

Treasury Committee

Oral evidence: [Decarbonisation and Green Finance](#),
HC 147

Tuesday 10 March 2020

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Members present: Mel Stride (Chair); Rushanara Ali; Mr Steve Baker; Harriett Baldwin; Anthony Browne; Felicity Buchan; Ms Angela Eagle; Liz Kendall; Julie Marson; Alison McGovern; Alison Thewliss.

Questions 1 - 59

Witnesses

I: Libby Peake, Head of Resource Policy, Green Alliance; Baroness Worthington; Nick Molho, Executive Director, Aldersgate Group; Lord Turner of Ecchinswell, Chairman, Energy Transitions Commission.



Examination of witnesses

Witnesses: Libby Peake, Baroness Worthington, Nick Molho and Lord Turner of Ecchinswell.

Q1 **Chair:** Good morning. Welcome to the Treasury Committee's first evidence session in the new Parliament of the decarbonisation and green finance inquiry. Could I start by asking the panel to introduce themselves, please?

Libby Peake: My name is Libby Peake. I am head of resource policy at Green Alliance. Green Alliance is a charity and think-tank that focuses on ambitious leadership for the environment.

Lord Turner of Ecchinswell: I am Adair Turner. I am currently the chair of something called the Energy Transitions Commission, which is a global coalition of companies and NGOs working out how to arrive at a zero-carbon economy across the world and working in China and India, as well as in Europe and on a global basis sector by sector.

Baroness Worthington: Hello. I am Bryony Worthington or Baroness Worthington. I am a member of the House of Lords. I am co-chair of the newly formed cross-party group Peers for the Planet. My current day job is advising a climate foundation on its philanthropy.

Nick Molho: I am Nick Molho, executive director of the Aldersgate Group. We are a cross-economy business organisation looking at how the UK can tackle today's big environmental challenges, like climate change, in a way that is not only environmentally effective, but also cost-effective and can deliver economic benefits for the UK.

Q2 **Chair:** Thank you, and welcome to our session this morning. Could I start with a general question? The Government have taken a decision to commit to net zero by 2050. Clearly the BEIS Department and its core clean growth strategy is central to that, but the Treasury also has a key role to play. I just wondered if you could outline to us what you see that role as being, and what you feel we should be looking to the Treasury to contribute to that process.

Nick Molho: The Treasury has an important role to play in three key respects. The first thing to say is that the clean growth strategy has all the right building blocks to get to net zero, but, in terms of policy detail and ambition, it is currently not aligned with putting the UK on track for the net zero target, so Treasury involvement in terms of plugging the policy gap in areas such as energy efficiency, the rollout of low carbon heat and completing the decarbonisation of the transport sector will be particularly important, as will stimulating innovation in new technologies like CCS and hydrogen, which we are going to need to decarbonise harder-to-treat sectors such as industry. Treasury involvement in all these areas is going to be critical to ensure that we have effective policies



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and that we can put ourselves on track for the target in a cost-effective way and in a way that can maximise supply chain opportunities.

The Treasury also has a very important role to play in terms of the funding strategy to get to net zero. Something we particularly welcomed in recent months was the creation of the Net Zero Review team at the Treasury, which is particularly looking at how we can ensure that the upfront costs of putting ourselves on track for net zero are distributed as fairly as possible. The Treasury has a particularly important role to play in ensuring that we have targeted public spending in areas such as innovation and rollout of energy efficiency and low carbon heat infrastructure, to minimise any unintended consequences on vulnerable parts of society or the economy.

The last key area where the Treasury has a really important role to play is around green finance. In order to get to net zero in a cost-effective way, we need to reduce the cost of finance. When you look at low-carbon projects, those are projects that have high capex requirements, so the more you lower the cost of finance, the cheaper the projects get. We have seen that with offshore wind, for example. For every 1% reduction that you make to the cost of finance in offshore wind, you reduce the levelised cost of the project by about 6%. The more we can get the Treasury building on the green finance strategy and ensuring that we take financial markets with us, by beefing up our current climate risk disclosure requirements and continuing to make reforms to the financial market regulations to make green investment more attractive to product investors, the better.

Baroness Worthington: First, I should say that we are delighted that the Treasury are starting to take the issue of decarbonising seriously. Back in 2008, when we were working on the Climate Change Act, we conceived of the concept of carbon budgets, partly because we thought the word "budget" might attract them to the idea and that they would apply their minds to, "How can we reduce our contribution to greenhouse gases to the atmosphere in the most cost-effective way?" That is the key role of Treasury: to ensure that the path we take is fiscally sensible and is balanced overall in terms of integrating the many challenges we have, in terms of ensuring that we have a strong economy and strong social network, but also boosting investment from the private sector into green growth. The Treasury is central to all of this and we are delighted that it has now set up a dedicated team to look at net zero and make recommendations on how we get there.

Broadly, we have to try to look beyond simplistic cost-benefit analysis, which is the default position of many economists, and see that this is actually a question of renewal of the UK economy and that there is a very large moral dimension to what we do in the UK. We must lead. We led the industrial revolution that kicked off this problem and we can lead in this green industrial revolution.



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The challenge here is not to obsess about the very last ounce of CO₂ that we emit, but to think about the quality of the policies we introduce. How effective are we at ensuring that we meet our multiple needs as citizens and as legislators? The quality of our policies is imperative and the Treasury plays a central role in that, in ensuring that we join up the parts of Government.

To give specific examples, we still spend a lot of public money on certain sectors of the economy, including transport. We need to see an integrated strategy of transport infrastructure that hits multiple objectives: clean air, no greenhouse gases and investment into our industries with sustaining jobs. The fact that we have public money being spent means that is a relatively easy job. We do not have to just rely on the private sector. We can crowd the private sector in, but we have public spending that we can deploy.

The same is true in our agricultural sectors. A large amount of public spending still goes into that sector of the economy and we are looking at it again now through the Agriculture Bill, through the lens of how we align that public spend with the objectives we have of a healthy, vibrant nature and reduced greenhouse gases.

There is a lot to do, and that is before we get on to fiscal policy itself and how we levy the costs of any investments that we make into the green economy in a fair and equitable way. We have to look at the balance between how we levy things on to public bills, paying as consumers, and how we use public finance to get to the optimal outcome.

In summary, the Treasury is central to all of these discussions, as is No. 10. It is a good sign that the great minds of the Treasury are now applying themselves to this problem. Perhaps one piece of evidence is that we are expecting an announcement on red diesel. This is a crazy loophole that has been around for a long time and it is exactly the sort of thing you would hope the Treasury would have spotted, perhaps even sooner than this. However, it has spotted it and closing it will make sure that we are being sensible in our fiscal policy. Applying its mind to the challenge is probably the best thing it can do.

Q3 Chair: Just very quickly on that specific point of red diesel, we have the Budget tomorrow. Do your comments apply to the agricultural sector as well as its use in, for example, construction? Is it across the whole area that you feel that subsidy should be reduced?

Baroness Worthington: Yes. This is an implicit subsidy to a fossil-based fuel. There are alternatives now. What will be really interesting to see is whether we can use some of the proceeds of that tax income to stimulate investment into solutions. Farm agricultural machinery is really well-placed to electrify and move to electric vehicles. You have many farms now with access to electricity directly, from their own wind farms and solar. These sorts of in situ machinery are really easy to electrify. Let us stimulate that and be a world leader in these technologies.



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Lord Turner of Echinswell: It is obvious what the core role of Treasury is in this. Treasury is in charge of taxes and Treasury is in charge of public expenditure. Although there are many other tools of policy required to build a zero-carbon economy, what the tax regime is and what the public expenditure regime is are crucially important, so that needs to be integrated with the overall strategy.

On the tax side, there are many aspects of tax that are crucially important to the incentives to drive a zero-carbon economy. We already have significant taxes on diesel and gasoline, but the level of those matters. If it is true that tomorrow we are going to see a removal of the cap on the fuel duty escalator, that will have a non-trivial effect on the decisions that people are making about the cars that they buy over time. That is something that is controlled by the Treasury, not by BEIS or anybody else.

Bryony has already mentioned the fact that the removal of the subsidies for red diesel is, again, something that is in the power of the Treasury. It is not just the construction sector or the agricultural sector. It is also the power-generating sector. Diesel gensets as a form of power generation are able to use red diesel. That is clearly a significant subsidy for one of the worst ways of producing electricity.

This is going to become more important over time. We are going to have to debate what we do about carbon taxes, levies or whatever you call them in the industrial sector, where taxes or levies of some sort are a particularly powerful tool in sectors of the economy where there are not a small number of known technologies, but multiple different things that companies could do to decarbonise. There you have to use the power of the price mechanism to incentivise companies to search for the cost-efficient solution, and that means a tax regime.

The Treasury is in charge of taxes in other sectors of the economy, some of which we are not currently differentiating by high carbon or low carbon. We already have a non-trivial tax on air traffic. It goes from £13 for an economy flight down to Spain to £176 for a club across the Atlantic, but at the moment there is no differentiation in that levy according to whether the airline is using a zero-carbon fuel or a high-carbon fuel. There are major opportunities to introduce a differentiation, which would create incentives to develop low-carbon fuels.

Across all of these different areas we do need an integration in the thinking of Treasury on taxes. Its attitude in the past has broadly been, "How do I raise taxes in order to pay for public expenditure but without a zero-carbon focus on it?" It has lots of potential to differentiate taxes in a way that creates incentives for greener behaviour.

If you then switch to the expenditure side, there are two vital categories of expenditure on which one has to engage the Treasury. Some of it is there already. One is the whole issue of pump-priming expenditure on new technologies. In the case of electricity, we have not done that by



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taxation. We have done it by CfDs that go straight through to the consumer bill, but there are other categories where we have done it on public expenditure, like the initial subsidies to buy electric vehicles or subsidies for charging infrastructure. What we will continue to find is that there will be particular categories of technology that initially are more expensive than the high-carbon alternative, that are capable of being fully competitive after a period of time, but that need to be subsidised through that initial process. Again, the Treasury is part of that, because there are a variety of ways of doing it. You can hand it straight through to consumer charges, as we have done for electricity, but you could do it through a taxation regime as well.

Finally, there are hugely important distributional issues that we have to take into account. Across most of the economy, the impact on consumer living standards and on the cost of living is actually quite trivial. I can name lots and lots of items of what we pay for, whether it is entertainment, restaurant meals, hotels or internet services, where the difference between the cost of living under a zero-carbon economy and a high-carbon economy is so trivial that you will not even be able to see it.

There are some other sectors of the economy where, once we have gone through the transition, we will actually be buying goods and services at a lower cost than we do today. It is almost inevitable that passenger road transport will eventually be cheaper in an electric form than in internal combustion form.

There is at least one sector of the economy where decarbonisation will have a net cost, and that is residential heat. We have very significant distributional issues there, because unlike, say, aviation, which is about 3% of consumer expenditure—on the lowest decile it is about 1% and goes up to about 6% in the top decile, so it is progressive in its impact if we imposes taxes on aviation—with residential heat, we are talking about 5% of consumer expenditure and that being 9% at the lowest deciles and then coming down through the deciles.

If that is an area where we are going to have some additional costs, we have to think very carefully about what the subsidy regime is and what the support regime is for lower-income households or badly insulated households to guard them against the distributional effects of that. Those distributional effects are focused on particular sectors of the economy, but we have to identify them and we have to work out what we do in public expenditure terms to offset adverse distributional effects, using the taxation revenues that we will also be generating in order to create incentives to move towards a zero-carbon economy. Across all of that, the Treasury is absolutely central; we cannot get there without a major Treasury role.

Libby Peake: We know that hitting net zero is going to be quite difficult. Despite everything that BEIS threw at it through the clean growth strategy, we still were not on course to meet the carbon budget when we



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were only aiming for an 80% reduction, so net zero is going to be even more of a challenge. We need action from across the economy, across Government and across society.

