

Business, Energy and Industrial Strategy Committee

Oral evidence: Clean Growth Strategy, HC 596

Wednesday 22 November 2017

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Members present: Rachel Reeves (Chair), Vernon Coaker, Drew Hendry, Stephen Kerr, Peter Kyle, Rachel Maclean, Albert Owen, Mark Pawsey, Antoinette Sandbach.

Questions 1 – 53

Witnesses

[I]: Baroness Brown of Cambridge, Chair of the Adaptation Sub-Committee, Committee on Climate Change; Jeff Douglas, Strategy Manager for Smart Systems and Heat, Energy Systems Catapult; Nick Molho, Executive Director, Aldersgate Group; and Lawrence Slade, CEO, Energy UK.

Examination of witnesses

Witnesses: Baroness Brown of Cambridge, Jeff Douglas, Nick Molho and Lawrence Slade.

Q1 **Chair:** Thank you very much, all four of you, for coming to give evidence to our Committee today on the clean growth strategy. We are very limited in time because of the Budget today, so we only have an hour for this session, which means that we will try to keep our questions short, but also that you will probably not all be able to answer every question, so we might ask specific people specific questions. Without further ado, we will get underway. My first question is: what is your overall view of the clean growth strategy? If you had to rate it out of 10, how many marks would you give it?

Baroness Brown of Cambridge: First of all, I very much welcome the positive tone of the clean growth strategy, and there are steps in the right direction. It is very good to have climate change put into the context of economic growth, for us to be seen to be going forward with growing a green economy, and we have been highlighting the opportunity there in our previous reports. It is very good to see that it is recognised as a cross-government issue, and we are pleased with the re-establishment of the inter-ministerial group. We welcome the R&D



support. We have a bit of a concern that there is more focus on R than on the implementation end, which we see as crucial. There are many good first steps.

It still needs quite a bit of clarification and firming-up. There are quite a lot of aspirations in some areas, not yet policies. There are a number of times where it says that things will be done where practicable, cost-effective and affordable. It is difficult, then, to say how much of this is actually going to happen. There are lots of positives; there are some gaps, and we are particularly concerned about the area of flexibilities. In fact, we do not like the term “flexibilities”, because it sounds as if it is something helpful and useful. We prefer to call it “borrowing and banking”, and we have consistently advised against borrowing and banking. If asked—and we would need to be asked—I can be very confident that, unless there is some dramatic change, we would give that advice again.

Q2 **Chair:** Thank you. How many marks out of 10 would you give it?

Baroness Brown of Cambridge: I do not think I would give it marks out of 10. We will be publishing our detailed report on it in January, so it is not appropriate for me to go into the full detail at this point.

Q3 **Chair:** Does it give sufficient long-term signals to investors?

Nick Molho: Building on what Baroness Brown was saying, where it really helps investors is not just in a positive tone, but the fact that this is very much a cross-departmental strategy. That really differs from previous strategy in this case. When a lot of your investors are international investors, that really matters, because it provides you with more confidence in the long-term policy direction that the Government are embarking on. It was particularly important that, within the strategy, all key economic sectors were covered, but you also had references to other key government policies, such as the 25-year environment plan, the waste and resources strategy and the industrial strategy.

In some areas, there has been some concrete improvement in investor certainty, such as the re-confirmation that up to £557 million would be made available for offshore wind, with an auction next spring, which is useful. The aspirational goals on energy efficiency are important as well. The important caveat is that in some key sectors, one of which is buildings, the extent to which more private sector investment will come forward very much depends on the detailed measures that are yet to be announced. If you take the example of energy efficiency, we will need to see clear regulatory drivers around the levels of energy efficiency that are to be delivered over the next 10 to 15 years, combined with clear and well-timed fiscal incentives, if we are really going to see any kind of meaningful progress in those areas.

Q4 **Chair:** Baroness Brown mentioned that there is a gap between what is in the strategy and what is needed to meet our carbon reduction targets.



Are there things missing from the strategy that could usefully plug that gap?

Nick Molho: One area that was not really touched on in the strategy was the future role of mature renewables, especially onshore wind and solar power. In a context where we are trying to meet our climate targets cost-effectively, given the significant cost reductions in both these technologies, it would be sensible to look at how we can provide a route to market for those technologies, through another CFD auction round, which could be capped at the level of support that would be given to conventional power generation and would allow projects to be developed where communities want them.

Lawrence Slade: I completely agree with that comment. One of the areas where a lot of detail was missing was around heat. While it was great to see the increased emphasis on energy efficiency going forward, there are a lot of holes in where we go on heat. Picking up on the Baroness's point, we have a lot of research into that area, but we need hard action. We do not have a very long time there.

Q5 **Chair:** What would you do, in terms of heat requirements?

Lawrence Slade: We need some real scale projects being rolled out, so we can actually understand. There is not going to be one silver bullet to solve the heat problem. There will be a variety of different solutions required in different parts of the country—off-gas grid, on-gas grid, et cetera—and it is really important that you accelerate the process of getting scale projects out there. For instance, between now and 2050, you effectively have three gas boiler cycles, so households will be replacing their central heating about three times over that period. It seems a long time to 2050, but it is not, actually.

Q6 **Chair:** Jeff Douglas, is there anything that you think is missing, or could usefully help plug that gap?

