over the next few years. One of the hesitations that the general population have about shifting to EVs is with the infrastructure. Are you seeing signals in the right direction from the Government on that and what more is needed to ensure that the charging infrastructure is there to support the

development of the market?

Dr Richardson: These are both important issues in the roll-out of electric vehicles. In terms of the ZEV mandate, we do support this. It was introduced by the previous Government about a year ago. The key thing about it is that it is a smart piece of industrial policy. We know from previous transitions between technologies that incumbent firms can get left behind. We all remember Blockbuster Video or Kodak. When these new technologies come in, it can be easy for incumbents to think that they have more time to change than they do. The zero-emission vehicle mandate is a way of saying to industry as much as anything, "You have less time than you think".

It is important to say, when we talk to the industry, that it is very supportive of this transition. What it is asking for is a bit more flexibility with some of the timing because perhaps the transition is taking place slightly more slowly than we had hoped and we have had this lull. However, for the car market it looks like it is on track for this year, the 18%, which is using the flexibility. Vans are much more challenging.

That does take you on to the charging infrastructure, though I would be remiss if I did not also re-flag up the point about making electricity cheaper. That paused the demand, because the industry is rightly talking about the demand and that is a key factor.

However, particularly for vans, access to charging infrastructure and grid connections are things that are very much on the Government's plate, but we need to see progress on that, unblocking that grid queue so that people who want to put in a substation in order to be able to put a van fleet on to charge overnight, or whatever it might be, can act quickly. We hear a lot of stories from people who are trying to do the right thing, firms that are trying to move to electric transport and if it is a van fleet or a lorry fleet, they cannot access the grid, so there is a blocker there.

On the household and car side, we are seeing the rates of increase on those chargers, but we need to triple it. You have to assume that it is a compound process, but we think that it will be. If it increases by a third each year and multiplies through, you should see that and that is what we would expect. However, there are particular issues. To give you an example, where I live there are charge points on all the lamp posts. It is very important for people who do not have off-street to be able to access low-cost overnight charging rather than just rapid charging.

However, where I live is not where everybody lives and lots of parts of the country do not have the same level of infrastructure available. There are things there and that can be a role for local government who often own that. There is power in the lamppost already, so it is a relatively easy thing to convert. Doing those measures that are relatively simple can help to give people confidence, because if you do not have a driveway—and it is only about 30% of people—you do not want to have to drive off to the expensive charger or try to find somewhere; you want

it to be on the street where you would park anyway. There are some quite straightforward things that could make quite a big difference there and it would be great to see those accelerated.

Q16 **Chair:** On that, you are suggesting that the infrastructure is broadly on target but the amount of demand among the public needs to treble. Many people listening to what you were saying would think that that was quite a rosy picture in terms of not having the inconvenience of going to a petrol station, you just have to find somewhere where you can sit by the side of the road for half an hour.

Clearly public demand is still a significant issue, and it will be harder the lower down the demographic groups you go. If you live in a terraced property without a drive, if you live in a council flat, it is very, very difficult for you to access this.

I appreciate what you have said about the technologies and prices, but some of the issues with public demand, it feels to me like you are somewhat underestimating the barriers and why much of the industry—who I absolutely agree are onboard in terms of the ambition—are very worried about the stepping up of the target. We have seen that in terms of vans with Vauxhall today. Do you not think that you are underestimating the difficulties in terms of public demand?

Professor Forster: You have been fantastic, James, but I will give you a bit of time off now.

When we do our analysis, we try to look at what is realistic delivery rates, where are currently, where industry is currently, what government policies are currently in place and what is the public attitude currently. We try to look within that at what sort of government policy will be necessary to do that acceleration that we want to try to achieve.

There are a couple of things that we need to pick up on this. First, it is about long-term, consistent policies that are well communicated. They have to be communicated by the industry and communicated by the Government as well. You have to keep that consistent messaging out there that in the long term your electric car will not be as expensive for you as the petrol or diesel one that you are using currently. That is the first thing.

The other thing is to try to work as much as possible with the industry to become advocates for the change you are undertaking. That is why we think as a Committee that the steady end date is that effective policy to be able to see the changes. However, you are right, Ellie, that the one we are concerned about is vans. We are particularly looking at the SME-type of business. That is where I think that it would be good to have a look at what are the support policies there to give the SMEs the confidence to get out and get an electric van.

Q17 **Chris Hinchliff:** Good afternoon gentleman. To think in general terms

about where we are off track and on track for delivery, we have heard just now that where we are off track is in part because of some of the assumptions in our thinking not being borne out in the long term, around the weight of cars, for example, and some of the efficiencies and how that plays out. Quickly to start with, how vulnerable are we to our underlying assumptions being off in reaching our long-term targets?

Dr Richardson: Part of the structure of the Climate Change Act 2008 is the five-year carbon budgets. That does mean that if one assumption goes one way, another assumption goes another way, or if you get noise in the system—like the French nuclear example I gave you—then over a five-year period that should balance out within the Carbon Budget.

The system is designed to be able to deal with some of that uncertainty. However, it is also important for the Government to have a set of contingencies against their own plan to say, "This is what we think will happen, here are the policies that we will put in place to make that, but this is what we will do if we find ourselves off track", because that clearly could happen.

