HOUSE OF COMMONS

Business, Energy and Industrial Strategy Committee

Oral evidence: Carbon Capture Usage and Storage (CCUS) HC 1094 and Clean Growth Strategy, HC 871

Wednesday 21 November 2018

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Watch the meeting

Members present: Rachel Reeves, (Chair); Vernon Coaker; Drew Hendry; Stephen Kerr; Sir Patrick McLoughlin; Albert Owen; Mark Pawsey; Anna Turley.

Questions 46 - 209

Witnesses

I: Claire Perry MP, Minister of State for Climate Change and Industry, Department for Business, Energy and Industrial Strategy; Ashley Ibbett, Director for Clean Electricity, Department for Business, Energy and Industrial Strategy; and Tim Lord, Director for Clean Growth, Department for Business, Energy and Industrial Strategy.

Examination of witnesses

Witnesses: Claire Perry MP, Ashley Ibbett and Tim Lord.

Chair: Thank you very much, Minister, and also Tim Lord and Ashley Ibbett, for coming along this afternoon to give evidence on a range of subjects—climate change targets, carbon capture usage and storage, and probably a few other things as well.

As you know, we have been doing our inquiry into carbon capture, usage and storage. It has been very interesting. We are very keen, Minister, to get your thoughts on that and issues around Government policy as well as wider issues of climate change and how we meet our targets in preparation for COP24. We will start with questions from Drew Hendry.

Q46 **Drew Hendry:** Minister, what progress have you made since our session last year towards closing the gap to the 4th and 5th carbon budgets identified by the Committee on Climate Change? How far along are we?

Claire Perry: I will ask Tim Lord, who is the director in this area to answer that point.

Q47 **Drew Hendry:** I am asking you, Minister.

Claire Perry: We continue to make good progress. In the Clean Growth Strategy, we were talking about delivering policies and procedures that would have us closing in on those budgets, which end in 10 and 15 years' time. In the back of the Clean Growth Strategy we have set out a very ambition range of actions that would help us along that way. We are absolutely on track to deliver all those actions. That is my answer.

Q48 **Drew Hendry:** By on track, what do you mean? How are close are we.

Claire Perry: To put it in context—and thank you for the opportunity, Chair, to talk about this—I remain incredibly proud of the fact that we are, I think, the only developed country in the world to have carbon budgets. We have over achieved on the carbon budgets to date. We are on track to over achieve on the 3rd carbon budget. If you look at our performance relative to our 1990 numbers, we are at 97% and 93% of where we need to be, based on the policies and proposals we have costed to date with regard to carbon costs. What we continue to do is to bring forward all the policies and proposals, which will help us to close the gap.

You will be aware, Mr Hendry, that many of these policies and proposals concern things that need to happen over the next five, 10, 15 years. We are bringing forward those proposals and consultations and delivering policies where we can.

Q49 **Drew Hendry:** You are saying you are over 97% of the way there. Is that what you are saying?

Claire Perry: It is a really important number. We hear constantly that we are off track. The number is based on the known amount of CO2 reduction from the policies and proposals that we have done the analysis on. We continue to bring new policies and proposals forward and flesh out the ones that are already in there and continue to believe that we will over achieve. I know that other committees—not this one—do not like be reminded that of course the very intelligent Government of the time who put the Act together did allow for the use of flexibility. It has never my intention or desire to use flexibilities but the law is quite clear—which is why the legal challenges have been seen off recently—that we can use flexibilities that we will have on the current budgets to meet those budgets. I do not want to use the flexibilities but legally we are able to do so.

Q50 **Drew Hendry:** That 97% is not actual and achieved emission reductions is it? That is not what is required, as is required for the 5th carbon budget. It is not even, as far as I can see, a prediction of the progress that will have been reached by that point under the current policy measures. It is just an ambition, isn't it, and not underpinned by policy measures at the moment?

Claire Perry: That is not true.