Jeff Douglas: In addition to the points that have been made, a whole-systems view needs to be taken. It is very easy to look at these subjects in the common places, looking at transport, et cetera, so it is vital to look across the whole system. The other point is to be coherent and, rather than just developing incremental strategies and steps, and thinking about these as incremental steps towards 2050, to be much more holistic and concentrate on the endgame. The long-term solutions will be much enhanced and a lot less costly if we consider them more in their entirety.

Q7 **Drew Hendry:** Baroness Brown, you mentioned earlier, in terms of the growth strategy, the use of caveats such as cost effectiveness. Are the Government right to allocate a third of the funding to transport? Is the balance right, in terms of the challenge of decarbonising of homes and industry?



Baroness Brown of Cambridge: We do need to see not only continued decarbonisation of the power sector and an ongoing contribution from power. In the fifth carbon budget, from now until 2030, we are looking to see a 44% reduction in emissions from transport, so it is one of the big opportunity areas, and a very important area. As I say, we have not yet finished our assessment of whether the balance in the plan is right between the areas, but transport is one of the big challenge areas.

Lawrence Slade: My gut reaction is that it is right and proper that transport gets an awful lot of attention, because of the role it plays in the economy, but it seems that heat in particular comes across as the poor cousin. It needs a substantial increase in investment if we are going to make headway with it.

Q8 **Drew Hendry:** Perhaps I could follow that up by asking how feasible the Government's ambition to phase out fossil fuel heating in off-gas grid buildings during the 2020s is.

Jeff Douglas: It is a subject of great interest to us from the strategic perspective, and there is a possibility of it being a cutting tooth for technologies in the on-gas grid group. It is a challenging target, but it is very good to have those challenging directions, create that kind of movement and make those strong signals. At this point, it does not look as though it is going to be an easy task but, if we look back at some of the things that have already been achieved so far, we might well have said at the point of initiation they were going to be tough as well.

Nick Molho: Regarding the point on innovation, there are some clear areas where innovation is needed, but there are other areas where innovation is not necessary: we know what to do. For example, in energy efficiency in buildings, we have the technologies to make buildings more energy-efficient. Ultimately, it is about having much clearer market signals as to the demand for improvements in energy efficiency and more time incentives to deliver that. That is an issue of structural policy intervention, rather than just more innovation.

Q9 **Drew Hendry:** Perhaps I could follow that up by asking what is required, then, to future-proof homes for low-carbon heating.

Nick Molho: You need, ultimately, a mixture of sticks and carrots. You need regulatory drivers that provide a clear indication as to the levels of energy efficiency improvements that would be required for different types of properties by a particular date. In the clean growth strategy, the Government refer to wanting to improve fuel-poor homes to a level of EPC band C by 2030, and non-fuel-poor homes, where that is possible, to the same level by 2035.

You need those targets to be binding and to be matched by well-timed incentives: for example, stamp duty rebates for more energy-efficient homes and reductions in VAT for energy-efficiency measures or renovation works. When you look across Europe, you see countries like



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Sweden that are varying VAT rates in order to promote energy and resource efficiency. Just a few months ago, the Swedish Parliament introduced discounts on VAT to improve resource efficiency and incentivise the use of services to repair a wide range of goods. Those things are being done with some impact in other countries.

Baroness Brown of Cambridge: We should not miss the opportunity for new homes. New homes are not the biggest part of the problem, I know, but we have a very necessary drive for a lot of new homebuilding. We should—to use the Chancellor’s phrase—make sure they are fit for the future, so they need to be very well-insulated. Ideally, they should be all built as zero-carbon homes. They should also be adapted for climate change that is coming, so they need good ventilation, shading and flood resistance. Those new homes should be built now, so that future generations are not having to pay the costs to retro-fit and adapt them.

Jeff Douglas: Adding to the debate there, I would go back to the whole-system thing. Again, the outcomes for the country are very important, depending on whether we have electricity networked heat, gases or the combination of those as our sources of heat in the future. That will make massive differences to cost, utility, security and the extent of our dependence on fuel resources, so it goes back to that view.

At a local level, we have found that it is very effective to do local optimisation, looking at the types of buildings and the geography at a local level, and to figure out those areas that may be best suited to go towards heat networks, heat pumps or other forms. Taking those strategic views is very helpful, not just in a deterministic way, but also in consensus building and stakeholder building. That is valuable. The next level is trying to sort out infrastructure. It is long-term and, as Lawrence has said, we need to be making moves on that. These are long-term assets that take a long time to put in place and will be around for a long time.

At the housing level, we would like to see a move away from the use of the kilowatt hour as being the exchange between the energy supply company and the consumer. We as consumers want service. It is not how much energy we use; it is what we are trying to do when we are using energy, so innovation in products is very, very valuable. There might be a way of ascribing the responsibilities for decarbonisation in homes to energy service providers, maybe on a ratcheting basis, to progressively improve their portfolio. There are some thoughts there, and I certainly agree with Lawrence: we need to start building these elements, and start building scale.

- Q10 **Albert Owen:** My question is directed first at Baroness Brown. The Government are prepared to use flexibility, as you alluded to in your opening remark, to meet the fourth and fifth carbon budgets. This has been criticised, as you know, by the Committee on Climate Change. Why is this?