Q18 **Chris Hinchliff:** Within your 2024 report you set out 10 priority actions, which cover a number of areas. Would delivery of these actions be sufficient to achieve the Sixth Carbon Budget? To follow that up with a few other quick questions, we do not have much of 2024 left now. Are there gaps in the delivery of those 10 priority actions and, if so, which are the most serious gaps? What are the implications of those gaps remaining?

Dr Richardson: Shall I have a go? The first thing to say is that the 10 recommendations are the things that we saw as most important but that is not the sum of everything that needs to be done to get back on track. It is the things that we thought that Government could most urgently do. We will have more to say on the rest of it when we publish the Seventh Carbon Budget.

In terms of what has not been done from that list, we keep banging on about it, but the point about making electricity cheaper is the top recommendation for a reason and we have not yet heard anything from the Government on that. I would focus on that. However, there are other things around more helpful industrial electrifications.

To be fair, we had an announcement only a few days ago on one of the things in that list, the planning rules on heat pumps, so there is progress. We are expecting the Government's response to our progress report before Christmas and that should set out and hopefully trigger more actions on those recommendations. However, in a sense, that is for them. I would say that we are seeing quite a bit of progress, but we do need quite a lot more.

Professor Forster: To come back to the 10 recommendations, they are particularly designed to get that 2030 target, to try to get that CB6, that

2035 timeline. There are some additional things that we need to do there. We begin to need to see the scaling up of the electricity supply there to cope with the extra demand. The other thing that we need is we need to begin to see the roll-out of carbon dioxide removal technology as well. There are some additional things to get to that path.

Q19 **Barry Gardiner:** Could I pick up on the electric vehicles? In your July report you highlighted the need to increase electric vehicles sales from 16.5% of new car sales in 2023 to between 80% and 100%, and for vans from 5.9%—reinforcing what you have just said about vans—to between 70% and 100% by 2030.

You say that the slowdown in growth in the UK coincided with the decision to delay the 2030 phase-out date taken by the previous Prime Minister. What is your view about the potential impact of a further change in the ZEV regime and how that might impact upon the clarity and the certainty and, as you said, Professor, the consistency of policy that business needs in order to plan its production lines well in advance?

Professor Forster: I do not think that it is the job of our Committee to comment on what is a very hot political debate of the hour. This is particularly the Government's policy as well. It is not our policy; it is Government policy. I want to try to stay out of politics.

Barry Gardiner: I was merely picking up on what you said in your report.

Professor Forster: Yes, you are absolutely right. What we say in our report are that long-term, consistent policies are the best way to both give business confidence and to give the consumer confidence that if they go out and buy an electric car, they are not making a stupid purchase. I will stop at that.

Q20 **Barry Gardiner:** I think we have both made the point, yes, thanks very much.

Professor Forster, you founded the Priestley Centre for Climate Futures. I know you do not claim to be Nostradamus but your ability to project into the future the impact of climate change is what I want to turn to now. The title of this inquiry is "Delivering the Government's Climate Targets". Those targets are not just in emissions reduction, although most of our questioning today has been about that. They are also for a country that is resilient to climate impacts, and that is adaptation rather than mitigation.

We are a signatory to the Sendai Framework for Disaster Risk Reduction. Article 7 of the Paris Treaty establishes a global goal on adaptation to enhance our adaptive capacity, strengthen our resilience and reduce our vulnerability. It is these goals that I want to ask you about, because in March you published your independent assessment of the Third National Adaptation Programme, which the previous Government produced in July last year. Can you set out for us the key findings that you made and what you think would be good recommendations for this Committee to include

to ensure that those targets, our adaptation targets, will be met?

Professor Forster: Perhaps I can start with that. I absolutely think that it is good to talk about why we are asking the country to reduce its emissions. That is because we want to protect our own population, and the rest of the world as well, from the impacts of climate change. The very wet weather that we are seeing today is an example. We are beginning to get a bit of a cognitive dissonance between what we are asking people to do and why we were doing it. Therefore, I always like to make sure that we understand why we are doing it, why we are asking our society to transition.

Q21 **Barry Gardiner:** It is to avoid Storm Bert; it is to avoid the flooding that we have just seen. You are right that we do not often see that connection being made when people are asking about whether we should continue with this policy or should we backtrack.

Professor Forster: You are absolutely right, but because we are going to always have a lot of climate change to cope with, we have to adapt our society. Just to concentrate on one key piece of advice that we will produce, towards the end of next year—I cannot remember when, but James can tell me—

Dr Richardson: Spring 2026.

Professor Forster: —we will be publishing a report on how well-adapted the UK is. That is precisely what you are talking about, because we do not currently have clear adaptation targets. You talk about adaptation in terms of targets, but I think that the most important thing that we can do there is to try to define what a well-adapted UK would be like.

Dr Richardson: If you said what was our top ask in that response, which it would be fair to say was not entirely complementary on the NAP.

Q22 **Barry Gardiner:** I think you said, "NAP3 lacks the pace and ambition to address growing climate risks, which we are already experiencing in the UK". You talked about slow progress. It is damning, absolutely damning.