The Treasury is in a uniquely powerful position to co-ordinate an effective response for the UK. That is not only because it holds the purse strings and deals quite regularly with all the other Departments; it is also because it should have a long-term approach to financial stability, which increasingly is going to be tied to environmental stability, and because it has a real overarching view of the infrastructure. The infrastructure that we need to get to net zero is going to be different from the infrastructure that we have currently.

I would say that historically it has been viewed that the Treasury is a blocker, but there have been some very welcome recent developments, which some of the other panellists have already alluded to, including the Net Zero Review team, the promise of a green budget and the reason that was given for the latest delay to the national infrastructure strategy, which was the recognition that we need to make our decisions on infrastructure compliant with a net-zero world. That is not historically the lens it has been viewed through, but it is great that is the approach that is going to be taken now.

Q4 Chair: Thank you very much. That was extremely helpful from everybody. You have raised issues of tax as an important lever and spend and the focus that the Treasury has on this issue. What about the issue of it working with other Departments and how effective it may or may not have been in that respect? You may be aware that the Commons Environmental Audit Committee said that the Treasury had “ridden roughshod over other departments’ objectives, changing and cancelling long-established environmental policies and projects at short notice with little or no consultation”. Is that a view that you share?

Nick Molho: If we had had this inquiry five years ago, I would probably have said that the relationship between Treasury and other Government Departments was, indeed, a problem. If you go back to some of the policy developments between 2010 and 2016, we saw a fairly high level of uncertainty across low-carbon investments. The levy control framework, which was the overall pot of funding allocated to renewable energy funding, was delayed on multiple occasions. The fourth carbon budget had been reviewed quite prematurely. The zero-carbon-homes requirement was cancelled in 2015, and that had very negative knock-on impacts on the feeling of investment confidence, but also on the work of other Government Departments that had put a considerable amount of time into developing those policies in co-ordination with business.

When you look at the offshore wind supply chain in the UK today, for example, offshore wind has certainly been a positive success story for the UK. We have a growing supply chain and a supply chain that is, importantly, located in regions of the UK that were in need of economic regeneration, but the prize could have been a lot bigger. The focus of the



offshore wind supply chain in the UK tends to be around blade manufacturing, both in the Solent region, on the Isle of Wight, and in Hull, at the factory operated by Siemens, but I remember talking to a wide range of would-be manufacturers back in 2011 and 2012. You had General Electric, Samsung and Vestas all interested in investing in UK offshore wind supply chains, not just to do the blades, which is what we have today, but also to manufacture some of the towers. A lot of the investment uncertainty of the time definitely had some negative impact on their perception of the UK as an investable market and it resulted in a smaller number of supply chain investments than we would otherwise have seen.

The evolution to today has been quite significant. The Treasury is playing a more proactive role in the framing of low-carbon policy. We were on the Green Finance Taskforce. There was a joint BEIS and Treasury initiative that was launched back in 2018, and the engagement of the Treasury across all the workstreams was really significant. It took a leading role in turning our Green Finance Taskforce report into the green finance strategy.

You are now seeing the Treasury leading on more and more low-carbon policy. For example, the Future Homes Standard policy that aims to tighten up energy efficiency and low-carbon heat requirements for new homes was announced in the spring statement last year, and the Net Zero Review team is now playing a critical role in looking at how the net-zero transition can be best funded. We have come a long way. We are not there yet, but we are definitely heading in the same direction and we need that to continue.

Q5 **Chair:** Baroness Worthington, is it getting better?

Baroness Worthington: It is definitely getting better. It is an easy whipping boy, is it not? It is easy to blame everything on the Treasury. Often this has been a collective failure of Government writ large, because it is essentially about the prevalence of traditional economic assessments. Often it is not necessarily the Treasury that is the only block. It could be that it is the parts of Departments that look at these things from a very narrow cost-benefit-analysis perspective. Some of the lack of joined-up thinking is within Departments. It is not just between Departments and the Treasury. It is easy to just say that it is all the Treasury's fault, but that is not true at all.

Some of the erroneous thinking about everything can be reduced down to a cost-benefit is starting to be challenged, and Treasury could lead that, because it has such a brains trust in thinking. It sees all of the economy, so it is able to make the connections between different sectors and see what is working.

It is perhaps a bit too glib to say we have not made great progress because of the Treasury. It is because it is difficult. It is because the politics of all of this is not straightforward. We are dealing with a problem



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that is 30 years from now, in terms of acting now for a benefit over a long period of time, which is difficult politically.

We are also dealing with something that is global. The arguments I used to have back in the 2000s around the Climate Change Act were all about, "Why would the UK go further faster when all it is going to do is disadvantage us internationally in terms of our trade?" We have come a long way. We are now, in Europe, seriously considering the possibility of border tax adjustments, precisely so that we can carry on investing in this green revolution and protect ourselves from those trade impacts. It has not gone away. It is an issue. It is just you need the right tools to address that political issue.

The last real tragedy of climate is that there is an imbalance of information, in that we all get lobbied by the incumbents. This is politically difficult, because the people who are going to bring the solutions to market are busy in their sheds building them and the people who are in the market today protecting the status quo have 100 years of capital behind them, and they do lobby; we have all experienced it. It is not an easy thing to solve, so just singling out the Treasury is probably not helpful. We have to look at the wider political challenges that the Government face writ large and, as Nick and others have said, we have seen a change. The Treasury is now starting to see this as something it is interested in and they are applying its mind to. That is definitely to be welcomed.

Lord Turner of Echinswell: Nick has largely said it. The answer would be very different five years ago to now. You can differentiate the influence of Treasury in relation to the things that it is directly and fully in control of—tax and expenditure—versus the influence of Treasury as typically having the second most important person in Government across every area of domestic policy, which is the Chancellor of the Exchequer. Five years ago, both of those were a drag anchor on progress, in that, in terms of tax and expenditure, the Treasury was not thinking at all about how to use the tax tools to create significant differentiation between green and non-green activities, and it now is.

In relation to the second, it was not clear who fully made the decision to remove the net-zero requirement on new housing development. You would not necessarily think that is a Treasury decision, but it at least seems to be that the politics of that was that it came out of the Treasury and the then Chancellor of the Exchequer and their influence on the rest of policy. It has to be seen as one of the most bizarre choices of the last 10 years. Requirements for new buildings to be net zero is an almost costless activity, because you get it right first time. It is nothing like sufficient to change our housing stock, because we only turn over our housing stock at about 2% per annum, but it was certainly an absolutely clear and totally costless activity, and yet it was stopped. The story, at least, is that that came out of the Treasury. I believe that was the case.



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If it was five years ago, I would have said, “Yes, the Treasury is doing some things that are a bit of a drag anchor and that are not helping to solve this problem”, but from all that I see at the moment there is a really fundamental change in the attitude of the Treasury on these issues.

Libby Peake: Historically there have been some inconsistencies in the Treasury’s policy, which we have heard about, but hopefully that has changed and we are going to be much more consistent. I would fully endorse Baroness Worthington’s view that we need to take a more nuanced view of the costs and benefits of meeting net zero.

There are different ways to model it, but some models, including the Cambridge Econometrics model, suggest that meeting the greenhouse gas reductions in the first four carbon budgets would deliver a 1.1% increase to GDP by 2030. Increasingly, we must balance the pure costs against the benefits that it will deliver, including to the Treasury but also to other Departments.

Looking at some of the things we would like to see, we would like to see more active travel, with people getting out of their cars and walking and cycling more. The CCC has published some research that shows that shifting just 1.7% of travel, which is not very much and is not anything close to the potential, would result in £2.5 billion in savings to the NHS every year. If you combine that with some benefits that we might see from improving energy efficiency in some of the coldest homes, which would potentially improve the NHS budget by £1.2 billion a year, that is nearly 4% of the NHS’s annual budget. We need to take a more nuanced view, not just of the costs but also looking at the benefits that it will deliver to the Treasury, to other Departments and to things like public health.

Chair: Great. Thank you very much. We are going to cover a lot of ground in this session and a lot of specific questions, many of which you are quite rightly and understandably picking up right up front. Going forward, could you keep your answers as succinct as you possibly can do? I am sure that everything that you want to say will come across. Thank you very much for your evidence so far.

Q6 **Felicity Buchan:** I have been asked to lead on the cost of net carbon zero. I hear what you have said, Libby—that we have to take a nuanced approach—but I will be focusing on the actual costs. I have four questions, so perhaps each person can answer one question. There is clearly a consensus that we need to get to net carbon zero, but there is not a consensus on what the cost is of that and what the practical implications are for individuals in getting there. Philip Hammond said last year, in a letter that was published, that the costs could be £1 trillion. Do you agree with that estimate?

Nick Molho: It is difficult to comment on the precise figure because of the uncertainty of looking 30 years out. There are obviously quite big uncertainties around what the cost of finance would be, which would have



a big bearing on the overall cost. The more in-depth reviews of the cost of net zero tend to look at it as percentage of GDP, looking at ranges of percentage of GDP, because that helps you situate the ballpark figures a bit.

From my understanding of the work that the Committee on Climate Change did on this and commissioned on this, we would be looking at an actual resource cost of 1% to 2% of GDP to get to net zero. It is important to appreciate, when you look at that, that while there will be an increase in some upfront cost—for example, in rolling out low-carbon heating, as Lord Turner just referenced—there will also be other areas of the economy where actually costs will fall. We are seeing that in the power sector. We are also seeing that in the transport sector. The CCC estimates that, by moving mainly to more electric transport we would be looking at annual reductions in the cost of UK transportation in the order of around £5 billion.

It is also interesting to compare with what other regions are estimating to achieve their own net-zero targets. A couple of years ago the European Commission, in the run-up to publishing its climate law, which it did last week, looked at the potential cost of net zero.

There are two types of models, broadly speaking, that you can use. You can either use a computable general equilibrium model—CGE model—which the Treasury tends to use. That tends to assume that the economy is in an optimum state before you run a particular policy, so generally you would expect the result to be negative. By using that model, the Commission estimated that reaching net zero would amount to a cost of around 1.4% of EU GDP. When using the macroeconomic model known as E3ME, which Libby referred to earlier, the result was positive. There is an estimate that suggests that the net zero target across the EU could deliver a benefit of around 1.4%. Models are models. No model says the perfect truth, but the reality is somewhere in between.

The reason the results are different between the different models is that macroeconomic models tend to not assume that the economy is in a perfect state when you look at a particular policy and they tend to take into account the knock-on impacts of upfront investments, in terms of technology development, supply chain growth, cost reductions and broad environmental benefits.

Q7 **Felicity Buchan:** Clearly, certain regions might suffer more from the move to net zero. I think of Aberdeen, for instance, with its focus on the oil and gas industry. How can we help alleviate these regional differences?

Baroness Worthington: There have been transitions from one particular type of fuel to other types of fuel in the past and they perhaps have not been well handled, so we need to think about the social implications of change, especially when it is something that we are asking society to do, rather than it happening naturally.



That said, I would rather think about the areas of the economy that could benefit; Aberdeen could, indeed, be one of them. When we look at how we are going to be generating our electricity and energy in the future, it is likely to involve a huge component of offshore engineering. Indeed, already we have seen industries that were developed to serve the oil and gas industry now being repurposed and serving the offshore wind industry. There is a reason why we are in the lead in terms of floating offshore wind infrastructure. It is because we have all of those wonderful engineers and all of that infrastructure and knowledge that comes from the oil and gas sector.

Let us be honest, the oil and gas in the North Sea is going to run out. There is nothing you can do to stop that, so the game of Government is to help ensure that that sector can transition to something new. That is why we have seen the embracing of offshore wind, because it plays to so many of our strengths.

If you add to that the potential for us to add carbon capture and storage to our arsenal of technologies, that is, again, a very direct reuse of the oil and gas infrastructure, if we can just get them to agree on a policy that will help us to do it. I will just turn it around and say that there are going to be benefits to this, because we are going to be building infrastructure that is future-proof and that is fit for the 21st century. Clinging on to the North Sea in the hope that it is going to keep producing when we have been exploiting it for 30 years is really not a very good policy for the rest of this century, I am afraid. Let us invest now, de-risk that investment and ensure that we can see jobs and growth come off the back of that investment.