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Baroness Brown of Cambridge: We have always recommended against using flexibilities. Indeed, as I say, we do not like the term, because we think it sounds like a rather comfortable term. For a number of reasons, it would be very unwise.

First of all, we have always said that there should be no banking of over-performance in the second and third carbon budgets. We said that before the Paris agreement was signed. Given that the Paris agreement actually upped the challenge, it seems even more appropriate post the Paris agreement. We have also said that there should be no reliance on purchase of credits.

There are particular issues with the second and third carbon budgets. One of them is that, when we set the whole budget, we include the EU ETS cap: here is the whole budget, and here is the EU ETS cap. We have to estimate the EU ETS cap because, when we set the budgets, we did not know what it would be. When it finally came out, it was smaller than the assumption we had made, so it is not this big; it is only this big. This means that the rest of our budget suddenly grows. That means that the rest of our budget is bigger than the cost-effective path we have calculated for the economy. There is something in the second and third budgets that has been termed "hot air", and that hot air must not be banked.

Q11 **Albert Owen:** You are not suggesting that the whole strategy is hot air, are you?

Baroness Brown of Cambridge: There are some quite complicated accounting reasons why we should not be banking over-achievement. We should not be using flexibilities for the second and third carbon budgets.

Q12 **Albert Owen:** In other sections of industry, what the Government are doing would be seen as cooking the books. Do you agree?

Baroness Brown of Cambridge: It is not cooking the books at all. Oh, I see. You mean the banking.

Albert Owen: I mean the banking, relying on international carbon credits and not really achieving their domestic emissions targets.

Baroness Brown of Cambridge: Our view is that the UK is saying that it wants to take a leadership role in helping lead the world to a low-carbon world. We are very supportive of that. We have committed to the Paris goals, which are indeed tighter. As the Committee on Climate Change, we said that we would not tighten the fourth and fifth carbon budgets to align with Paris, because we thought the most important thing was to be sure that we were on track with them first, and they still gave us scope after that to tighten up. If we start banking and borrowing to meet them, we will absolutely not be on the track to meet those goals. We will be pushing everything into the distant future.



Albert Owen: Absolutely. I say “cooking the books”.

Nick Molho: There is a broader issue of policy consistency and industrial strategy here. If we introduce those flexibilities, we may reduce short-term investment, but we will also dampen market signals to industry in terms of investment in supply chain, innovation and cost reductions. That ultimately will weaken our growing competitive advantage in a number of areas, such as offshore wind, manufacturing of electric cars and so on. The big objective of industrial strategy is to create leadership in new markets, so we really need to take a policy-wide perspective on this.

Q13 **Albert Owen:** Briefly, to the other two—I realise the time restraints—do you believe that we can meet the budgets with domestic emission reductions?

Lawrence Slade: What do you mean by “domestic”?

Albert Owen: Rather than banking and relying on international credits, do you think that if we focused on reducing emissions—and this strategy is supposed to focus us on that—can we do it domestically?

Lawrence Slade: From our perspective, we are disappointed about some of the ambition in approaching the fourth and fifth budgets.

Jeff Douglas: It is tough but feasible, and we need to take action.

Q14 **Albert Owen:** That is a great short answer there. It is tough. Will we be able to make the reductions to meet the Paris agreement’s commitment of 1.5 degrees? When the Climate Change Act was set up, when the Committee on Climate Change was set up, it was two degrees. Now, we have a more ambitious target. Can we make them? Do we have need to have technologies to do it? Are they commercially viable to go?

Baroness Brown of Cambridge: The 1.5 degree target is particularly challenging. It will need us to reach net zero emissions at some point beyond 2050. We have not done our assessment of when we think that is for the UK, but one of the important issues—to bring that back to the clean growth plan—that we feel is missing from it is carbon capture and storage for power generation. One way that most of the models have of getting to negative emissions, for example to help us balance emissions from aviation and shipping, would be carbon capture and storage with bioenergy as a power-generation technology. We think that carbon capture and storage for energy generation is an important element, along with CCS and CCUS for industry.

Q15 **Albert Owen:** Are these close to commercialisation? We have a Budget today, and the Chancellor may be listening. Do we need to have extra government finance to make this carbon storage a reality?



Baroness Brown of Cambridge: We need more encouragement, and financial encouragement, for major demonstration of these things, yes.

Nick Molho: There is a broader question about learning about what has worked and what has not worked in recent years. No one would have forecast that you could have cut the cost of offshore wind by 50% in two years. The reason that has been possible is that you had an approach, in terms of both supporting innovation and looking at supporting deployment. That is what we need to apply to other technologies, including on heat, which is our next most tricky area to tackle. That is where the clean growth strategy has to deliver.

Q16 **Albert Owen:** CCS fell off the shelf. Can it be put back on, and can it be part of meeting the target?

Nick Molho: It can, absolutely, but it requires that kind of approach.

Q17 **Peter Kyle:** I wonder if I could ask you, Nick, what you perceive as the main challenges facing British industry right now with regard to meeting the targets.

Nick Molho: In some areas, there is a lack of clarity, in terms of market signals. There have been some improvements here, but it very much differs from sector to sector. On offshore wind, there is greater clarity up to the mid-2020s, but there is a question after that as to what is going to happen, because the supply chain and industry are capable of delivering much more than the 10 gigawatts that are currently being talked about.