Dr Richardson: What we say is that the first thing that we have to do in this country is to work out the level of adaptation that we are seeking to achieve, what our quantifiable goals are, what the actions are that sit behind that and how will we measure it. Obviously you then have to do those things, but you start by working out what it is that you are trying to achieve, how you will try to achieve it and how you will measure progress. That seems pretty basic, but we do not have those things in place.

Q23 **Barry Gardiner:** You were the Chief Economist at the National Infrastructure Commission. Can you explain to the Committee what is required to meet the resilience standards for our national infrastructure and which parts of our critical infrastructure—our power supplies, our hospitals—are currently at risk, given the projections that you see for the

future. IPCC says that we are on course for between 2.7° and 3.1°, let's face it, so we need to be thinking about what resilience actually means for our critical infrastructure beyond 2050 and how our failure to adapt properly can impact on our mitigation efforts.

Dr Richardson: A lot of that is the work that we are doing for this well-adapted UK report, so we will have much more to say on that when that comes out. However, it is clear that you are seeing very differential levels of adaptation and action. If I look at, say, drought, there has been quite a bit of action over the last few years.

I will claim some credit to the National Infrastructure Commission for its 2018 report on this. That has triggered a general recognition across government, the industry and the regulator on the level of action that is needed—the "what needs to be done" in terms of the quantified objective and the actual measures underneath it.

Although progress in building infrastructure in this country is glacial, there are things going on underneath that are beginning to see action on that. It is not by any means a done deal, but it is a more encouraging position. However, on something like, say, flood protection, the Environment Agency is out there—like its equivalents in Scotland, Wales and Northern Ireland—building stuff, so I do not want to say that nothing is going on, but if you ask what is the level of flood protection that we are seeking to offer our citizens, there is no answer to that question.

Barry Gardiner: The answer may be provided by my colleague, Sarah Gibson, whose constituency has just felt the impact of it. I take the point. Thank you very much.

Q24 **Martin Rhodes:** You made reference earlier in passing about heat pumps. Heat pump installation rates are assessed as being significantly off track. In your view, what are the main reasons for this?

Dr Richardson: Top of the list is the point about the relative prices of electricity and gas. You have to make it cost-effective for a household to get one of these things. There has to be a saving on bills. That would be true if the true costs of electricity and gas were being reflected in the market prices, but at the moment we add extra costs on to electricity that distort that.

There is that sense in which there is a pull from the user because they can see the benefit of it, and you are lining them up. You are saying, "If you do the right thing, you benefit from it". At the moment if you do the right thing you may lose from it and that is not a very good message to people.

That long-term consistent demand that Piers talked about a second ago is really, really important because that also helps people to move into the industry and think that it is worth training for this, for example. That is a second issue here, that there are relatively few people who are trained in installation; there are lots and lots of people who will install a boiler for

you and relatively few who know how to install a heat pump. If you are a trained boiler installer, it is not that difficult to do the cross-training. If you are starting from scratch as an apprentice, it is a longer process. We do see some companies that are beginning to offer processes like apprentices, so there is action on it, but we are not seeing that pull-through of enough people with the skills.

It also can be quite difficult for a household. Thankfully, we have just seen this change on planning. It will be interesting to see what effect that has. I think it comes in on 1 January. However, we have been making it artificially difficult to install a heat pump, whereas you do not require any of that for a boiler. There are challenges there. It is one of those things where you have to try to get all of these things right to make it easy and accessible for households.

I would also point to the social rented sector and privately rented sectors, where you have a mismatch between the person who is paying the bills and the person who is installing the heating system. Therefore, you have to work with those sectors, but also potentially regulate, or maybe in the case of the social housing sector you may need to subsidise as well because you do not want that getting passed through in bills to people who are on low incomes. Then those sectors also move.

With something like the boiler upgrade scheme, it works for a householder because they get the saving on the bill if you get the prices right. However, the landlord bears the cost of the heating system, and the tenant bears the cost of the bill, so you have to line those things up as well.

Q25 **Martin Rhodes:** You mentioned the issue on the availability of heat pump installers, and you mentioned conversion training and the possibility of apprenticeships. Should the principal focus be encouraging young people on apprenticeships and new people coming into this career path or is it about retraining existing engineers?

Dr Richardson: It is probably both. You have a large stock of people who install boilers for a living and who can quite straightforwardly cross-train. However, many of those people are—I think that I am allowed to say this now—relatively older. They are my age, and they are probably not thinking that in the 2040s and 2050s they will be installing heat pumps. Therefore, you also want to bring in people who are the workforce of tomorrow.

This is potentially quite an attractive job. It does not require a university degree. We are very good as a country at university degrees, but we are less good for people for whom that is not the natural route. It will not be replaced by AI; it is not going to be outsourced to a foreign country. You get up every morning and you know you are doing something for society. That is quite an appealing prospect. Obviously you need to make sure that there are good wages and conditions in those jobs, but it could be an

attractive thing for young people—and it is everywhere, not just in London.

Q26 **Martin Rhodes:** In terms of heat pumps, what can we learn in the UK from elsewhere in the world where there may have been greater progress?

Dr Richardson: The one advantage of being where we are on this is that we can learn more, because almost every other country that we would look to is further down the road. It does point to the things we have already talked about. If you look at the countries where you are seeing big take-off in heat pump rates, it is mostly that combination of getting the financial incentives right for people, making it relatively hassle-free and having a clear and consistent narrative and plan from the Government so that it is worth people's while making that switch, it is worth people's while training into the industry and it is worth businesses' while setting up in it.