Q8 **Felicity Buchan:** We clearly have a commitment to net zero, but a lot of our competitor countries, like China and India, do not. How do you think that we keep our economy competitive against these other countries while we transition?

Lord Turner of Ecchinswell: May I also just make one comment on your first question, because I did very specifically want to deal with that? I very strongly believe that expressing the figure as £1 trillion or £1.3 trillion is not helpful to understanding of the figures, for the following reason. The way to help people think about whether there is a cost of climate change mitigation is, as Nick says, to ask how much lower your standard of living might be in 2050 than it would otherwise be. That is what the CCC has said might be in a range of 1% to 2% on a worst-case basis, because what it does is works out what the abatement costs are across all sectors of the economy; it adds them up and say, "This could come to 1% to 2%", which you can see in its report.

As Nick has said, if you then put it through a model that says, "Yes, but the very process of doing that will create incentives for new technological development that would not occur", we know, as a piece of economic theory, that the costs will be less.



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Let us suppose it was 1.5%. The UK GDP is £2.2 trillion. If it grows at 1.75% from now to 2050, it will be £3.7 trillion in real terms in 2050. In nominal terms, it will be £7 trillion. If you take the little slices of cost, starting at a twentieth of a percent of GDP today and slowly growing up to 1.5% by 2050, and if you then worked out that in terms of trillions, my calculation is that, if you were doing it in real terms, it would be £0.8 trillion; if you were doing it in nominal terms, it would be £1.2 trillion.

Therefore, it is not completely absurd to say that the cost from now to 2050 might be £1 trillion, but by setting that figure up, you are making people think, "I have to find £1 trillion in the Budget to pay for that". These are tiny little slices, at the end of which, by 2050, people might have to accept being 1.5% worse off than they otherwise would be, which, if we are growing our economy at 1.75%, means that they will reach, in December 2050, the living standard that they would otherwise have reached in February 2050. That is a way that we can understand this and, to be blunt, although I respect Philip in many ways, I thought that letter was a piece of propaganda of little value in terms of its contribution to public understanding.

On your second one, on net zero, we work extensively in China and we produced a report in December called *China 2050: A Fully Developed Rich Zero-Carbon Economy*. That is absolutely possible and the work that we are doing there is trying to persuade them that they can head in that direction. It will take time. It is not impossible that China could commit to being a net-zero-carbon economy, and I am more hopeful that they will do that than I am of America at the moment, given the dynamics of their different politics at the moment.

At the moment they are not there and at the moment we could be affected by, for instance, exports of steel that arrive in Europe and Britain and undercut our steel industry, if we have committed to zero carbon and they have not. We will have to think about the border tax adjustment route. The idea of carbon taxes plus border tax adjustments is an idea whose time has come. We need to take them seriously. You can do that either by having a carbon tax and then very specifically returning it to your domestic industry, through certain forms of subsidies or contracts for difference, to guard it against the competitive impact of countries that are not imposing an equivalent carbon price, or you can do it by a border tax adjustment.

There are very specific ways that we can make sure that our progress towards a zero-carbon economy is not to the competitive disadvantage of those sectors of the economy where international competitiveness is important. Let us be clear. If we are increasing the regulatory pressure on supermarkets to make sure that they are using zero-carbon electricity or having maximum efficiency in their refrigeration units, there is no competitiveness impact. We cannot all rush off to Shanghai to do our weekend shopping. These competitiveness issues relate to very specific sectors of the economy where you have a high energy cost input as a



percentage of the total cost of production and where they are internationally traded. We are quite capable of identifying those sectors of the economy and putting in place specific forms of public policy that protect those internationally exposed sectors of the economy.

Q9 Chair: You are probably off Philip Hammond's Christmas card list, which is fine. Not that I want to ride to his defence, but just to zero in quickly on this cost issue, he said £1 trillion. Your calculation there in real terms suggested £0.8 trillion, so it was in a similar ballpark. The additional point that you are making is that is spread over a very long period, and Philip Hammond did make this point. Even if you spread it, it is still about £50 billion a year. To put that in perspective, we collect in this country, by way of business rates, about £25 billion to £30 billion per year. Not all of that additional output would convert into tax revenue but a substantial proportion would, so you could frame the cost as being that you would not, therefore, be able to abolish business rates for all businesses in this country. It is still quite a significant amount per year, is it not?

Lord Turner of Echinswell: That is not quite right, because the ability to abolish business rates depends on the fiscal revenue of the Government, and the fiscal revenue of the Government is a fraction of the figure I was giving for total GDP. The other thing is that if you assume that this cost very slowly develops over time, starting at a twentieth percent of GDP and then increments of that going to 1.5%, the cost in 2022 is £5 billion lower on GDP. They are small figures at the beginning, growing gradually over time. If I had to bet, it is going to be way less than that, because that is on the basis of calculations of what is called gross resource cost, which is working out what it would cost if you simply had to take the extra cost of abating your steel industry and having slightly more expensive electricity; it does not allow for induced energy efficiency improvement and induced technological change.

The evidence of the last 15 years is that we have dramatically and systematically underestimated the power of those effects. That is why many of the people who run this through more complex models believe that the cost will be zero or even a positive. It is still useful as a piece of policy process to work out what the worst could be if those induced technological and energy efficiency effects are not powerful. That is what the CCC was trying to do in suggesting that figure of 1% to 2% of GDP in 2050.

Q10 Felicity Buchan: To the extent that there is a cost, how do you think that should be divvied up, in terms of who is responsible? Is it the public sector, the private sector or individuals?

Libby Peake: The figure of around 2% of GDP is equal to about 5% of Government spending, so the Government definitely have a role to play and can definitely give money to the people that need it and kick-start other sorts of funding. Something that is important to remember is that it is not all going to be on Government's shoulders. The money that Government spend is going to leverage private finance as well.



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We have done some analysis with CAFOD, Friends of the Earth and a few others, looking at the sorts of investments that are needed over the next three years. We have estimated that over the next three years Government could spend about £25 billion extra, taking the total spending in this area to £42 billion per year.

Some of the big areas that need to be looked at in that are changing and improving the railways. That is about £5 billion a year. That is not HS2; that is improving the main lines and local connections. There is £2.6 billion needed on environmental land management and nature restoration, and an additional £2.3 billion a year on low-carbon heating.

The important thing to remember is that the private sector will be incentivised to act because we make these sorts of investments. One of the things that we would like to see is £1 billion a year of additional funding to improve energy efficiency for those least well off, but we have estimated that that funding on its own is going to leverage 3.5 times more funding from the private sector to help meet those goals.

Just in relation to the first question, I want to highlight that we also need to think about the costs of not acting. If you think that it will cost 2% of GDP to achieve this, Lord Stone has suggested that it will cost at least 5% of GDP by 2050 to not achieve this and that, if you include the other effects, such as health, that could rise to 14% of GDP. Framing it in that light is also incredibly important.

The final point I would make on the first question is that if we act sooner, we will achieve things sooner, because innovation does bring down prices, and it will lower the price overall, which has been alluded to. We have already seen that with offshore wind. Over the course of 10 years we have made it so that offshore wind and other sorts of renewable technologies are the cheapest form of new energy and that has far exceeded any sorts of expectations. That was not expected to happen until years or decades from now, so unleashing the forces of innovation and getting people rolling on this will bring down the costs overall.

The Chair: Perhaps we could take our next two questions together.

Q11 **Mr Baker:** It is very interesting. Baroness Worthington mentioned upfront costs being distributed as fairly as possible in her opening remarks. Lord Turner, I was very glad to hear you talk about domestic heating and the impact on the less well off, because I am certainly conscious of many people struggling to make ends meet in my area. When you have talked about where the costs will fall, you have used the word "assume" in the course of your evidence, and you have talked about this side-slicing over many years. Could you just tell us a bit more, Lord Turner, about what you think the upfront costs are? In other words, how much cost is going to fall on whom and when, in reality, not as a matter of assumption as we go through many years?

Q12 **Liz Kendall:** Do the supposed costs of the 1.5% include health impacts,



or the benefits of net zero for health? That was my only question.

Baroness Worthington: No.

Lord Turner of Ecchinswell: It is the job of the Treasury to produce that very detailed piece of work. Let me be clear: our Energy Transitions Commission is working as much in India, China and Europe as the UK, so we are not doing detailed modelling of year-by-year costs.

If one can satisfy oneself, with a high degree of certainty, that the overall costs, which of course are based upon assumptions—everything about the future is based upon assumptions—are of the relatively small order of magnitude that I have set out, it is then quite possible to make sure that nobody suffers significantly more than that.

As I go through the sectors of the economy, you can work out, sector by sector, what the impact will be. There are many sectors of the economy—like our health service, our education service, our entertainment service, our hotels, our restaurants and all those categories of consumer expenditure—where, at best order of magnitude, we should assume that the impact of this is zero. There are then a set of things in terms of people buying clothing, washing machines, cars, et cetera, where the impact is so small that nobody will really notice it and those cost expenditures are spread out.

Mr Baker: You have made the case. I am grateful. I am sorry to cut you short.

Lord Turner of Ecchinswell: We need to go through these areas. You have heard the figures earlier on road transport. After some initial costs, road transport will be cheaper because of electric vehicles. You fundamentally come down to a couple. You come down to probably residential heat and aviation as the two where there may be a non-trivial cost in doing it.

Q13 **Mr Baker:** Lord Turner, I am so sorry to cut you off. It is just that I am very conscious of everybody else's time and that I am shoehorning in. You have been very clear that it is the job of the Treasury to work out where the costs are going to fall in the short run. Thank you.

Can I just also very briefly ask Libby Peake something? As I listened to your earlier evidence, you did not use the term "spend to save", but you seemed to be suggesting that if we spend on green issues, we save, for example, on health. Is that what you are saying? You are making the case for spend to save to the Treasury.

Libby Peake: Yes, and it is not just on health. It is on also avoiding impacts. If you look at flooding, that is costing us billions of pounds a year. If we spend now, we can help prevent things.

Q14 **Mr Baker:** I remember some of the arguments I have been party to, like early-years spending. It is very clear that early-years spending is a



spend-to-save measure over a similar timeframe—decades. Do you think that the Treasury is more receptive to spend-to-save arguments today than it has been in the past?

Libby Peake: I am hopeful. There are signs that it could be increasing. We might be talking about the Green Book later on. So far, the way that things are looked at does not necessarily incentivise long-term views for environmental stability, but it certainly should do, and I am hoping that the Net Zero Review in the Treasury is going to help lead to that.

Mr Baker: Thank you very much. I have trespassed into another colleague's question, so I apologise.

Q15 **Rushanara Ali:** You have all talked about the benefits of investment in order to save. It is a very compelling argument. I just wanted you to dig deeper into the issues around transition and the process of getting there. At least for a period, there will be some people who will be heavily impacted. I just take my own constituents and their recent experience. For those on lower incomes, when they are having to transition to electric cars, policy needs to be carefully designed so that people do not feel the impact negatively, even if it is a short-term impact.

Recently there have been debates about regions and regional inequality. Perhaps you could touch on what the impact will be in terms of particular sectors. You have already touched on some of it, so if you can just focus on the areas that have not been addressed already in terms of sectors, but also groups of individuals and types of work that are going to be affected. What should the Treasury be doing in terms of more granular understanding of how we protect those who are likely to be directly affected during that transition period? Otherwise, we are running into tensions and conflicts that need to be addressed. Macroeconomic policy, whether it is climate or other, tends not to take into account those regional disparities and the unequal impacts of transition. If you could touch on that, that would be great, and then I will move on to a couple of other questions.

Libby Peake: I welcome that recognition, and this does have to be done in a just way, to make sure that those who are least well off are not being damaged by it. In certain areas, like in terms of energy efficiency, the money that Government should be spending should go towards the lowest-income households and those who are not able to pay. At the same time, we need to improve the incentives for those who are able to pay and who do not necessarily feel compelled to create energy-efficient homes without the right sort of incentives. Things like low-cost loans or changes in stamp duty could help that.