Q18 **Peter Kyle:** What is interesting about your answer, then, is who is responsible for finding solutions to those challenges. Is it industry, or is it government?

Nick Molho: It is a mixture of both. There has been a very positive shift in the way in which low-carbon generation has been supported. You now have a focus on government seeking to provide clarity on volume, subject to industry delivering cost reductions. That provides the right balance.

Q19 **Peter Kyle:** When you have two sectors—government/public, and the private sector and other sectors—both responsible and both sharing responsibility, how do you make the decision as to who should lead on what?

Nick Molho: Government need to lead on providing clarity as to what they want in terms of infrastructure development and clear expectations around cost reductions. It is ultimately up to industry to step up to the task and deliver within those parameters. That is what will be needed for offshore wind beyond the projects that will be announced at the next auction in spring 2019. Moving to the built environment, the problem there is greater, because there is very little clarity about the extent to which energy efficiency in commercial and domestic buildings is to improve.

Q20 **Peter Kyle:** On that point, does the climate change levy have enough



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incentives for non-energy-intensive industries to invest in carbon reduction?

Nick Molho: My discussions with a range of different businesses would suggest that it helps, but it is not enough. Ultimately, you need enough of a nudge for an investment in energy efficiency to compete with, in the case of a retailer, a decision to invest in a new store. You need to be able to see returns over a two to three-year period for that to cut across the boardroom.

The other point I wanted to add around drivers on energy efficiency is that we have some tools coming up. In April 2018, the minimum energy efficiency standards are going to be introduced for privately-rented accommodation in the domestic and commercial sector, which will mean that you can no longer rent properties that are EPC-rated F or G. It is a start. It will have to get stronger over time, but it shows that we know what kinds of tools to use. We just need to apply them across the board, make them more ambitious over time and send a clear signal to industry that we will not deviate from that direction of travel.

Q21 **Mark Pawsey:** I would like to stick with Mr Molho, in terms of the impact of policy on heavy industry and energy-intensive industries. We saw, in recent years, the challenges faced, for example, by the steel industry. One of the challenges was that its energy cost was rather higher than its European and worldwide competition. Now, there is the opportunity for energy-intensive industries to seek an exemption from the climate change levy, but are these exemptions sufficient to allow our energy-intensive industries to continue to be competitive in world markets?

Nick Molho: There are two aspects to this. The first one is on exceptions and compensation. They need to be kept constantly under review, to make sure that they are always proportionate to any differences in the impacts of low-carbon policies in the UK versus those of our competitors. We have commissioned a study that will come out early next year precisely on that issue.

Q22 **Mark Pawsey:** Are they currently proportionate? Are you happy at the level at which they are set?

Nick Molho: My understanding is that, within the companies that get them, they have made a big difference, but there are some question marks around companies at the margin that could have an arguable case for getting support and are currently not getting support. Where you draw the line, and the speed with which you provide the support, are still under question at the moment.

Q23 **Mark Pawsey:** What does a company at that margin need to do? How does it make its case for an additional exemption?

Nick Molho: Ultimately, that requires a much clearer understanding of the extent to which our own policies, including policies that may be



announced today around the future trajectory of the carbon floor price, differ from what is happening in Europe. In my understanding, those companies that are involved in several different types of energy-intensive activities often struggle, because they cannot be boxed in one particular category; they are involved in multiple sectors. That is where the flexibility in the way in which support is provided needs to be improved.

There is another issue, which has been a big missed opportunity, over the last five years. There has been very little focus on discussing how energy-intensive companies in steel, cement and glass can play a role in our future low-carbon supply chain. You need significant amounts of good-quality steel to build offshore wind turbines. You need good-quality glass to have double or triple-insulated houses.

If we are going to achieve that, we need to have a clear industrial strategy approach to making sure that those companies can play a role in our low-carbon supply chains. I get the sense that the clean growth strategy is starting, for the first time, to touch on that. There is a reference to joint energy efficiency and decarbonisation action plans with energy-intensive companies, but it is not very clear how far those are going, or what they would entail. We need to look at that in much more depth.

Q24 Mark Pawsey: Those industries can only contribute if they are able to produce at a competitive rate.

Nick Molho: Indeed, both would need to be looked at together.

Q25 Mark Pawsey: I might ask others: are there steps that government can do to encourage industries that are currently energy-intensive to be more efficient in their use of energy?

Lawrence Slade: One of the challenges that those companies have is that, at the upper end, and certainly in the ceramics industry, as I understand, many companies have gone as far as they can in terms of maximising the efficiency of their businesses. They have a challenge there that fits under the research element of parts of the strategy, in terms of how government can help them investigate fuel-swapping and use of other fuel sources, which could reduce their emissions. There are limits in terms of direct financial support. For the longer term, you want to help them look at other fuel sources and feed stocks that could reduce emissions and improve their efficiencies.

Q26 Mark Pawsey: You think that the industries themselves have gone as far as they can.

Lawrence Slade: That is my sense, yes.

Q27 Mark Pawsey: Do others agree with that, or do you think that the industries should be doing more? Should government be providing them with incentives to do more?



Baroness Brown of Cambridge: I am sure there is variation between companies and industries as to how far they have gone.

Lawrence Slade: That is true.

Q28 **Mark Pawsey:** How should the clean growth strategy best align with the industrial strategy in future, to take advantage of opportunities in low-carbon technology? How should the two policies come together? Do they come together, or are they totally separate, as far as you are concerned?