The Scandinavian countries—where it is famously not very hot in winter—are the furthest advanced but we are seeing real change in places like the Netherlands, which is very similar in its use of gas to the UK. Therefore, this can be done, and we are optimistic, based on that evidence, but only if the pieces are put in place.

Q27 **Bill Esterson:** Thanks very much, Chair, for asking me to take part as the Chair of the Energy, Security and Net Zero Committee. We are following up on our previous Committee's inquiry into home heating and we have a session next week, so this is very timely.

You were talking about other countries. Why are they doing so much better than us? Is it about confidence, is it the point around better communication or is it just electricity prices being lower?

Dr Richardson: It is the mix of these things. The electricity-price thing would be the single biggest thing, but I would not want to say that if you just set the price right everything else magically falls into place. However, it is probably the thing that makes the most difference. If you look at the chart of the electricity/gas price ratio and the rate of heat pump take-up, it is pretty much a straight line in the direction that you would expect, so it is a very important fact. However, yes, we do need to get the other things in place as well.

Professor Forster: We do have a very poor track record in the residential sector in particular. This chopping and changing with different policies, where they are introduced and then withdrawn and then changed. I do not think that this inspires exactly the same business or consumer confidence that we are seeing in other countries.

Q28 **Bill Esterson:** From what you have seen of this Government's warm homes plan, do you think there will be a greater degree of certainty and that that will make a difference?

Professor Forster: Touch wood.

Dr Richardson: It is early days.

Professor Forster: That is what we would hope, and we will come back in July and tell you that.

Q29 **Bill Esterson:** I look forward to it, thank you. The previous Government had a target of 600,000 heat pump installations and we are doing about a 10th of it. Do you think that that target is realistic, all things being equal?

Dr Richardson: It is extremely challenging. If you got all the right things in place and you saw growth rates that are towards the top of what we have seen in other countries, recognising that some of that 600,000 is new builds—so if you prevent any new gas connections for any new properties that are built, which you ought to do, because it is madness to build a new house and connect it to the gas grid and then require the new—

Q30 **Bill Esterson:** Is that one of the recommendations that you would make?

Dr Richardson: I think that it would be a very sensible recommendation to make. It is not impossible to hit that target, but I would not want to underestimate how challenging that is.

Q31 **Bill Esterson:** In your report you talked about the supply chain, and you talked about manufacturing. How important is it that we have a strong domestic supply chain?

Dr Richardson: The manufacturing side of it would be the thing that I am least worried about with heat pumps, simply because there is a global market in heat pumps that is quite large. If you want that manufacturing base here, again it is the stable, long-term policy creating the ageing demand that makes it worthwhile for somebody to set up a factory here.

You are starting to get into questions of industrial policies that are perhaps at the limits of our remit. Can you source the number of heat pumps for houses that you need? That is the thing I would be least worried about because there are a lot of heat pumps around the world.

Q32 **Bill Esterson:** Great. This will be my final question. You spoke a lot about how expensive electricity is, you spoke just now about the extra costs of electricity. If they do not go on electricity bills, where should those extra costs go?

Dr Richardson: It is a choice for the Government. You can put it on to the gas bill, keeping the balance within the dual fuel bill roughly where it is, or you can put it on to taxpayers, but the public finances are under strain, so we do not say that lightly. The Government will need to decide on the balance between those things. It may be that you want to have a bit of each, partly because there are a small proportion, about 15% of the population, who are not on gas.

Of course they gain, and that is important because there are a lot of fuel-poor households in that group, but then there is a cost of them gaining that has to sit somewhere. You might want the Exchequer to pick up that part and then say, "Well, we will equalise the impact on a dual fuel bill", but within that you have changed the relative prices and, therefore, the incentives and what happens if people switch. There are definitely choices for the Government to make on that balance.

The other thing I will say is that there will be some households who have very high gas bills and relatively low electricity bills. That almost certainly means that they either have very large houses—in which case maybe we are not particularly worried about them; they can afford it—or very leaky houses. You probably do want more effort on the insulation of those properties because that is the best way of sorting out that part of the issue. Rather than saying, "Well, we will not do it", it is to say, "Well, that we just need to stop those houses wasting so much".

Q33 **Bill Esterson:** It is the importance of the fabric first approach. Of course, you have just advocated potentially putting extra—I did say it was the last question. I was not telling the truth, of course. If we move the levies off electric bills, but you also want us to use less gas, what happens there?

Dr Richardson: If you rebalance them between gas and electric, you shift the incentive for people to stick with gas and create a better incentive for them to move on to electric, but your day one dual fuel bill can still be the same, because you have taken a cost off one side of that bill and put it on to the other side. That balance does require some Exchequer funding to make it work. I would not want to pretend that it does not.

Q34 **Bill Esterson:** Ultimately, as we are using less gas and we want the same amount of levy collected from gas, that is going to mean very expensive gas bills.

Dr Richardson: Fortunately, the levies themselves will naturally reduce over time. Quite a substantial element of them is from the early costs when renewables were very expensive a long time ago. Those are mostly on fixed 15-year contracts, so they will roll off, so that problem does thankfully solve itself.