In terms of the role that Government could play in making sure that this balance is throughout the economy, one of the things that we would really like to see is an improvement in resource efficiency and activity like the circular economy. The economy at the moment is incredibly linear.



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You are taking materials out of the ground, making something from them, using them briefly and then disposing of them.

An economy that is more sustainable and that will deliver a lot of carbon benefits is one that is more circular, so materials are kept in use for as long as possible. That involves all sorts of different activities and different skills that we do not have. We would be improving things like recycling—open-loop recycling and closed-loop recycling—in the first instance, but then creating a workforce and businesses that focus on repair, remanufacturing and servitisation, as well as bio-refining.

We have done some analysis with the Waste and Resources Action Programme that shows that really going on a transformational agenda in this area could result in up to 500,000 jobs, and 100,000 of them are net jobs.

Q16 **Rushanara Ali:** We are talking about millions of jobs in the transition period that will be affected. What specifically should Government do, whether it is tax or subsidies, to make sure that that transition is not going to hurt more people? I am a fully signed-up member of tackling climate change and the rest of it, but I am concerned about what action you think Government should take to support the millions who will have to experience those issues.

Nick Molho: The Grantham Research Institute at LSE has done some interesting work on that, essentially showing that the net zero transition will change the nature and location of some of the jobs. They estimate that roughly 10% of the current UK workforce has skills that will be more in demand and 10% less in demand. Particular regions that are listed as areas of change are the east and west Midlands, Yorkshire and the Humber. That really speaks to two things in terms of Government intervention. The first one is a real focus on skills, so having a national low-carbon skills policy that ensures that the future workforce and the existing workforce have the skills they need.

Q17 **Rushanara Ali:** Is the Government's current skills investment and agenda fit for purpose to address the current challenges, as well as this transition challenge?

Nick Molho: No, not yet.

Q18 **Rushanara Ali:** What should we be doing?

Nick Molho: It is not sufficiently aligned to what we are trying to achieve with net zero.

Baroness Worthington: I was just going to take an example of transport, because that is something that touches on every constituency. Essentially, if we are going to transition from the internal combustion engine to electrified transport, there is going to be a dislocation in terms of people's current employment, but there will be positive benefits to



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your region in terms of increased productivity and less health burden from having cleaner air and cleaner cities, so it will be a nuanced effect.

In terms of preparing ourselves for that, at the moment tech colleges around the country are still producing new graduates who are only able to service a combustion engine. How much longer are we going to let that be the case before we intervene and say that our education system needs to be adapted for an electrified transport system? It would be quite easy to see tech colleges starting to focus on skills that are applicable today. There is some evidence now emerging that you can transfer those skills very easily. If you are taking an electric vehicle, it is a simpler system. Potentially, you could actually retrofit a lot of cars and create lots of jobs.

- Q19 **Rushanara Ali:** There are lots of coulds and shoulds, with respect. You have all been very positive about the focus in the Treasury now, but the Government also shut down the Department of Energy and Climate Change. We do not have a dedicated Committee that is looking at these issues. Some people would argue it is quite a good thing that we have the Treasury looking at it. That is welcome, but the question is whether Government action is fit for purpose to deal with this challenge. We have quite limited investment, for instance, in low-carbon investment compared with other European countries. We have £1 billion worth of subsidies that were slashed in 2015. There is a long list of these changes that are actually going in a different direction.

Do you feel that, whether it is the skills agenda, these transition arrangements are fit for purpose? If not, what should be done about it? What I am not hearing is a strong enough steer, and it would be really helpful for this Committee to get a strong enough steer on what else the Government should be doing. On top of the good things that it is doing, where are the areas that we can see very dramatic change?

Baroness Worthington: We have to do what we did for the power sector in the transport sector, and that is a big task. We have not done it yet and it needs to be done urgently because of the air quality impacts, the climate change impacts and the fact that it will be cheaper for poorer people to run electric vehicles than a combustion engine, so that is what we need to do.

- Q20 **Rushanara Ali:** I have one final question for Lord Turner, given your background in the financial services sector. We know that the City remains the world's major centre for financing emissions, supporting, directly or indirectly, about 15% of global CO2 emissions. Do you think that the greater focus on the UK's financial systems resilience around climate change is going to address some of those issues? What should be happening? What else should be happening to change that number, so that we are not fuelling the financing of dirty energy?

Lord Turner of Ecchinswell: One of the good things that has happened over the last three years is that an increasing number of corporates in the real economy, but now also banks and asset managers are making



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commitments to be net zero by the middle of the century, in what they are doing in their companies themselves, their portfolios or their lending practices.

The big challenge at the moment is about what net zero means, because if you assume that sometime in the second half of the 21st century we can be doing a large amount of bioenergy and carbon capture and storage, or if you believe that you can buy a large number of offsets from the forest and land use sector, then there is any amount of fossil fuels that is compatible with net zero.

The next step, which is crucial, is to start getting some discipline in these promises of what net zero is, and some transparency of what is actually meant by that and translating that into what level of fossil fuel use is compatible with a true science-based target or net zero commitment. That will show that the only way that is compatible with a net zero commitment by mid-century is as rapid as possible an exit from thermal coal, in particular, getting absolutely to zero by 2050, a significant reduction in oil use, and perhaps total gas use across the world staying roughly where it is at the moment but not increasing.

The good news is that a very large number of asset managers, insurance companies, pension funds and banks across the world are switched on to this. They are now working on the details of what it means and they are beginning to put pressure through to the industrial companies, like the steel companies or the shipping companies. I would, for instance, quote what are called the Poseidon Principles, which were launched by the major ship financiers, who have made commitments that they will only in future finance ships that are capable of becoming net zero ships.

The answer is there has been a very major and useful step forward in the degree of focus on this over the last two years, but there is lots of work in the details to make sure that people do not get away with saying net zero and you find that embedded in their model are assumptions that still make net zero compatible with 50 million barrels a day or something like that.

Q21 Ms Eagle: Just before I ask the more technical point about Treasury modelling, which is very important, I just want to ask whether the rise of populist climate-change-denying heads of state across the world, including in some of the largest carbon-producing countries in the world, is going to stop progress to net zero, or is it just a blip that we can clamber through?

Nick Molho: It is interesting to look at countries like the US, where federal politics are not entirely helpful on climate change at the moment. While clearly it would be much better to have a positive voice from the US Government on climate change, what is quite interesting is when you start following the money and see where the money is actually going. One of the remarkable findings from the annual study that Bloomberg New Energy Finance does on clean energy investments is that, under



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President Trump, the US has twice invested a record amount in renewable energy. It was \$55 billion last year, which is the highest it has ever been, and the previous record was back in 2017. The cost evolution and technological development in areas such as electric vehicle batteries and renewables is, despite the political difficulties, still allowing investment to come through.

Q22 Ms Eagle: You do not think that the breakdown of the Paris climate talks, particularly the way in which the US withdrew, is anything other than a blip?

Nick Molho: I would not say that. It is a very challenging situation. Hopefully, it is a matter of having to wait for the US to change its position in the years to come. In the meantime, what is particularly important is where private investment is going; there was some good news there. It is also about looking at the individual action at the state level. Several US states that are major economies in their own right, such as California, have quite pronounced net zero ambitions. Working closely with them and cities is an important thing to do in the meantime.

Q23 Ms Eagle: The approach to changing and transitioning from where we are now to a net-zero economy, both in the UK and globally, really puts a lot of pressure on traditional economic modelling and assessments, particularly leaving the market to do things when we know there are externalities and failures in the market. I was interested, Baroness Worthington, in what you said about it not necessarily being the Treasury that is the problem here, although that has in the past been a bastion of quite narrow thinking in terms of how markets ought to work and what Government intervention ought to be about. How do you think that these traditional economic assessment problems of classical economic analysis can be overcome?

I am going to ask some technical questions about this in a minute, but you cannot produce the right kinds of assessments and plans if all the classical assumptions that we are all used to working with in economics, which feature these externalities and do not price in problems and damage to the planet, cannot be included in your economic models. It is clearly very difficult to have an economic basis for moving forwards.

Baroness Worthington: The first thing to acknowledge is that macroeconomics and microeconomics are very different, and that we ought to probably consign macroeconomics to being interesting but not potentially the most important asset that we have in our toolbox. Microeconomic assessments, in terms of distributional impacts, are very important, but more important than anything is political leadership. I know this is old-fashioned, but we have to take a moral stance on some of this and say that this has to be done irrespective of what the models tell us, not in the distributional aspects in the micro-modelling, but this macro-modelling needs to be put in perspective.



First and foremost, if we are going to rely on macroeconomic modelling, let us open them up for scrutiny. There are too many black-box models relied on by different Departments. The whole of the EU is running a black box at the moment on its cost-benefit assessments. These need to be open and able to be interrogated. We need to know what the assumptions are and we need to enter into this in a dialogue of transparency. Too many times I have been a civil servant and I have received these impact assessments with these very specific numbers that have been calculated. We all know it is garbage, but we have to have an ability to challenge this, and the only way to do that is to open them up for scrutiny.

Q24 Ms Eagle: I agree with you that quite a lot of economic modelling is garbage. Quite a lot of it is affected fundamentally by the assumptions that are in the black box. Talking of which, do you think that the Treasury's Green Book, the discount rates and the methodology that it uses for its economic modelling currently facilitate effective funding of environmental policies? There have been slight tweaks to it in the last few years, but does there need to be a more significant change in the way that the Green Book does cost-benefit analysis?

Lord Turner of Ecchinswell: I am afraid I am not up to speed on that. I did not know that question was going to come and I am not up to speed on it. In general, the crucial thing is the cost of capital, which somebody mentioned earlier, and the discount rate is absolutely crucial. If you look at the latest IEA report on offshore wind, it illustrates that the difference between an 8% weighted average cost of capital and a 4% weighted average cost of capital for an offshore wind development changes the levelised average price at which you will get that by about 30%, so these things are hugely important. I know that many integrated assessment models are using very high cost of capital assumptions, as a result of which they tend to say that the optimal path to a zero-carbon economy should be back-ended in terms of when we do our reductions.

Ms Eagle: Which is the opposite of the—

Lord Turner of Ecchinswell: That is the inevitable consequence. The higher you do your discount rate on an integrated assessment model, the more you will say, "Do not do much now. Leave it all as something we will do in 2050 or 2060", but I am sorry; I am not up to speed on the latest Green Book.

There are fascinating questions here. Can I just register that I would love to come back on residential heat if anybody would like to ask me? Mr Baker asked me a question and I had more to say on that, because it is so central; it is really central.

Q25 Ms Eagle: Let me just talk about Green Book methodology again, because if we could get the Treasury to change the way it does some of its Green Book methodology that would have a completely transformative effect on the projects that other Departments were allowed to take



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forward, providing, of course, the assessment in those Departments was widened out, rather than as narrow as traditional economics would say it ought to be. At the moment civil servants have to apply a discount rate of 3.5% in project appraisals based on the idea that people prefer to receive goods now rather than later.

Lord Turner of Ecchinswell: Is that in real terms or in nominal terms?

Ms Eagle: I do not know.

Lord Turner of Ecchinswell: I suspect it is real.

Ms Eagle: I would have thought real.

Lord Turner of Ecchinswell: The Treasury naturally thinks in real in its discount terms.

Q26 **Ms Eagle:** Clearly, that will act as an institutional barrier to producing goods and efficiency in the medium to long term at the expense of satisfying yourself with things now.

Lord Turner of Ecchinswell: I am willing to comment on that. We live in a world in which I think there are some structural tendencies for real risk-free interest rates paid by Governments to be structurally low. I have believed that for some time. It derives from the naturally arising balance between demand for savings and demand for investment in the world. We have seen that over the last 10 years. The real rate of interest on a UK Treasury index-linked bond is about -1%. As of today, even the nominal 10-year bond is about 20 basis points. 80 basis points are probably due to the current situation with the coronavirus, et cetera. Even separate from that, we are structurally in a world in which Governments can borrow money at very low nominal rates and negative real interest rates.