Nick Molho: They really need to be joined up. That, for us, would be one of the key asks.

Q29 **Mark Pawsey:** Is there any sense that they are currently joined up?

Nick Molho: There has been a big improvement in this area, compared to previous strategies that I have seen. Obviously, the industrial strategy White Paper is coming out on Monday, so that will be the ultimate check. Sending clear market signals through the clean growth strategy to grow private sector investment and low-carbon infrastructure is one part of the puzzle. The other is to ask whether we have the right policies on skills. For example, are we helping LEPs run STEM skills programmes and other skills programmes so workforces up and down the country can benefit from new supply chain opportunities? Are we encouraging greater co-ordination between central government and LEPs in helping SMEs identify supply chain opportunities in their area?

There are some examples of good work that has been done around Hull and in the Solent area, where the forthcoming investment from the likes of Siemens in Hull or MHI Vestas on the Isle of Wight has been accompanied by lots of work with LEPs to help local SMEs bid for supply chain contracts. That required a lot of co-ordination between government and LEPs in terms of understanding the broader policy picture, the direction of travel that government are going towards and, at the local level, between LEPs and local businesses, making sure that there can be an emerging supply chain around big manufacturing investments.

Q30 **Mark Pawsey:** Do we have a sufficiently competitive advantage in wind technology, for example? Are there any other areas of technology that we can use to both grow the economy and reduce our carbon emissions?

Nick Molho: There are some existing ones and some emerging ones. We cannot be good at everything. In the offshore wind sector, we are increasingly good at exporting cables, foundations, towers and blades. We have two major facilities now for manufacturing blades. We also have emerging strengths in the ICT area, in terms of developing smart systems: smart transport, smart parking, smart manufacturing and so on.

We have strengths in the legal and financial area. Of course, we have growing strengths in the electric vehicle sector as well. We have seen big



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improvements in the competitiveness of our car industry in that area over the last 10 years. Importantly, we also have very strong engineering firms in the UK that are very good at designing energy-efficient buildings, but we are doing a lot of that abroad at the moment. We need to do more of it at home in the UK, to meet our target.

Q31 Mark Pawsey: May I ask your views on the tidal lagoon project, in terms of an emerging technology that we might have an advantage in? Are there any particular views on whether that would assist?

Nick Molho: I am not a specialist in tidal lagoon technologies. Every technology should be considered and looked at. If, through an approach similar to the one we have applied to technologies like offshore wind—so investment in innovation and deployment—we can have a system by which you can deploy these technologies and they go down in cost over time, we should be considering that.

Q32 Antoinette Sandbach: I am going to take you back to domestic energy efficiency. Jeff, could you outline whether or not you think that the strategy lays out in sufficient detail the policy needed to achieve the domestic energy targets?

Jeff Douglas: First of all, at a high level, I really welcome the direction and the recognition in terms of the improvements to buildings. There are a number of detailed proposals that talk about energy performance certificates and changes, so that is very welcome. We also welcome the linkage into the fuel poverty area. There are very good moves in that direction.

Looking across the whole piece, we have done some work on specific houses, real houses and real retro-fitted home improvements, and they can be extremely expensive. They are expensive; they take quite a long time to do, and they will produce only 30% or 35% of improvement. Improving energy efficiency in its own right is not the whole story. We have to do that in conjunction with the appropriate low-carbon energy heat input.

Q33 Antoinette Sandbach: In that context, was it a shame that the zero-carbon homes target was lifted, and would you like to see that re-implemented as soon as possible?

Jeff Douglas: I think everybody feels that that was a shame directionally. As we have said, new homes are not the greatest portion of activity. We need to concentrate on the 26 million existing homes, but in terms of a foundation for the future, and a signal to the industry, it would be very valuable to have that strength of policy.

Q34 Antoinette Sandbach: Obviously, the Green Deal was one of the attempts to deal with those 26 million homes, but it was a failed attempt. What lessons do you think we can learn from the Green Deal?



Jeff Douglas: At the moment, there is no real stimulus in the home environment for an individual to make a big difference to their housing or their heating systems. If your boiler breaks, you contact the plumber; the plumber comes along and he replaces it with a boiler. We have to break out of that loop. There is no responsibility, really, for decarbonisation as a consumer. Who has the strength and the job to do that?

Some incentive for energy service providers to improve the energy efficiency and the carbon intensity of the customers within their portfolio over a period of time would be very helpful, giving strong signals, perhaps coupled with a carbon price. I come back to the real need for the infrastructure that provides this. Whether heat comes from electricity, networks or gases, there are some large, long-term signals that need to be provided in order to make the things that we were just talking about happen.

Nick Molho: The problem with the Green Deal was that there were some very good ideas in the early stages, but the final design of it was not tailored to what consumers needed. In particular, it had an interest rate that was about four times what you would pay back on your mortgage, so why would you take up an energy efficiency measure if it was going to cost you that much?

Ultimately, it goes back to knowing that you need to get something done by a particular point in time, which is why being very clear about what improvements, in terms of EPC ratings, we want to achieve for a particular type of property and by which time is so important. Equally, when you are thinking about incentives, these need to be strategic incentives. You are trying to make a systemic change in the overall energy efficiency of our building stock, so you need something quite strategic to address that.