Bill Esterson: It sorts itself out. Okay. That is very helpful.

Q35 **Sarah Gibson:** I was going to move on to agriculture and I am sure that Toby has organised this very well because he knows that, if I talked about heat pumps and air-tightness on buildings, you would never get me out of here. That is probably a sensible thing.

This is quite important because we are seeing these drops in terms of our energy use because the decarbonisation of the grid is getting better, but in fact, agriculture and land emissions seem to have been very slow to reduce. We are interested to know what the biggest limiting factors are,

in your views. Your 2024report, notes that there is a lack of policies that tackle emissions specifically in agriculture and land use. Why do you think this is the case and what should we be looking at?

Professor Forster: I have to declare an interest. I am a partner in a family farm as well.

In terms of what I think the sector needs, probably, first of all, is a proper land use strategy to come from the Government. This is something they have consulted on, but we have yet to see it produced. Producing that ought to really set clarity over the overall direction of what things you do in what part of the country and what interventions you want to do.

The other certainty is with the Government grant that will replace the common agriculture policy, the so-called ELM grant coming out of DEFRA, that has taken a very long time to come out. The size of that grant and exactly the take up within that grant to deliver the on-farm changes we want to see occur. That is all a bit confused currently, and we do need to see good, clear guidance coming out to DEFRA about the on-farm changes that can be introduced to try to decarbonise them.

There is a lot of emphasis on all sorts of different things within those ELM subsidies, but the actual quantified things that could actually reduce the carbon emissions of agriculture are more uncertain and it is quite uncertain where the direct support for those policies to come from.

Q36 **Sarah Gibson:** Are there any specific policies that you think Ministers should be adopting in the short term that would make a significant difference?

Professor Forster: Just in terms of what we have discussed with the Climate Change Committee, what we are keen to see in the short term are policies for woodland creation and peatland restoration. They are particularly important ones to do early. As James talked about, trees take a long time to draw down carbons so, if we want them to affect our net zero 2050 target, the tree planting does have to happen early.

Quite a lot of the other policies are to try to bring in the ELM grants and things as early as possible and to give our farming community the right financial incentives to be able to change. It is a very subsidised industry so what we do say to the Government is that they ought to be able to use those subsidies to affect the right changes.

Sarah Gibson: That makes perfect sense, which brings me on to a slightly more specific area that is—

Chair: Before you move on, Sarah—I will come back to you in a moment. I will just bring Barry in on this issue and then I will come on to you again.

Q37 **Barry Gardiner:** I am just interested in what you were saying about the

tree planting being so important. We often talk about the right tree and the right place, but you were specifically talking about the time it takes for those trees to sequester carbon. We can look at this from a biodiversity point of view, in which case we might go for mixed deciduous, traditional, oak, elm, beech and so on, but if you are looking at fast growth and sequestration of carbon, you might be looking at dreadful Sitka spruce. How do you balance those two things?

Professor Forster: That is a very good point you brought up, because that is where our Committee changed our advice. If you look at our older reports, we talked about trying to grow your carbon as fast as possible, but our advice has changed on that. We are far more about trying to make sure we do plant the right trees in the right place.

The good thing about that is these very high-quality, very climate-resilient, biodiverse woodlands can still sequester exactly the same amount of carbon as your standard conifers, but they just take more time to do it. That is exactly why our recommendation is to put those trees in the ground as early as possible, because then it gives them the time to eventually sequester exactly the same amount of carbon.

Barry Gardiner: The right tree, in the right place, at the right time.

Professor Forster: Yes.

Chair: I will bring Cameron Thomas in, and then we will go back to Sarah to finish up.

Q38 **Cameron Thomas:** Just following on from Barry's point there, the climate in the UK is changing and it is getting warmer, and many of the trees and flora that we are used to in this country will now struggle to adapt to the climate as it warms. There is a concern around invasive species. What balance do you think the Government should find in looking into flora that are not native to the UK and how we might introduce those along the same lines?

Professor Forster: That is a bit beyond our expertise as a Committee, but I know I am also trustee of a charity that does this. We work in partnership with all organisations like the Woodland Trust and Natural England that do take those things into consideration. You do not put exactly the same trees in you would do today; you think about what climatic conditions there could be in 20 or 30 years' time.

Q39 **Sarah Gibson:** This is slightly more specific and comes up from your report, to do with methane emissions, where the reduction rates in agriculture from your Committee's recommendations for the balanced pathway need to almost increase eightfold. Can this be achieved with the current agricultural practices? Would methane suppression feed products alone that have that potential to achieve the reductions on agricultural methane? If not, what other things should we be considering?

Professor Forster: We will give you our complete advice when we publish our report at the end of February, and just to say we do think we can be more optimistic about some of those on-farm changes. If you do have a look at the evidence today, things like pea supplements and good animal husbandry and good genetics can make a significant difference.

We are also quite clear in our advice, though, that we are not going to get the necessary methane reduction without a reduction in numbers of livestock as well. That would do two things. It would reduce the methane emissions directly, but on top of that, it would take some pasture land out of production, and with that pasture, you can put in your woodland and try to support other biodiversity.