That clearly raises the question as to whether we will make sensible decisions, as a country, if we are capable of borrowing at those rates but we are applying 3.5%, which I am guessing is a real rate, in our project evaluation. I simply do not think that makes sense. Even a lot of private investors would now be willing to accept investments of less than 3.5%, let alone Government.

Again, we live in a world in which you have pension funds and insurance companies that are attempting to match long-term liabilities. Back in the early 1990s, they could have matched those by buying a UK real index linked bond for 30 years, paying 3.5% real. They will now get -1% real and these guys are desperate for a yield uplift above that. There is a lot of money in the world that is willing to invest for 2% or 3% real, or even less. That will increasingly be the relevant even private cost of capital for well-structured projects where there is contract certainty and certainty of price going forward. I have to say that 3.5% real, in the current structural environment, seems to be a very high discount rate to be applying.



Q27 **Ms Eagle:** You are now saying there is an enormous and unique window, given the rates of interest and quantitative easing, and the cost of borrowing being so low historically, to exploit investment opportunities using borrowing, in order to structurally transform our economy to make it fit for the future in environmental terms. That is what you have just said.

Lord Turner of Ecchinswell: There are two opportunities. If you get your contract structures and your policy certainty right, there is a huge opportunity to mobilise relatively low-return private capital. That depends on the power market structure and the use of fixed price auctions that give people certainty of a revenue stream over the future, but that can produce very low required rates of return even on private capital.

There may also be another issue in this environment. Indeed, I think the current Chancellor has said it and certainly I heard the immediately previous Chancellor say it. If the Treasury can borrow money at -1% real, that is a different environment from when it used to have to pay 3% real. Surely that changes the calculations we make.

Baroness Worthington: I seem to recall there was a debate recently in which we looked at discount rates, again in the context of public sector pension liabilities. When we are minded to, we can review these things. I suggest that maybe the Committee would like to request the Treasury to have a study on this. It permeates an awful lot of our assumptions in every Department of Government.

Q28 **Ms Eagle:** Finally, in terms of planning, the Treasury has not yet laid out a comprehensive funding plan or pathway for net zero. Does that matter? Would you like to see such a plan published? Do you think the Treasury should report on progress towards that in its fiscal events—in other words, in spending reviews and budgets?

Baroness Worthington: When we introduced the concept of carbon budgets, one element that never really got implemented was that, if we are facing a deficit, as in we are not meeting our targets, there is a potential monetary value to that, in the sense of the social cost of carbon if you are over-emitting your projection. You could, conceivably, price that and say that is the net effect of us missing our targets. You could use that as a benchmark against which to assess an investment case for getting back on track. The Treasury could usefully calculate out the over-time impact of us missing targets. There are a lot of assumptions in there relating to how other parts of the world act too, and social costs of carbon may be too high; you may choose another floating carbon price to use.

The point is getting the Treasury's minds to think about this in terms of liabilities, as in if we do not meet our targets we are creating a liability, and assets, as in investments now that decrease that liability over time. It then makes the case. You made completely the right point: in terms of climate change, time matters. Backloading our effort means we go over



tipping points that could be completely irreversible. There is a real premium on acting early, which is also when there are low-hanging fruit to be got at. The curve we take towards our net zero matters. If we can come up with economic assessments, which the Treasury can help us with, that make the case for that, whether that is changing discount rates or just calculating the cost of not acting, that will be incredibly helpful.

Q29 Alison Thewliss: I wanted to ask about the Scottish Government, which has a net-zero target for 2045, setting up a Scottish National Investment Bank also to try to drive investment there. Does the Treasury have the necessary flexibility to adapt its thinking to allow for devolved Governments that want to go a bit faster and a bit further to do so?

Baroness Worthington: I think so. The devolution of the Climate Change Act to the Scottish Parliament has worked well. Scotland's geography and energy make-up makes it eminently more capable of moving faster. That has been tested. The CCC and others have worked well with that system, so it is great that Scotland is going faster.

Q30 Harriett Baldwin: This is probably quite a quick question. I wanted to get the panel's thoughts on the announcement to allow onshore wind, solar and certain energy storage projects into the contracts for difference framework. Are you all happy with that?

Libby Peake: I think we probably are.

Q31 Harriett Baldwin: Does anyone want to take a contrary view?

Libby Peake: It is not a contrary view, but I would also highlight that, while it is great and something we have been calling for, it is not only a matter of allowing them into in that pot; it is also encouraging the planning regime to allow them to come on stream. This highlights to me the importance and the potential role of Treasury in ensuring that policy is consistent across Government. At the moment it can still be quite hard, and just including them in that pot is not going to change it so that things like onshore wind can get planning permission and be able to have the right-length blades in order to generate the most amount of energy. It needs to be looked at holistically, along with the planning policy.

Baroness Worthington: The planning does not apply in Scotland. The auctions will benefit Scotland and Wales immediately, and we hope that they will benefit England when we get a better review of the planning.

Nick Molho: To add to the onshore wind point, if I may, from an industrial perspective we worked quite closely with a range of manufacturers and UCL a couple of years ago, looking at why industrial electricity prices in the UK were higher than in some of our European neighbours. One of the key factors was lack of access to onshore wind on the market, which is the most cost-competitive form of producing electricity, so, from an industrial perspective, that is really good news.



A study was done by a consultancy, Baringa, a couple of years ago. It modelled, back in 2017, the impact of having one gigawatt of onshore wind going through pot 1 CfD auctions. The conclusion was that those contracts will return a value of £18 million to consumers over the lifetime of the contract, because the strike price would be below the actual price of electricity. Increasingly, we are seeing that with offshore wind as well.

Lord Turner of Echinswell: It is undoubtedly good that we are removing some of the restrictions on onshore wind. For some time, it has been clear that this is the cheapest way of getting a kilowatt hour of electricity in the UK, although the falling cost of offshore is an extraordinary development and a very positive development as well, and creates fantastic opportunity, for Scotland in particular.

I wanted to focus on your particular question on storage and flexibility within the capacity markets. We are increasingly in an environment where the cheapest way of generating a kilowatt hour at some stage of the day, or the year, is going to be renewables. That is going to undercut fossil fuels. That is absolutely clear. The fundamental problem of a renewable system is now switching round entirely to not what the cost of generating the kilowatt hour is but how you balance the system, both diurnally, day to night, and seasonally. It is therefore really important that we focus on the policy regimes that support the development of a full range of storage and flexibility devices. Our own analysis makes us believe that the diurnal day to night will increasingly be dealt with by a battery solution, but that solution is not applicable to the longer-term seasonal balance issues.

There are a whole range of technologies, including lots of entrepreneurs out there with lots and lots of new ideas, with hydrogen, with compressed air and with liquid air. This area of policy may be where there is an appropriate role for pump-priming expenditure to get the technologies up to scale. That is what is really important now, rather than the actual generation itself, because that has gone through the pump-priming bit and is already cheap. It is very important that our capacity markets are not designed in a way that creates a bias to the easier answer, which is to build another gas turbine or, even worse, put in place a diesel gen set. All these other forms, including demand management forms of flexibility response, are an absolutely crucial area of policy, now that we have the generation costs being lower than the fossil fuel costs.

Baroness Worthington: You could also do nuclear. If you had a different discount rate, it would make a lot of sense.

Q32 **Harriett Baldwin:** We covered some of the inconsistencies that you saw, in the Treasury's signalling, in terms of the cost of renewables. I do not know that we need to cover that ground again, but obviously feel free to add anything on that if you think there are other market signals you would like to see the Treasury make more consistent. I wanted to think about moving beyond just the UK into the international sphere. When I



was Africa Minister and International Development Minister, we put a lot of money into green climate finance and international climate finance. We are doubling that. Where do you think the Treasury has a role in deciding that we would get much better value for money as a planet by doing more in the international space, once we get to the marginal costs not being very good value for money in the UK? What role does the Treasury have in making those trade-offs?

Baroness Worthington: This is fundamental to understanding the question of what we mean when we say “net zero”? At the moment, the interpretation is that we mean it domestically, as in within the control of our sovereign nation. Over time we will come to question that. I say all these comments around tradeability of effort with the caveat that, if you are going to be buying any kind of abatement service from outside of your control, you need to have very strong MRV—monitoring, reporting and verification. There needs to be a really clear global standard that says that what we have purchased is genuine and additional and there is a value in doing so.

If we have that, and we need to invest in making that possible, there is no limit to how fast and how far we go. We can become net zero very quickly if we accept the fact that we are able to use investments overseas towards that goal. Equally, if we crack domestically our agricultural, land use and forestry sectors, we will be able to turn them into a net sink, meaning that is contributing positively to meeting our net zero. Again, that needs very careful regulation and oversight. The reason we call these things budgets is because, in real terms, the global atmosphere is fairly agnostic as to where we emit. There is the potential to go further and faster if we are starting to use these flexible mechanisms.

There is an important point to make: we should strive to do as much as we can at home, because we demonstrate to the rest of the world the policies you need and we innovate technologies. There are lots of lovely examples of Scottish fuel cell manufacturers being purchased by Chinese manufacturers and commercialised because we have invested in doing it at home.

Q33 **Harriett Baldwin:** When we have done that and we have lowered the cost of offshore wind, I would be very grateful if you, as lobbyists, could go to the lobby groups, like RenewableUK, and say, “Did you know, guys, that the UK is subsidising offshore wind via these mechanisms and that Somalia has the windiest coastline in the world?” Would it not be better if they developed an offshore wind industry in Somalia rather than extracting all the gas they are about to extract there and so on?

Lord Turner of Ecchinswell: Can I comment on this? On the issue of whether our own target should be net zero domestically or allowing for some purchase of credit, it is important that we have a domestic commitment to be net zero within the UK by 2050 and a credible path that gets us there. That will drive the technologies in the developed world, which are then applicable throughout the developing. I agree with



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Bryony that the use of the offsets could be a way to accelerate that and to get net zero earlier, but I would not want it to be instead of the 2050; it could be a way to accelerate.

The point you make about developments of renewables in other countries is hugely important. I already referred to the IEA's latest World Energy Outlook on offshore wind. They also have a brilliant chapter on Africa. They make the point that, leaving aside some Saharan developments, the whole of sub-Saharan Africa at the moment has less developed solar PV than the Netherlands. It has about five gigawatts, and that is despite the fact that, if you run the physical numbers, this is one of the greatest solar and wind resources in the world.

The crucial thing is the cost of capital. There is no problem getting low-cost capital, as long as we have a good electricity market structure to invest in the North Sea, but those people, I am afraid, will be very wary of investing in offshore wind in Somalia, because they will have, screaming at them, "Political risk, political risk". One of the most important things in the world is the mobilisation of global capital for those parts of developing economies where the cost of capital is still well above developed economy levels. That is not China. Capital is dead cheap in China because of some structural characteristics of their financial system. It is true to a degree in India and it is massively true in Africa. The rate of return that people would demand for a wind development or a solar development in Africa will be way above the cost of offshore wind or onshore wind in Germany, the Baltic or the North Sea.

Within the environment of COP26, this is a really crucial issue, a vision for Africa in particular, and other parts of the developing economies, of how we mobilise really massive amounts of capital. Some of that may come through grant aid, but that will still only be a very small part of the opportunity, unless it is effectively used to unleash very large amounts of private capital as well.

Q34 **Harriett Baldwin:** Is it only the Treasury that can look at those trade-offs across all the Departments?

Lord Turner of Ecchinswell: Yes, it is. The Treasury has an ability to think about that, but it is really a global issue. It gets to the whole role and capitalisation of the development banks and the role that they play, but it is important that we are aware of what a huge issue and potential issue that is. Africa has the opportunity never to build coal-fired power stations in the first place if it moves rapidly to a renewable process, but the cost of capital is the single most important determinant of that.