In terms of incentives, you need to time them to appropriate times in the life of a building, where people or companies are open to disruption, which will be when they move homes or when they carry out major renovation work. That is where VAT reductions on energy efficiency measures or renovation work, and exploring stamp duty rebates, could make a big difference, when coupled with clear regulatory drivers.

Lawrence Slade: Answering with my Committee on Fuel Poverty hat on as well, I am tremendously encouraged by the commitment out to 2028 in terms of eco-funding and the aspiration out to 2035. The £3.6 billion that goes along with that commitment to 2028 sounds like a lot of money, but it is worthwhile remembering that for the Government to reach their own fuel poverty targets, there is about a £15 billion shortfall.

Q35 **Antoinette Sandbach:** What do you think about the proposals to delay the energy efficiency measures' implementation in social housing until 2020?



Lawrence Slade: I find it quite shocking. There are still several hundred thousand houses that are F and G. Yes, we have the stricter performance standards coming in in 2018, but there is a lack of linkage between ambition and what is happening on the ground. There is no point in having stricter standards coming in unless local authorities have the ability to enforce those standards with landlords.

There is an issue here around a carrot and stick approach. When the Green Deal was in place, we also had the LESA—landlord's energy saving allowance—which the Treasury cancelled a few years ago. I would argue that, while we need to encourage landlords, particularly those with properties that are F and G rated, a tax exemption or tax allowance as the carrot would help no end. There is also a problem that we do not have a register of rented properties in this country, so we do not know how many properties are rented.

Antoinette Sandbach: We do not have an assessment of all our housing stock.

Lawrence Slade: Exactly.

Antoinette Sandbach: We have not had a housing survey in England. I think there has been one in Wales.

Lawrence Slade: My final point is that, since about the late 1990s, we have had energy-efficiency programmes, but they have been stop-start, stop-start. The 2028 is a great move, but we need a national approach to this. It needs to be looked at at a national level, with a national programme. Domestic housing is one of our biggest areas of infrastructure. Let us look at it on a national scale and see how we can attack it at that level.

Q36 **Rachel Maclean:** If I may ask Jeff on this point of how we decarbonise heat, we understand that that is one of the most difficult challenges to achieve. We also understand that hydrogen has the potential to help us achieve some of the targets, but that a lot of measures are needed. Can you give us some idea of the challenges that need to be overcome before we can utilise hydrogen, in particular, and what technologies we need to develop?

Jeff Douglas: There is a great deal of discussion about the possibilities for the use of hydrogen and the continued use of the gas grid. We need to take the whole-picture view, really. Hydrogen, in the quantities that would be needed for domestic housing, is an expensive resource. Current production is most likely through steam methane reformation, so using our existing gas feed stock is the largest commercial source at the moment, and probably the only one that we could bank on in a policy sense if we were starting today.

Hydrogen, most certainly, could well have a place. I see it as a valuable resource, with a great deal of flexibility. It needs to be used



appropriately in that way. We need to look across the whole system at a balance between networked heat and the opportunities to use combined heat and power, where you are getting some efficiencies of the heat and power plant, combined with electrical efficiencies using heat pumps. We need to look at those kinds of measures and the potential of hydrogen in parallel with them.

Baroness Brown of Cambridge: If we are going to use steam methane reforming to produce hydrogen, we need to recognise that that produces carbon dioxide. If we do that without carbon capture and storage, we are in a worse position than we are at the moment, so we must not see hydrogen as a magic bullet. It is expensive, and it needs carbon capture and storage if you use steam methane reforming.

Jeff Douglas: That is absolutely correct.

Q37 **Rachel Maclean:** Can the committee give us any assessment of how progressed we are on the carbon capture and storage technology currently? Are we at the point where we can start to use hydrogen, or what is the gap there?

Lawrence Slade: The problem is the commercialisation. I do not see any problem with the technology. In various forms, carbon capture and storage has been in action around the world. Making it economic is a challenge. We have seen it used economically in terms of enhanced oil or gas recovery, for example, because you get the extra revenue from harnessing the hydrocarbons. We have not seen it become commercially viable without that element, and that is the real challenge.

We started off with investor confidence. We have been talking about CCS for so long. We had the previous competition for CCS that was suddenly cancelled when it was just getting to the point of interest, so there is a lot of distrust from the investor community and industry in terms of "Yes, we know we can do it; yes, we know it is important, but what are the terms?" There is a big confidence issue here for government.

Nick Molho: Building on this, a key next step for the clean growth strategy, having announced some funding under the RHI and for innovation, is to develop a clear action plan. We need to try out electric heat pump on a broader scale. We need to do pilots on hydrogen. We need to get a better understanding, both technical and regulatory, of district heating in urban areas, ultimately with the view that, by the mid-2020s, we are in a position to make evidence-based policy decisions on what is the most appropriate form of heating in different parts of the country, which would deliver our low-carbon heating needs cost-effectively. That co-ordination approach is going to be an important task for the strategy going forward.

Q38 **Rachel Maclean:** You mentioned the renewable heat incentive, and we have seen some additional funding proposed for that. Is that sufficient, in your view?



Nick Molho: I have not seen analysis specifically on that point. I could not answer that completely, and I know that it is linked to a reform of how the incentive is going to work. What is important is the fact that there is clarity of funding up to 2021 now, which is positive. The extent to which that is sufficient to the need is not something that I am able to answer.