Q40 **Chris Hinchliff:** An important part of the evidence this afternoon has been around heat decarbonisation. We have just had the autumn Budget and seen some announcements in that relating to that point. Looking at the figures announced in the Budget, would you say that the up-front support for incentivising heat decarbonisation and also the necessary parallel improvements in home insulation are about right?

Dr Richardson: We need to look to the spending review on this because these are about long-term programmes. The Budget was very much around tax, clearly. The spending side of the Budget was kind of, "Here is one year to tide you over while we do a full spending review". As somebody who has put together budgets and spending reviews in my past life, I understand why they have done it that way, but what we are talking about are long-term programmes. We need to see what the longer-term settlements are before we are able to say whether that is the right order of magnitude.

I should say that for the first time, I think, as part of Our Seventh Carbon Budget, we will be setting out the broad range of where we think the public spending implications of our pathway would be, depending on the choices that the Government wish to make. That is obviously a very contemporary topic at the moment. There is a lot of choice for the Government within that and we are not seeking to make those for them, but we are trying to illustrate a little bit more than we have done in the past how you might do this in different ways within the public finances. We will have a bit more to say in the spring.

Q41 **Chris Hinchliff:** Given the importance that you have given to electricity prices this afternoon—again, you might give me the same answer here—but would the Committee recommend any further fiscal measures for the Government to consider in addressing the gas/electricity price ratio?

Professor Richardson: In some senses it is a fiscal question. Your answer to that might be, "We are going to rebalance it all between electricity and gas and there is no taxpayer contribution", or it might be that there is an element of taxpayer contribution within that, but it is a question that has to be addressed within a fiscal context. It was not in the Budget. As I said, we are waiting for the response to our progress

report. Hopefully the Government will both set out their views on that and, if it is something that they seek to address through a spending review or some other process that we would get clarity on when that would be. I will certainly expect the Treasury to be around the table when that decision making is made.

Q42 **Cameron Thomas:** Thanks, Chair. What level of acceleration of peatland restoration and tree planting do you think is necessary to meet emissions targets on the Climate Change Committee's balanced pathway?

Professor Forster: Okay, I do not know if I remember all the exact numbers, but things need to rapidly accelerate. We recommend, for example, that between 30,000 to 50,000 hectares of woodland need to be put in annually, and I think we are somewhere, I cannot remember exactly—

Dr Richardson: About 13,000.

Professor Forster: Yes, 13,000. Somewhere between 10,000 and 15,000. We also need to see—do you remember the numbers?

Dr Richardson: We are about 12,700 hectares at the moment and we need about 32,000. It is slightly more than doubling.

Professor Forster: Triple or double, yes.

Q43 **Cameron Thomas:** Thank you. There are two parts to the next question. The Government announced £400 million of funding for tree planting and peatland restoration in the Budget. First, to what extent do you think that that is or is not adequate and how should that spending be best apportioned to accelerate those activities to the levels required to contribute to emissions reduction?

Dr Richardson: I fear I may be about to give you the answer I just gave your colleague, in the sense that this is a long-term programme. What we need are those long-term settlements. It is great that they have put money in, but it is a short-term thing because that is how they are doing spending. The trees take a long time to grow because we need to manage these run rates over long periods of time.

Similarly on peatland, these are not things that you can just do overnight; you need a programmatic approach, so we would hope to see a longer-term, clearer plan from the Government. Inevitably that is a matter for the spending review. I do not think we were ever going to get that in the Budget.

Q44 **Olivia Blake:** Just a quick one on peatlands. Do you think there is a need for a look again at the ban on burning that was brought in under the last Government to protect peatlands from further degradation, because it only covers areas of deep peat at the moment?

Professor Forster: I think we will be looking at peatland again quite carefully when we publish our CB7 advice. We thought it was a bit easier

to restore than it is, and it takes more time and more thought to do, especially on lowland peat. I am afraid I do not have a particular answer for you, but we are going to have a brand new, comprehensive look at peat when we publish in February.

Q45 **Olivia Blake:** My next question is again about the funding settlements that were announced by the Chancellor for 2025-26 to enable individual Departments responsible for tackling climate change to deliver and sustain emission reductions at the pace required. Do you think that they are adequate and are going in the right direction?

Professor Forster: I will go back to James on this one, because he is the economist.

Dr Richardson: As I said before, what matters will be the long-term programmes. It was encouraging to see that change in the overall capital envelope within the Budget. That has not been allocated yet and obviously there are many competing demands on that. Seeing what is essentially a restoration of the plan that we had a few years ago on the capital budget that would stop it falling is important, because this is an investment programme first and foremost.

It is largely capital spending that matters, both private and public. There is certainly a much more plausible envelope there for the kinds of things that we think need to be done, but I do appreciate there are many pressures on that. We will have to see what the settlements come out in the spending review, but it is clearly a step in the right direction.

Q46 **Olivia Blake:** Under the last spending review, the Treasury was quite keen to see joint applications to it. Do you think that that would be of benefit in trying to meet targets across government?

Dr Richardson: I would certainly hope that, between the Departments that have responsibility here and also within the Treasury, the spend on net zero and the spend on climate adaptation are brought together and that part of that process is saying, "Here is the total; does that line up with what we think we need to do to meet the Government's targets? Does that line up with what we are trying to achieve in adaptation?" rather than it purely being looked at Department by Department.