Baroness Worthington: The Treasury may have a role, and DFID clearly does, but I would encourage you to speak to the Department for Transport. This is something Adair and I both work on. One of the reasons we do not see big investments in Africa for these large-scale developments is because demand is not firm. They do not have the same industrial needs for energy that we do. Their populace are very low users



of electricity. Who is going to sign your PPA? Who is going to be your counterparty to the purchase of that? It might be that these big investments into Africa are used to generate electricity that goes into a fuel form, meaning it gets turned into hydrogen or an ammonia product. We could see the shipping industry acting as the buyer that de-risks that investment there. We have been talking to the DfT about this, and it is exactly the sort of vision the UK could, as a maritime nation, present in CHOGM, or in any country meetings that we go to in Africa, to see how we can unlock that private capital and have a purchaser. That is the key thing: a de-risked purchaser.

Libby Peake: I wanted to build on the thing that Baroness Worthington said about how net zero and emissions are accounted for at the moment. The net zero we are aiming for is within territorial area, but the emissions we are ultimately responsible for outside of the UK are growing. It would be really good if everyone had it on their agenda to have this in mind. In 1990, consumption emissions outside and inside the UK accounted for about 13%. We have done a great job of focusing on power, but if we look at consumption emissions those are now nearing 50% of our total carbon footprint. We need to keep a conversation going and lead internationally as well. COP26 provides a really good opportunity to do that.

Q35 **Julie Marson:** I would like to focus on lifestyle choices for consumers and how the Treasury and the tax system can help to promote green, low-carbon choices. Many of us want to make green choices. What are the prime tax incentives the Treasury could use to help us choose green? Perhaps, Lord Turner, it might even be an opportunity to talk about residential heating.

Lord Turner of Ecchinswell: There are many sectors of the economy where we do not need to change our lifestyle because we can decarbonise what we do at the moment. With residential heating, I would not focus so much on a lifestyle choice there. Some people do have the opportunity to turn down the thermostats, be more sensible about what they are wearing, et cetera, but, on the whole, we are going to have to probably deliver roughly the same amount of heat that we have at the moment. Probably the biggest lifestyle choice issue—it is a tricky issue, and we need to face this fact—is agriculture and food.

Because I fly the world to talk about the importance of climate change, I am well aware of the irony of that situation, so I have looked at what the biggest single thing that I can do immediately to reduce my carbon footprint is, and it is to give up red meat. It is as simple as that. You just run the figures. That is probably the biggest single thing any consumer can do tomorrow, without having to buy a new car or invest in a heat pump or insulate, which are things that cost money and are difficult. Things they can do instantaneously are diet issues.

As I say, there is a big, complicated issue on residential heat and the costs of doing it. That includes some lifestyle issues, but it is



fundamentally a cost issue. The issue of persuading people to eat significantly less red meat in particular is one we are not going to be able to shy away from if we are serious about a zero-carbon economy.

Q36 **Julie Marson:** What about other potential tax?

Lord Turner of Ecchinswell: That could include a methane tax. You would absolutely have to apply that to imports as well as domestic production. Otherwise, you would just produce a disastrous effect of substituting our domestic beef and lamb production for stuff that might be produced in an even worse fashion elsewhere. Let us be clear: if we go down that route, and I think there is a role for that, we will have to have an import defence protection as well.

Q37 **Harriett Baldwin:** It is really worrying that people as influential as yourself, Lord Turner, make these statements about red meat, when you think about the difference between sustainably grown cattle and flying in soya beans from Brazil.

Lord Turner of Ecchinswell: That is why I made the point about imports. I absolutely accept and am well familiar with that. I am quite close to people in the environmental movement and the Soil Association. They are good friends of mine; my wife used to be the chair of the Soil Association, so I do know this stuff. There is a real difference between grass-fed and stuff produced in a beef lot with soya. The fact is they all produce methane emissions, and methane is a very powerful greenhouse gas. We cannot get around that. It does not mean that people have to give up red meat, but the way forward is to consume less red meat and, when you consume red meat, have high quality, organic and low-environmental-impact red meat. That is why I stressed that, if we go down that route of taxing the methane emissions from red meat, we will absolutely have to apply a border tax import. Otherwise, we will have a clearly adverse effect on the climate, because we will just import beef from places where it is produced in an even more environmentally detrimental fashion.

Nick Molho: There are three key areas where Treasury fiscal incentives can be quite powerful. One of them is around VAT. A lot of our business members are trying to put into place more resource-efficient or circular business models. What often happens is that a product that is more resource-efficient, such as a good-quality tyre, for example, which can be reused and reconditioned several times in its life, will often struggle to compete on upfront price against a single-use tyre of poorer quality. There, a tool such as VAT adjustments to reflect the better environmental and lifecycle economic value of a resource efficient product could be really powerful. If you look at what is happening in Sweden, for example, they have halved the cost of VAT for commissioning any repair services on leather goods, bicycles and white goods. They also allow people to recoup the cost of doing those works through income tax discount.



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On the energy efficiency space, something that has been talked about for about 20 years and was a key area of discussion in the Green Finance Taskforce is the issue of stamp duty. Having stamp duty adjustments for more energy-efficient homes would be particularly powerful, because it would coincide with a moment in a building's life where people are open to disruption, in the buying and selling process. That is something that came up as a key measure that the banks we interviewed as part of the Green Finance Taskforce felt could be the most powerful lever to kick-start the retrofit market.

The last point to make is around carbon pricing. It is high time to put together a clear carbon price trajectory for the 2020s, because that has an impact on everything.

Baroness Worthington: I recognise the meat issue is complex, but it genuinely is the case that this is a substitutable action in which you could still get the same amount of protein from other sources and wipe out a really significant source of greenhouse gas. It is the one thing that can be done relatively quickly and would almost certainly have overarching health benefits if we are starting to shift our protein sources as well, so I think it is worth identifying.

I completely agree with Nick on VAT. We need to do a root-and-branch review of VAT. There are distortions that apply to materials you use to make your home more energy-efficient. There are exemptions from VAT. I think airline tickets are not levied with VAT. These are the things that a Treasury that has its mind on the challenge will start to uncover, so I would welcome that.

Talking about aviation, it is fortunate that the rich fly the most, but there is then a regressive effect on all of us that they do so. It has become incredibly cheap for people to take that extra flight to their Tuscan villa. We should be thinking seriously about how we can use the tax system or the airport passenger duty to ensure that we are trying to properly price the impact of those leisure flights—it is not business flights that are growing; it is leisure that is growing in the UK—and then we need to channel some of that back to investment into our aerospace and aeronautical industries. We have given a grant, I think of £350 million, for electrification of flight into some of our leading engineering companies in the UK. That is the sort of innovation we want to be driving in the UK because it would bring jobs and investment to the country, but, wherever that money comes from, it almost certainly has to be levied in a progressive way on to the higher users of aviation. Hardly any of us fly, and those that do are responsible for something like 80% of emissions, so there is a clear place where we can have a lifestyle effect.

Libby Peake: With changes to this sort of tax regime, it is really important that we need to take people along with us and understand what they want and what they are concerned about. We are in favour of a tax on frequent fliers, for instance, but we did some research that



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suggested people are not ready for it. That is not necessarily going to stay the case, because there have been shifts in people's attitudes towards flying and towards meat. One thing we know is that people are quite open to the idea of changing VAT or replacing it with something that reflects material and carbon impacts. We did some research with Cardiff University, publishing a report called *By popular demand*. That was looking at fully replacing VAT with something that reflected the environmental impacts of materials. That is popular, or at least acceptable, to more than 70% of people.

Even if you are not looking at completely overhauling the VAT system, there are some simple fixes we need to do right now to address the perversities that result from it. The most important one is changing VAT on refurbishment and repair of houses. At the moment, you pay 20% for the most part, and if you are building a new house, knocking it down and getting rid of all the embedded carbon, you pay 5%. That is clearly providing for the worst outcome, rather than encouraging people to do the right thing, which is to maintain the current housing stock. We know that 80% to 90% of the houses that are going to be around in 2050 already exist. Government have a very easy tool that they could use to encourage people to make those more energy-efficient and suitable for the future.

Q38 **Julie Marson:** Aside from speculation about what might happen in the Budget, if you could pick one thing to have in the Budget tomorrow, in terms of the tax, could you identify something?

Chair: To make it more interesting, could we have a 20-second answer from each in turn? You can choose one thing for the Budget tomorrow.

Lord Turner of Ecchinswell: Abolish the red diesel exemption.

Nick Molho: Stamp duty rebates on more energy-efficient homes.

Baroness Worthington: We should be putting more money into zero-interest loans for the less able to pay in the sector, so using Government facilities, like Salix Finance, for example, the least talked about but most impactful policy we have ever done. Salix Finance gives zero-interest loans for local authorities. Can we extend that to allow the least able to pay to access capital?

Lord Turner of Ecchinswell: That is huge.

Chair: Great. That gets the thumbs up from Lord Adair.

Libby Peake: Overhaul the transport policy funding for transport, to encourage more public transport as well as active travel, which would have additional benefits for health.

Chair: Thank you very much. Let us hope the Chancellor is listening, making his last-minute manuscript amendments.



Q39 **Anthony Browne:** While I have the floor, I want to give Lord Turner his chance to say what he wanted on domestic heating. You have flagged it up several times and never quite got to it.

Lord Turner of Ecchinswell: If you did a systematic analysis—and it would be good for you to press the Treasury to do this—of, when you get to a zero-carbon economy, on which items of consumer expenditure it has had an impact and where it is so trivial or where it is beneficial, we will probably come down to residential heating, aviation and maybe a bit of agriculture. Of these three, I think residential heating will be the biggest and most important.

When I was chair of the Committee on Climate Change, we looked at this. We used to look at things like whether you could have a thing where we all got a certain number of kilowatt hours without tax and then, on your marginal kilowatt hours above that, you paid a significant tax. The only trouble is that it is not the case that richer people use more kilowatt hours of gas. Two different groups of people use more kilowatt hours of gas: relatively well-off people in large houses, who could afford to pay, and older people who are at home all the time in badly insulated houses, who could not afford to pay. You end up with a distributional challenge that is very heterogeneous. It is very granular. There is no easy, “This is the distributional effect. How do I offset this?”

What is also the case is that, in terms of the cost of capital—and this is why Bryony’s point is hugely important—there are things you can do to invest in a house to make it more efficient, either by insulating or by installing a heat pump. Those are of the nature of a capital investment of £5,000 or £10,000, which has a rate of return. For higher-income people, who have cash resources or who have easy access to credit, it is reasonable to say, “You have to do that.” One of the crucial characteristics of income distribution is that, the lower down the income distribution, the higher your cost of capital and the less access you have to cost of capital. The cost for lower-income people to borrow to insulate or buy a heat pump is massively higher—I mean massively higher—than it is for higher-income people who have cash resources.

I would encourage this Committee to encourage the Treasury to do a really deep analysis of how the distributional consequences of this work and what the ways of dealing with it are. Things like zero-interest loans to people on lower income or, at really low income, straightforward grants, to enable them to do these items of capital investment, will be required in order to drive this house-by-house capital investment that will be required to get us there, without having severely adverse distributional effects. That is why it is such an important issue to focus on.

Baroness Worthington: I would support all of that, except I would do transport first. We differ slightly, in that I think there is a view that transport will just decarbonise itself because the cars are better and cheaper to run, but I worry about the distributional impacts of that. There



is a class of people who are essentially fuel poor because they are trapped into running very old diesel cars, commuting into a city centre and cannot afford train tickets.

Q40 **Anthony Browne:** That is why there is so much political concern over the fuel duty escalator.

Baroness Worthington: Yes, exactly. How do we get over that burden and enable those particular people to have access to these cleaner vehicles? That needs some careful thought. I would love the Treasury to do that and then do heat after that.