Q39 **Rachel Maclean:** Does anyone wish to add anything?

Baroness Brown of Cambridge: We will be publishing our report in the middle of January.

Rachel Maclean: Well, we will look for that. Thank you.

Q40 **Stephen Kerr:** Sticking with carbon capture and storage for a moment, Lawrence, there was reference to the £1 billion competition that was cancelled. There is a £100 million investment. What can that achieve?

Lawrence Slade: I am not best qualified to answer that in detail, but I go back to my previous comment. There is a confidence issue in where this is going, and the Government really need to show that they are determined on this. The point that the Baroness made is absolutely critical here. If you are going to go down the hydrogen route, it is most likely that you will need CCS, so I find it interesting that there is only £100 million put towards this.

Q41 **Stephen Kerr:** In your opinion, should the UK be taking a global lead in CCS? Is that a realistic proposition?

Lawrence Slade: I first spoke about CCS in Westminster at least 15 years ago, and the general view then was that we should. I hold that view now. Whether we will or not is a different matter.

Chair: We will call you back in 2030 to discuss it again, Lawrence.

Stephen Kerr: It is a circular discussion.

Nick Molho: What is forgotten in the CCS debate is that, while it is often mentioned in the context of the power sector, going back to energy-intensive companies, it can play a really important role in industrial clusters. That is where we should be putting the focus of our policy. How can you get a range of major industrial users benefiting from the application of CCS and sharing the infrastructure? That is the key to deploying it cost-effectively.

Lawrence Slade: Nick's point is absolutely critical there. As I mentioned earlier, it is making it a commercially viable area. If you can combine it with industrial users as well, that may be the missing element to make it a commercially viable option.

Q42 **Stephen Kerr:** Lawrence, can I look more closely at low-carbon electricity supply? Does the clean growth strategy support investment in low-carbon electricity supply?



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Lawrence Slade: As we said at the start, it certainly gives some very positive signals. As other panellists have commented, it strikes me as odd that we still do not have a route to market for onshore wind and solar, for example, in that they are the cheapest forms of low-carbon energy that we have at the moment. We should be looking at and encouraging a great mix of different technologies on the system.

Q43 **Stephen Kerr:** What kinds of policy support do those more mature, sustainable forms need?

Lawrence Slade: Give them access to CFDs, for instance. We know that costs are coming down; costs have tumbled. We have had the example of offshore wind. We know companies are looking at even cheaper forms of solar in coming years and, indeed, onshore wind. The amount of support that is required will be going down. The Government could look at the same approach that they gave to offshore wind, in terms of saying "We will support these sectors, but here are the targets that we want you to achieve", and seeing what that carrot and stick approach can do. Let us try that again in other areas of low-carbon generation.

Q44 **Stephen Kerr:** What do the Government have to do, in your view, specifically?

Lawrence Slade: Just step up to the plate, offer support and start talking to the industry about giving those areas the route to market.

Q45 **Stephen Kerr:** I have one last question. Post 2021, what do the Government need to do, or what is needed in general, to ensure investor confidence and support to see the right levels of investment in low-carbon generation?

Lawrence Slade: One of the problems that we have had over the years, when it comes to environmental policy, is a stop-start approach. That is the worst possible thing for investor confidence: you have just got used to something, and then wham. We saw it with the climate change levy, the solar levy and onshore wind. This Committee's predecessor Committee had a very good investigation into investability and some of the issues.

Where you get signals like a very clear plan on offshore wind, you see the results. When you give a signal on energy efficiency—as, indeed, the paper does, and it should be recognised for this; it gives a signal out to 2028 and an ambition out to 2035—that is great. For the first time ever, if I am manufacturing energy-efficiency products, I have a long-term horizon. I can go to my board, raise capital and invest in new products and innovation. That is great. That is what the Government need to do. They do not need to pick winners; they do not need to come out with finite, detailed policy. Give us the framework; give us the long-term horizon. Competition will work, and competition will start delivering at lowest cost for consumers.

Q46 **Stephen Kerr:** So it is about consistency and constancy.



Lawrence Slade: Yes. It is not that complex.

Nick Molho: What is needed is another CFD auction for onshore wind, but one that is capped at the level of support that you would give to conventional power generation, the cheapest form being gas CCGT. It is not about giving the sector subsidy; it is about giving it a market-stabilising CFD.

There was quite recently a study from Baringa, which I will share with the Committee after this session. It showed that, if you were to hold another one-gigawatt auction in 2018-2019, which would mainly consist of onshore wind projects, it would be very realistic to achieve a clearing price of around £49 per megawatt hour. Over the lifetime of the contract, the low-carbon contracts company would get a net payback of £80 million; i.e. the consumer gets money back. We need to investigate how we can make the most of that cost-effective renewable energy resource where communities are happy to host those projects.

Q47 **Vernon Coaker:** Transport accounts for 21% of emissions. Between 1990 and 2015, there was only a 2% reduction. The clean growth strategy says that, over the next 15 to 20 years, there needs to be a 30% reduction, or points to a 30% reduction. Friends of the Earth says that current policies will only deliver 10%. I just wondered, Jeff and Nick, whether you think that moving to electric vehicles and all the other transport initiatives will deliver that reduction, or whether more needs to be done. Are electric vehicles the answer?