The way the process works, they will end up with a departmental lens on it, but hopefully they are also capable of bringing that together in a joined-up way. I certainly hope that that is part of how they are doing it.

Q47 **Olivia Blake:** Moving back to transport to focus on aviation, which is a big area for you, to what extent is the UK relying on the net reduction in international aviation emissions to deliver its targets at the moment?

Professor Forster: Perhaps I will pick that up. We have for a very long time recommended as a Committee that both international aviation and shipping is included within our Carbon Budget. The Government said that they would include it within the Sixth Carbon Budget, but we are still in

fact competing for that to be expressly delivered in the legislations. That is a very important thing to do. We have to get our country on to the right way to hit that net zero 2050 target. It is too unfair to try to get those carbon budgets without a contribution that comes from our aviation industry.

What is very important as well is that we are one of the most progressive countries trying to look at our aviation industry. If you talk to the people in the industry, they actually want to try to work to this net zero target, just because they think they can influence the international negotiations. By incorporating within our carbon budgets, you do encourage the industry to think about these innovative technologies and to make the necessary investments as well. It is something that is good for the industry and it is absolutely the right thing to do.

Q48 **Olivia Blake:** It is encouraging to hear that the Government are considering bringing in aviation shipping emissions into Carbon Budget 6. If that was not to happen, what would the consequences be if aviation and shipping were to remain outside the Sixth Carbon Budget envelope?

Professor Forster: As I said before, that would then mean that other areas of the economy would have to find that 13 million tonnes of decarbonisation or something like that. You have to get that coming from the aviation industry.

Olivia Blake: Great, that is useful. I was looking for that number.

Q49 **Chris Hinchliff:** To return to recent announcements, could I tempt you to comment on the coherence of Budget measures relating to the decarbonisation of transport? Are there any measures that you would like to see us recommending to the Government when it comes to fiscal measures and the decarbonisation of transport?

Dr Richardson: We did see an increase in vehicle duty for petrol and diesel cars. That clearly helps with the incentives and with this demand point that the industry, understandably, has been pointing to. I am sure they would have preferred subsidies to taxes, because they care about overall demand as well as demand for electric vehicles, but it does shift the demand there. The Government made decisions around fuel duty.

Our focus has been on the other side of that, saying, "Well, look, actually, if we rebalance these electricity prices, the cost of running your electric vehicle falls"—sorry, I know I have mentioned this about 30 times now, but it affects the cost of running the electric vehicle as well as the heat pump as well as industry. That is why it is so important to us, because it operates across so much of the emissions landscape.

There is always a choice in fiscal things about which way you use your instruments, but what matters for the consumer is, "Am I better off or not?" You can achieve that in more than one way. It would not be for us to tell the Government which way to achieve it. It certainly makes the case for the electricity side of things.

Q50 **Ellie Chowns:** I have a couple of questions. The first one follows on a bit from the comment about the inclusion of aviation and shipping, recognising that the UK has made relatively good progress in reducing territorial emissions, but much less good progress in reducing consumption-based emissions. Should we be thinking about the implications of that for how we are setting carbon budgets and how we are measuring our progress?

As the technology improves and we are moving towards carbon border adjustment mechanisms and things like this being able to recognise consumption-based emissions more easily—although I recognise that your report says we are there is quite a lot of flexibility in the figures—can you comment on the importance of recognising the difference between consumption-based and territorial emissions and how we should better take account of that in policy?

Professor Forster: Perhaps I will talk about that at the beginning. In fact, trying to set targets for consumption emissions is not within the remit of our Committee directly. If you do go back to the Climate Change Act, it is explicitly about territorial, but that does not mean that we do not care about consumption emissions. It is something that we report on and in fact, there are people in my university who produce consumption emissions for the Government. We report on them and when we publish our net carbon budget advice, we go into quite a lot of detail about where they come from. This is the important part of the consumption emissions, because these are the ones that we import from other countries.

If you have a look at where they come from, the bulk of them come from EU countries, which is our biggest import market. Quite a lot of them come from food. If you have a look at the trajectory, because our EU colleagues are also working to this net zero target, and they have quite a similar decarbonisation pathway to what we have for our country, in fact, over time, we can be a bit more confident that they should rapidly decline. That is something we are very much keeping tabs on, though.

Q51 **Barry Gardiner:** Yes, if I can just follow up on that, because in your report you talk about consumption emissions—you actually say it is at figure 1.7, but it is not, it is at figure 1.9—

Professor Forster: James's fault, not mine.

Q52 **Barry Gardiner:** That is the correction that needs to be made on page 82, but the key thing here is you say, "The latest consumption emissions data saw a large uptick in part due to increased non-EU imports … Unilateral measures such as the CBAM"—that is the carbon border adjustment mechanism—"will be most effective if paired with assistance and financing to help trade partners decarbonise, along with other multilateral partnerships. This would bring climate benefits beyond what is possible".

It is important that you emphasise this here, but it is something that the Government have not, I think, sufficiently emphasised, and I wondered

whether you thought that this should be a recommendation of this Committee. As you point out, there are wider benefits in terms of hypothecating the revenues from CBAM to our international aid programme so that other countries can actually leapfrog their technologies, producing less emissions. Without that, the CBAM can become a trade barrier that other countries see as another climate injustice by the global north on the global south.