Nick Molho: The Treasury has a really important role in terms of ensuring policy coherence. If you look at fuel duty, for some sensible cost-of-living reasons the fossil fuel duty has been frozen since 2010-11, but in the 2010 to 2018 period you have seen rail prices going up by 42%. You are making public transport completely unaffordable and inaccessible to people. That is something that needs to be tackled as part of an integrated transport strategy.

Q41 **Anthony Browne:** I am going to ask a question about business, but before I do that I have a follow-up question on VAT on domestic fuel, which does not take into account the carbon intensity of fuel. It is a 5% flat rate for electricity and gas. As it happens, I have 100% renewable electricity and I am paying the same VAT as someone who has coal-powered electricity. We probably all agree it is desirable, but do you think it is practical to have VAT on domestic fuel take into account how green it is? The Netherlands is doing that. It is introducing higher tax for gas than electricity for domestic fuel.

Lord Turner of Ecchinswell: The crucial challenge at the moment is we actually have piled some costs on to electricity but not on to gas. We have not done it through a variation in the tax, but the CfDs on renewable energy have somewhat increased the price of electricity while not increasing the price of gas. We have created what, in the long term, is a perverse incentive, because we know how to get electricity to zero carbon. We will not get gas burnt in the home to zero carbon. Yes, there could be an argument for increasing over time the cost of gas. My point earlier was that, before you do that, you need to know what distributional consequence you have and have very powerful offsetting mechanisms to make sure that is not having an adverse distributional effect. At the moment, we do have a perverse favouritism for gas rather than electricity.

Baroness Worthington: We have a policy on domestic heat that rewards renewable heat, but that was a gift from the European Union. I suspect the RHI is one of the Government's least favoured policies and is horribly administratively complex to run. I would strongly urge you to request the RHI be reviewed. It could be widened to incorporate a wider set of technologies and a wider set of actions, and it could be made significantly simpler, so that we are providing the kind of incentives we



need to get at the heat in a holistic way. That is all I would say in relation to the heating costs.

Q42 **Anthony Browne:** The question I have been put down to ask is about business. A lot of businesses now are setting out their own pathways or targets for becoming carbon-neutral by 2050. I think BP has done it, which is interesting. Microsoft has done it way beforehand, obviously. Heathrow was talking about it.

Harriett Baldwin: Heathrow has done it for everything except flights.

Baroness Worthington: It does not include the flights.

Anthony Browne: Clearly, businesses have to adapt their business models to what we were talking about in terms of fiscal incentives and so on and so forth. How far do you think businesses should have a proactive role? Is there anything that the Treasury, or Government more widely, can do to ensure businesses have a more proactive role in becoming carbon-neutral by 2050?

Nick Molho: The first thing to say is that there is huge business enthusiasm behind net zero. We worked very closely with around 20 business sectors last year, looking at the implications for businesses of the UK having a net-zero target. What we found that was particularly interesting was that, for a lot of those sectors that have struggled in recent years in competitiveness terms, such as cement, aggregates and steel, a net-zero target represented a new opportunity to regain competitiveness advantages, as long as the target came together with a comprehensive policy package.

To answer your question, businesses have an important role to play in setting strong aspirations and doing business model changes that they can afford to make at the outset. There are a lot of improvements in operational energy efficiency, where you get your power, where you can get quick returns on investment. There are two key areas where I think Treasury and the rest of Government have an important role to play, which came out from all the roundtables we had.

The first one is that, if you are going to decarbonise a lot of those hard-to-treat sectors, you are going to need to see critical technologies, such as CCS and hydrogen, being trialled at scale and then rapidly being deployed in the market. The frustration that came up a lot from the businesses we spoke to was that, at the moment, the UK's innovation policy tends to be too small in ambition, too fragmented and often subject to review. We have seen that with CCS multiple times, for example. Having a very dedicated and scalable policy to try CCS at the scale of clusters is going to be important, and the same with hydrogen. We were really pleased to see announcements over the last few weeks where Government have begun to award innovation funding grants to try out the different ways of producing hydrogen, for example, and to scope



out the feasibility of CCS, but we are going to need much more than that going forward.

The second point is around making sure that we then put in place for those sectors market creation measures that work hand in hand with our innovation policy. One particular policy tool that came up a lot in our discussions with heavy industry was that of product standards, having product standards that can gradually reduce the level of embedded carbon in building materials, for example, over time. Where those policies are particularly useful is they redefine markets. They create a clear market signal, saying that, if you want to sell steel or cement on the UK market, it needs to comply with those very tight embedded carbon requirements.

The other advantage is that it also supports the competitiveness of our domestic industries that are innovating to get to net zero, because it will not allow products that do not comply with those embedded carbon requirements into the market. That could be a policy tool that Treasury should think quite carefully about and that could work closely with and complement well the border adjustment tax policy suggestions that were made earlier on.

Libby Peake: In terms of something that would be helpful to businesses, setting out and indicating a long-term view of where you expect to get to would be useful in allowing businesses to make the sorts of investments that are needed. If you look at the plastics tax, where what it is going to look like has not even been confirmed, some of the businesses that we are working with are deciding that is changing their investment. That is changing what they are planning on investing in, because they know it is going to be coming down the line. Even before that has come in, you have a lot more plastics recycling facilities that are being built. There are ways that could be improved by having an escalator on it, either in terms of the price that companies are expected to pay or in terms of the amount of recycled content they are expected to have. You would then get an even clearer long-term trajectory and the businesses would have even more reason to invest in these sorts of things.

What I would also say about that tax is that it barely touches upon material use. It is having an effect, but, if you look at the association of material use with carbon, it is actually quite high. I believe that Treasury should be exploring things like raw material taxes and mechanisms to take account of externalities and material use, in light of the net-zero agenda.

Q43 **Liz Kendall:** You have all talked about what you think should be a priority for the Budget and for UK emissions. Lord Turner has already touched on this. What do you think the single most important change the Treasury and its related organisations, including the Bank of England and the FCA, could make to reduce carbon emissions globally?



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Baroness Worthington: It is probably something to do with how we finance projects overseas. There have been some pretty startling numbers about quite how much we are enabling fossil fuel investments into overseas territories, and developing countries in particular.

Q44 **Liz Kendall:** Is that UK Export Finance?

Baroness Worthington: Yes, it is Export Finance facilities.

Q45 **Liz Kendall:** Do you think we should just stop that?

Baroness Worthington: We should put a far higher bar on what we are prepared to invest in. We should be incentivising clean investments to enable these countries to leapfrog. There are quite often resource curves in developing countries where you may have a natural resource but it is extracted in its raw form and then refined out of country, so you only get the disbenefit of the extraction and very little in development terms. There is a false assumption that this is always going to be good for a country if they find a natural gas resource or oil resource, that it should be exploited to its maximum and therefore we will underwrite that as a development goal. That needs to be completely reassessed and a different frame and lens put on it.

It would be incredibly significant if the Treasury could signal it was willing to do that for our export guarantee, but also then send a wider signal to our financial institutions, which are all centred in the City of London and have a big impact. Often what you will find with the big banks is they will have a European set of standards and policies about finance, but their Hong Kong branch will be operating under a totally different set of rules, where financing of coal is still going on and the Belt and Road is being developed with, unfortunately, a very high fossil footprint, when it could be entirely low or zero-carbon if it was using renewables, so yes, something around that would be good.

Nick Molho: There is probably also something we could do around climate risk disclosure, especially when you think about the role of Treasury, the upcoming COP and the fact that we will be in a position of co-ordinating quite important initiatives. At the moment, under the UK's green finance strategy, there is an encouragement for all major businesses and investors to disclose their risks relating to climate change, both physical risks and regulatory risks. We think it should be made mandatory for all large businesses and investors. That is potentially something we could also do in co-ordination with other countries in the run up to the COP. Better, consistent disclosure is important in terms of improving decision-making at the business level. It is important in terms of providing more complete, comparable and reliable information to investors, and it is something that can help shed a light on those businesses that need to improve their investment portfolios or their approach to climate change.



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You are seeing a lot of investors already doing lots of good things on this agenda. For example, Legal & General Investment Management have a climate impact pledge. Through this, they review the climate performance of all the companies they invest in under their Future World Fund. They rank them and, if businesses do not take sufficient action to address some of the climate concerns that Legal & General would have set out to them, they will divest from those businesses. For example, we saw in 2018 that Legal & General Investment Management removed eight different companies from the Future World Fund for having not taken sufficient action on this agenda. It also recently withdrew some of its investments from Exxon. All that comes from having much better disclosure, and it is disclosure that is done in as consistent a way and as globally a way as possible.

Lord Turner of Ecchinswell: This whole issue of disclosure is very important. The Task Force on Climate-related Financial Disclosures has actually had a bigger impact than I anticipated three or four years ago, when it got going. I can link that to Mr Anthony Browne's comment earlier, on how important corporates are. This development over the last two years—and it is only the last two years—of more companies making commitments to be net zero by a particular date, usually 2050, and asset managers saying, "We are going to work out what the carbon implicit in our portfolio is and we want it to be Paris compliant", and banks saying, "We want our loan portfolios..." has been a very powerful discipline.

In my commission, we are dealing with a lot of these companies across many different sectors—the steel, cement and financial sectors. People sometimes say it is greenwash. Somebody once said to me, "The great thing about virtue-signalling is that it sometimes moves on to virtue". Once you have made that commitment, you have created a discipline that you have to live to. Most of the companies that are doing this are really serious about it and trying to do the right thing.

The next step in this agenda is transparency and precision. When somebody says, "I have a net-zero commitment", are we clear if they are talking about their scope 1 emissions, their scope 2 emissions or their scope 3 emissions? When they say they are net zero, are they assuming the world is going to be able to do a lot of carbon capture and storage and a lot of offsets, so it is okay to have a business model that includes a lot of oil and gas?

The next step on that disclosure regime is, I agree, to make it mandatory rather than voluntary, but to make it more transparent and more defined, in terms of, "What precisely are you saying? When you said you were compatible with net zero, what assumptions have you made about how much oil or gas or coal can be produced in 2050?" We have managed to create, out of the Task Force on Climate-related Financial Disclosures, something that has good momentum. By reinforcing it, making it more transparent, giving it more discipline and defining more clearly what a net-zero scenario is, we can get even more value out of that initiative.



Libby Peake: In terms of something that could help change the culture and mindset at Treasury, I believe that placing a duty on it to evaluate all major projects and the investment we are giving overseas against net zero would be potentially really useful. It could also be helpful in preventing problems down the line, like we have seen with the third runway potentially not being able to go ahead now, or being deemed illegal because it did not take into account the net-zero commitments. I would say putting that at the start of the decisions you are making on infrastructure and overseas investments would be really useful.

Q46 **Alison McGovern:** We have spent two and a quarter hours talking about the UK's plans. The UK's emissions account for 1.5% of global emissions. I want to ask some questions about the rest of the world and how we can influence what goes on there, particularly on the subject Liz has just asked about, in terms of what happens to the capital markets. Does anybody want to comment further on any of the other regulators? Is there more that the regulators of London's capital markets could be doing?

Lord Turner of Ecchinswell: It is clear that, in this issue, China is at least 20 times more important than the UK. Chinese emissions are about 10 gigatons. Our emissions are about 450 million tonnes, so it is 20 times more important. Therefore, as a country we have to not only get our own house in order and get to net zero, but we have to engage in international diplomacy and engagement. That is exactly what the COP26 process is about. The UK has the role as president of COP26 and the negotiations and discussions that are going on at the moment. How do we influence that? We partly influence it by trying to have an international agreement that this is important.

Q47 **Alison McGovern:** Diplomacy is very important. However, at the moment it is quite difficult. What I was more wondering about was pension funds.

Lord Turner of Ecchinswell: The answer is the UK pension funds can do almost nothing in China. China's capital supply is almost entirely domestic, so the answer is, on 10 gigatons, what the City of London does has almost no impact on what will happen in China. There are different avenues required.

Q48 **Alison McGovern:** What about the rest of the world?

Lord Turner of Ecchinswell: The rest of the world, yes. The answer is we have to encourage them to look at the African developments I talked about earlier. We have to tighten up on our export support for fossil fuel plants.