Nick Molho: They are definitely part of the answer, but there are three important challenges to tackle. The clean growth strategy makes progress. For example, it announced more money—£80 billion additional funding—for charging infrastructure, but you have three key issues. One of them is around accessibility of charging points. We know from studies that have been done by the likes of the Energy Saving Trust, Uber, TfL and others that there is a lack of charging points. There are complexities around where those are sited, and how accessible they are. That is where the Automated and Electric Vehicles Bill has a very important role to play.

Q48 **Vernon Coaker:** Is Friends of the Earth right with its 10% figure?

Nick Molho: It depends on the assumptions that it used. For example, the grant system that we have to help consumers with the up-front costs of electric vehicles stretches out to 2021. My hope is that government in the coming years, under the clean growth strategy, will provide clarity for support that goes beyond that. In my view, the emissions reduction targets that the transport sector needs to deliver are achievable, but that depends on continued policy clarity and incentives beyond 2020.

There are two important issues in terms of how you keep on stimulating market demand for ultra-low-emission vehicles. One of the most efficient regulatory drivers over the last decade has been the EU CO₂ emission



standards, going out to 2020. As the UK leaves the EU, it will be important to work with the EU so that we can input on its standards and make sure that they keep on acting as a market pull for ultra-low-emission vehicles. There is then another very important issue, which is to make sure that, as we electrify some of our heating and a big chunk of our transport requirements—

Vernon Coaker: Lorries as well as cars.

Nick Molho: We integrate the whole power, heat and transport policy nexus. We held an event last month on the barriers to greater growth in electric vehicles. One of the points that UK Power Networks made was that they thought that they could accommodate 40% to 50% of the projected growth in EVs by just optimising the existing network. That tells you that you need investments in smart systems and demand-side response, in continued interconnection, in battery storage and so on. It is about making sure that we really bear in mind the needs of the heating and transport sector in developing our low-carbon power policy, and making sure that we really incentivise switching.

Q49 **Vernon Coaker:** Let me give you one policy initiative, and just get a yes or no from each of you. The Government have a target of getting rid of internal combustion engines by 2040. Would not a great stimulus to electric vehicles and electric lorries be, as some have suggested and other countries do, to bring that forward from 2040 to, say, 2030? Is that a good policy initiative? Jeff, what do you think? Other countries are going to do it. Norway are talking about 2025.

Jeff Douglas: Again, we have to consider our situation in the round.

Q50 **Vernon Coaker:** Is 2040 the right year?

Jeff Douglas: As Nick mentioned a moment ago, we need to integrate and think about heat decarbonisation and transport decarbonisation.

Vernon Coaker: I am just looking to see if we can get a specific policy initiative.

Jeff Douglas: I just want to say that you need to balance those things, because there is a potential substantial increase in demand for electricity for other areas. That has generation implications and network implications. I am not suggesting that they are not solvable in any way, shape or form, but I would come back to the big picture.

Baroness Brown of Cambridge: The work we do on the Committee on Climate Change looks at the cost-effective path for meeting our carbon budgets. In the fifth carbon budget, we have given what we see as the cost-effective path. We have said that, by 2030, we need to see 60% of light-duty vehicles being ultra-low-emissions vehicles. Indeed, we would like to see a vehicle emissions target for 2030 of about 50g per kilometre, so it is very disappointing that the EU is not moving as aggressively as that, or as fast as that, in its latest targets.



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- Q51 **Vernon Coaker:** On aviation, the clean growth strategy has no new proposals for dealing with aviation within it. It is going to consult on a new document. What are we going to do to reduce aviation emissions, and where does the third runway at Heathrow and the debate about Gatwick fit into all that? Can we expand international aviation and meet our climate change targets?

Baroness Brown of Cambridge: In the Committee on Climate Change, we have looked at that. We used the assumption, which we did not invent, that we need to get back to 2005 emissions levels by 2050. Then an allowance for that much emission from aviation is incorporated in all the budgets. We said that that does not depend on where the runways are. Whether we have more runways at Heathrow, meaning that there can be less growth elsewhere, is not a decision that the committee can make. With some reasonable assumptions on new and improved technologies and the way airports operate, that allowed for about 60% growth in aviation by 2050.

Baroness Brown of Cambridge: Unfettered growth is likely to be somewhat more than that, so it implies some constraint on the rate of growth in aviation.

- Q52 **Vernon Coaker:** Sorry, did you say 60% growth in aviation traffic by 2050?

Baroness Brown of Cambridge: Yes.

Vernon Coaker: We have to meet our climate change targets while expecting a 60% growth in aviation traffic.

Baroness Brown of Cambridge: That is the assumption. We are not saying that you cannot fly, but it means that, when we take on board the Paris requirements, we therefore have to have negative carbon emissions to combat aviation and shipping emissions.

- Q53 **Vernon Coaker:** The Airports Commission's target is, I understand, higher than the CCC advice. Is that correct?

Baroness Brown of Cambridge: I was on the Airports Commission. Our work involved meeting the carbon budgets and the CCC target. One thing that changes, of course, is the DfT prediction about how fast aviation is likely to grow. That depends on things like economic growth, so there is a varying line that our 60% and other things go against. The Airports Commission looked at scenarios that met the CCC's requirement.

Chair: Thank you for coming to give evidence today. It has been very helpful.