Professor Forster: I am certainly not going to go into details of what are the best policies for international trade, because it is outside of my job, and I am also not expert, but just in terms of that, we think things like carbon border adjustment do have a certain role, but they are not necessarily the most efficient way to drive efficient reductions, especially trying to support other countries to decarbonise.

There are other approaches to consider. These are things like very high-quality standards that can support international countries to come together to reduce their emissions over time, and those approaches will probably ultimately be more efficient than something like a carbon border adjustment mechanism.

There are particular examples where you might want to employ some of that agriculture, because if you are going to ask our own farming community to change, the last thing you want to do with that is try to import not-very-good-quality, very high-carbon products. What do you say, economist?

Dr Richardson: You have probably covered most of it. If I think about, say, a country like South Africa, you have a high-carbon legacy electricity infrastructure in that country. We can help that country to decarbonise its whole economy, partly because we have big financial markets, big financial investments, a lot of expertise. Then, of course, the CBAM does not then impact them, and you have done good things for the climate, and it is good for the economy of a country that we have close links with. There is a real win here. Of course, there is a lot of complexity within that. I do not want to say that it is all magic and simple, but there is a real opportunity here if you can make that work.

Q53 **Chair:** Over the course of your session we have reflected a broadly positive sense of direction and some areas that we want to see faster progress on and, on that current trajectory, some of the challenges that might exist in terms of continuing as we go forward. Obviously, when the policies of the Government change, that may change some of those things.

One of the things this Committee is very interested in is the changes to the planning framework and the house building targets, which not only see substantial increases in the amount of house building but also move away from it being largely London and city-based and anticipating more house building in areas that maybe have not seen that that level of house building growth in the past and may be less dense. It will depend what

decisions get made in terms of transport, in terms of energy supply for those houses and others.

Do you have any assessment on the basis of where the Government are going on those house building targets and the planning framework? Is that likely, in the future, to change our progress in any significant way on the current trajectory?

Dr Richardson: As we talked about earlier, the main thing is to ensure those properties are not connected to the gas grid, because that is the biggest source of emissions within the home and also of air pollution within the home. If we can get that right, that is the most important thing.

We have not specifically looked at a lot of the details and some of that does get beyond our remit, but in our modelling of the building sector we do assume house building targets, but we do not have a microgeographic capacity to look at that. It is predominantly around the gas grid.

The other thing would then be, if you have more dispersed communities, electric vehicle charging—because they are probably going to be a predominantly car-driven transport mode if places are more sparsely populated. An electric car powered by a wind turbine or another zero-carbon source, from an emissions perspective, is emissions neutral. You have to get that charging infrastructure in there so that people who are buying those homes can feel comfortable to get an electric car to go with it.

Professor Forster: Perhaps the other thing I will very quickly add to that is that they do have to be properly insulated to a very high standard, and they have to be well adapted to whatever future climate we might expect. They have to be built in the right part of the country where they will not go under water, and they have to be resilient to heat waves.

Q54 **Sarah Gibson:** I am going back to the housing issue because we are talking about building more in rural communities, and you are saying, "Well, so long as they have electric cars, it is fine for them all to travel on their own in an electric car". I find that incredibly worrying, because is the Committee really looking at full lifetime carbon footprints of these things? Because yes, the emissions, of your electric vehicle, are lower if it is fully renewable, with an aspiration to being zero, but the carbon footprint of manufacturing all those electric cars where they could be more urban areas or better connected by public transport or walking or cycling, which is not the case if we are building in those rural communities, and you are expecting everyone to drive. Surely as a whole carbon reduction programme, if we are looking globally, the manufacture of those huge numbers of electric vehicles required cannot be the right answer.

Dr Richardson: It is a really important point you raise, but my sense on this is that of course the manufacturing emissions depend on whether I have the car, not how far I drive the car. In order to avoid people having

cars, you would have to be building those properties much more in the densest of places, where people might not have a car at all. So yes, if you put all of that building into inner London, you might stop people buying a car.

However, if you are building it in a town, or in a rural area, or even in a suburb of London, you are probably not changing the number of cars by very much. What you are changing is the distance travelled, and it is the distance travelled that is affected by that drive train and the turbine that is driving it rather than the gas power station. That is why I am doing the maths that way round.

Q55 **Sarah Gibson:** Yes, okay. I was going to say that if you come and spend some time in the rural community outside the M25, the biggest difference in terms of connected cities and connected small towns is the second car. If you do not provide good public transport and good access to towns then what happens is people buy a second vehicle, and I think that is perhaps a bit you are missing. No, they do not actually have to all live in inner London. That is an option, but you will provoke people into buying a second car if we are not careful.

Professor Forster: Perhaps I will chip in on what we do as a Committee. We absolutely do have a look at options for transport within the rural communities that are low carbon, and we have a look at them quite carefully. In fact, one of our professors, again, does the work for our Committee—Greg Marsden at the University of Leeds. He has done some good work for us, just trying to understand exactly both the challenges and the opportunities that come from the rural community work. That does feed into the analysis that we are going to be providing.

Chair: Professor Forster, Dr Richardson, thank you very much for your evidence. Thank you for all the time you have spent with us and for appearing in front of the Committee. Thank you also to the Committee.