There again, diplomacy is very important. One of the biggest challenges in south-east Asia is Japanese continued support through JBIC—the Japan Bank for International Cooperation—which is funding coal developments on a large scale throughout south-east Asia. To be blunt, they are so much more important than us to what is going on in south-east Asia that



we have to be focused on the diplomatic and the agreement route. Our ability to change the behaviour of our banks and insurance companies is much less powerful than the fact that, at the moment, the Japanese private and public banks still have policies of supporting coal throughout, in particular, the Asian area.

Baroness Worthington: Just to put a little caveat around this number of China being 20 times more important, that is only if you are looking at the flow of emissions in a year. The reality of climate change is it is a stock problem, meaning it is emissions over time since we started the industrial revolution that is causing the impact today. If I were a Chinese negotiator, I would say to you, "That is an absolute outrage that you are equating our emissions today with your emissions over time, given that you have grown wealthy on the back of your North Sea oil and gas and your coal reserves in Newcastle, and now you are telling us we cannot exploit our resources".

There is a very big diplomatic dimension to everything we do when we move from thinking about our own domestic situation and the impact we have on the wider world. The best example we can give to the world is to show you can do this without damaging your economic growth, and we have done that. We have reduced emissions. If we get on track for our 2030 targets, we will have taken our emissions down by 60% relative to 1990, whilst our economy has grown. That is a diplomatic gift, because we can take that to the rest of the world, and we have done it with a plethora of technologies and a plethora of policies, so we have a huge amount of knowledge to be able to share.

Q49 **Alison McGovern:** To play devil's advocate on that for a second—this is an informative session; it is not about scrutiny or argument—take, for example, nuclear weapons. There are not huge amounts of evidence that countries unilaterally getting rid of nuclear weapons is an encouragement to the holders of great stocks of nuclear weapons. There are examples of economies that have been better than ours at decarbonising that have not proved themselves to be very good examples to countries. Australia, for example, is not choosing to follow the example of other similar economies. If that is the case—suppose for a second that is the case, just playing devil's advocate—would we not be better focusing on money that flows through the City of London finances and how we regulate the use of those finances, rather than pinning all our hopes on us getting a gold star, as Britain, and seeking to be persuasive on the world's stage at a moment where we are leaving the world's biggest trading bloc?

Baroness Worthington: There is no doubt that the City of London is influential, but it is also true that is not a sector that lends itself to sectoral regulation on particular societal outcomes you want to see it achieve. It is very hard. We are barely able to regulate them to stop themselves crashing; that needs international co-ordination to make it effective. I am slightly sceptical about pinning all our hopes on changing the City of London. Money flows downhill and it flows to profitable



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businesses. You have to change policy to change the way that money flows, at a UK level and at a global level.

The challenge of China is really a challenge of coal in their power sector. The way we can encourage them is to show them that you can decarbonise your power sector without an overreliance on gas, because they do not have any gas, and using a plethora of technologies. That is genuinely, if you wanted to bend the curve of global emissions fastest, the best action we can take. The City of London may or may not be financing some of that in China. I suspect it is a marginal player.

Q50 **Alison McGovern:** The China thing is a bit of red herring in this conversation.

Baroness Worthington: It is not a red herring in climate terms, because it is the most important country.

Q51 **Alison McGovern:** It was a question about the role of finance. The Treasury Select Committee investigates finance across the piece as a sector. That is why I am asking the question.

Baroness Worthington: How much time does the Treasury actually spend regulating financial markets? It is mostly about tax and spend.

Alison McGovern: The Bank of England does and we investigate them, and the FCA does and we investigate them.

Baroness Worthington: But you devolved the Bank of England to be separate from the Treasury for a reason. I am not saying this is not an important line of inquiry.

Alison McGovern: No, but we scrutinise the Bank of England. That is why I am asking.

Lord Turner of Echinwell: Your challenge on how important it is for us to get to zero-carbon is a good one, but I still think it is. I do think it is the case that the way that Europe has pushed towards zero carbon has developed some technologies that other countries have then picked up and indeed taken further. Without the German Government initially paying very large subsidies to Bavarian farmers to put solar PV on their sheds, we would not have had the extraordinary collapse of the price of solar PV, which has enabled China. I accept there is coronavirus. I spend about five or six weeks a year in China, debating these things with Chinese policymakers. It now has available a technology, which it is driving the cost of down, that it can apply to decarbonise its economy.

The fact that Europe is now committing to net zero by 2050 is not irrelevant. I have been at meetings in China where major policymakers had not quite realised that we were making those commitments, and they are thinking about it. I happen to think that China is taking climate change seriously, that it will probably exceed our expectations in driving towards a zero-carbon economy, but what we do is not irrelevant to that.



Alison McGovern: That is a fair challenge.

Libby Peake: In terms of what the UK can do, we have a fantastic opportunity with COP26 to lead the way and get together a coalition of people that are aiming to get to net zero. We are one of the first economies and the first major economies to put that into legislation, but we are certainly not the only one. At the last COP, they got together a group of people where 123 different countries were at least committed to working towards net zero. If you can capitalise that and get the world to a tipping point where, say, at least 50% of world GDP is aiming for net zero, and use our convening power at COP26 to do it, that would be really useful.

On the specific point of China's emissions, I would always remind people that a lot of the emissions they are creating are responsible for things we eventually consume. It is not necessarily fair to say China is doing everything. We need to look at consumption as well.

Alison McGovern: That was not the point I was making.

Nick Molho: On where the rest of the world is at, it is worth saying that there are lots of self-interest reasons why China, the US and other countries on this agenda will want to take on more ambitious pledges on climate change. They are witnessing extreme weather events in the same way that we are. In China you have other local environmental problems, such as air quality, which is a huge driver behind closing many coal plants. Many countries such as China are seeing that switching to electric vehicles and switching to renewable energy is actually economically a sensible thing to do.

When you look at what has happened in China over the last 10 years, there was an interesting report from PwC on this. Despite the still big presence of coal, we have seen the carbon intensity of the Chinese economy going down by 41% between 2007 and 2017. For the last 10 years, China has been the number one investor in renewable energy every single year. Clearly, there is a lot more that needs to be done, but there are some very interesting trends we can build on.

From a UK policy perspective, it is worth flagging that we now have a new policy tool at our disposal following Brexit, which is trade policy. Trade policy is a way through which we can seek to promote our high environmental and climate standards.

Q52 **Alison McGovern:** My next question was going to be on carbon pricing. Are there any brief comments that anyone on the panel would want to make, particularly on carbon pricing or anything further on border taxation or anything?

Nick Molho: On carbon pricing, at the moment we do not have much forward certainty in terms of the price of carbon. We absolutely need a clear view of what the carbon price will be, a clear carbon price escalator



throughout the 2020s. One thing that is worth flagging is that, once coal comes off the system, the impact of the carbon price on electricity price will be halved, because coal was the most carbon-intensive form of power generation. That will weaken the market signal that the carbon price is supposed to provide, so we urgently need to move on to the task of having an escalator in place.

Baroness Worthington: There is a particular part of City of London policy you might want to look at, which is the way that we list companies on the London Stock Exchange and, more specifically, on the AIM, the Alternative Investment Market. That is of interest because we give a tax break against investment into that market. There is absolutely nothing to stop a very carbon-intense company from investing, from being listed into the AIM market and then we give public money back for that investment. There are some little quirks and anomalies that have never really been looked at that you could, as a Treasury Committee, take a look at and see if they are sensible. I hear that you want some specifics that relate to these instruments.

On carbon pricing, there have been many reports written about whether we should seek to go alone with a UK carbon pricing policy, whether we should stay within the emissions trading scheme of Europe, and variations on the theme. Adair and I are on a commission that has been set up to look at this exact question. The crucial thing we have to consider is, sector by sector, how we apply a policy that will internalise the externalities and prevent any negative distributional impacts of that. We have the opportunity.

Q53 **Alison McGovern:** What is the commission?

Lord Turner of Ecchinswell: It is the Zero C commission.

Baroness Worthington: It was set up by the founder of OVO Energy and will be publishing sometime soon.

Q54 **Alison McGovern:** Presumably there are as many opinions on this question as there are papers written.

Baroness Worthington: There are a lot of opinions, because it is not entirely clear yet. We certainly know that us coming out of the European Union has a net beneficial effect on the European price, because we were net sellers into that system. We were essentially allowing that price to be lower because we were selling our spare allowances. At the moment, it looks like it is probably better for them and for us if we just stay out, and if we want to make a link at some point we can do so. There will be economists who will tell you otherwise, but I would not listen to them.

Lord Turner of Ecchinswell: There are some sectors of the economy where you can make a lot of progress without an explicit carbon price. It is still implicit. The contracts for difference are a form of implicit carbon price. You can have a very focused instrument because you know there is a small number of technologies and you can say, "I am going to support



that". My own belief is that, when you then move to the industrial sector, to how you decarbonise petrochemicals or cement or steel, there is such a huge multiplicity of things business could do, either to achieve short-term partial emissions reductions or eventually zero, you need to use the market instrument of a price. Therefore, we should be having a carbon price steadily increasing in value applied to the industrial sectors at very least, which means maintaining what we have and steadily increasing it. We then need to look very carefully at the international competitiveness effects and the issue of border tax adjustments to make sure that is not a disadvantage. It as simple as that.

Q55 **Alison McGovern:** Does anybody have anything else on carbon price?

Lord Turner of Ecchinswell: Can I change my initial vote on red diesel? A plastics tax is a really valuable thing to do. We can recycle almost all our plastics if we increase the cost of throwing away plastics and if we increase the cost of putting new fossil fuels into plastics.

Alison McGovern: It would benefit industry too.

Lord Turner of Ecchinswell: It would create a new industry.

Baroness Worthington: This is one area where the Treasury has not received enough credit. Lots of people are talking about banning single-use plastics. That is a bloody useless policy. Moving upstream and applying a tax to allow this industry to adapt to a completely different system is really clever. There is not enough credit given to the fact that the Treasury has led with that and found a particularly sophisticated way of getting at what is essentially a resource use problem that has come. You need to create the right incentives and the right financial stimulus.

Q56 **Liz Kendall:** So you need less tax on these.

Baroness Worthington: If they are recycled. You could probably ensure that they are using glass.

Q57 **Liz Kendall:** You need an incentive for this to be developed, rather than taxing the end user.

Baroness Worthington: Either ban everything, in which case it becomes a blunt instrument, or you go upstream and try to fundamentally change the way we produce and price the system, which leads to this being here.

Q58 **Anthony Browne:** I understand the benefit of a plastic tax in terms of reducing plastic waste. How does it affect carbon dioxide emissions?

Lord Turner of Ecchinswell: The crucial thing is to move to an environment where we have no end-of-use carbon emissions. What has happened over the last 15 years, as we have limited landfill, is that we then tend to increase incineration of plastics. When you incinerate a plastic, you release all the CO₂ that was implicit in the oil or gas that went into the plastic in the first place. If we banned incineration—I think



we should move to banning incineration—and also taxed ethane or naphtha, which are the gas or oil inputs to the plastic process, we would create very strong incentives for the emergence of both mechanical and chemical recycling technologies, in which, even if this was made of non-compostable plastics, it would go back through the plastics in a closed loop.

Q59 **Anthony Browne:** Banning incineration is nothing to do with tackling climate change.

Lord Turner of Ecchinswell: Banning incineration, if you produced recycling, is reducing CO2 emissions.

Libby Peake: It absolutely is, and recycled content has lower carbon content than virgin content. The tax could go a lot further in reducing material use and carbon by looking to put charges on virgin material, rather than the way they have construed it at the moment.

Baroness Worthington: It is not primarily a climate measure, but the point is the Treasury were not given enough credit.

Chair: We are ending on credit for the Treasury. Thank you so much, as a panel, for coming. That has been very wide-ranging, very informative and very insightful to us and informing what we do as a Committee going forward. That concludes the Treasury Committee's evidence session on decarbonisation and green finance.