Tim Lord: That figure is based on our emission projections. If you take the 1990 baseline for carbon budgets and then you take the 4th and 5th carbon budgets and assess the gap between them as 100%, on our current projections, which were published in January of this year, we were 97% of the way to the 4th carbon budget and 95% of the way to the 5th carbon budget. As the Minister said, there is a range of further policies and proposals that we need to bring forward in order to close the remaining gap. One example is business energy use, where we set out a 20% ambition by 2032—

Q51 **Drew Hendry:** I am interested to go back to the percentage that you keep using—over 90%. It varies between 90% and 97% as we have heard. Under current policy measures alone, the CGS ambition would be underachieved by around 40%. Two-thirds of the policies to achieve reductions are classed as being of significant risk of failure. Is it not therefore incorrect to keep putting out those figures of above 90% towards the 5th carbon budget?

Tim Lord: Is that a CCC figure that you have used in that case?

Drew Hendry: Yes.

Tim Lord: That figure is an assessment of the confidence of delivery at the current stage in the policies and proposals that we set out in the Clean Growth Strategy. We would accept absolutely that in a number of cases the policies and proposals do need further development and policy implementation. As the Minister says, a lot of what we have done over the last year has been about laying the groundwork, through the work we have done with business energy—

Q52 **Drew Hendry:** I will ask the Minister again. Thank you.

Minister, is it not incorrect to keep using that figure of 97%?

Claire Perry: No, not at all. We have always used BEIS numbers. We always invite scrutiny of those numbers. The carbon budgets, and our projections against them, as we set out in the Clean Growth Strategy, and will continue to do so, are based on BEIS numbers. As I think we were very clear in putting forward in the budgets and in our projections, the numbers included both the existing policies and a sub-set of the new, early stage policies and proposals that we set out.

Again, I remain—

Q53 **Drew Hendry:** Including those at significant risk of failure?

Claire Perry: If you would allow me to finish, Mr Hendry, thank you.

I do not accept these policies are at risk of failure. There are policies that are at a very early stage and policies that are more developed. I remain incredibly proud of the fact that I think we are one of the few developed countries in the world that have budgets at all, let alone budgets going out to 2032.

If I may say, Mr Hendry, one of the missing parts of this, which we never talk about, is if you look at how we calculate emissions and emission success, it should be done on a unit of GDP. The best way to cut emissions is to have a massive great recession, which we do not want. These numbers, of course, do not build in any economic growth over the period.

I do not accept that these numbers are fallacious. I think they are absolutely right. These are the baselines that we measure ourselves against. If you add it the emissions intensity ratio, we continue to be among the world leaders. It was minus 4.7% last year and it is accelerating. We are the first people to say that we have more to do. I also believe that we are the first developed economy to contemplate a zero carbon future and to set out policies and proposals right across the economy. I would hope that you would share our pride in our United Kingdom's ambition in that space.

Q54 **Drew Hendry:** You are saying that you disagree with the fact that under current policy measures alone, the CGS ambition would be underachieved by 40%. You say that is not correct.

Claire Perry: I understand why the CCC has taken a view on some of the policy proposals and procedures. That is why we have an independent CCC, to scrutinise them. I have also been absolutely clear about how we have always shown our workings on our numbers and we will continue to do so.

Q55 **Drew Hendry:** If you understand why, why would you not accept the premise that this is the case, that the ambition is going to be underachieved by 40%?

Claire Perry: Because it is a forecast for a budget that ends in 14 years' time, where we are seeing incredible dynamic changes in the world of renewables reduction and where all parts of the United Kingdom, included the devolved Administrations are recommitting to the challenge. I do not therefore accept that the numbers are fallacious. I accept that we have a challenge. I always accept the CCC's view of the world but I rely on the Department's numbers.

Q56 **Drew Hendry:** You are saying clearly that your forecast is correct and the CCC's forecast is not.

Claire Perry: Mr Hendry, no, I am not. I am saying that we use BEIS numbers and based on those forecasts, we believe that we are at 97% and 93% of where we need to be relative to the 1990 baseline. The CCC has commented on that and come up with its forecast. I rely on the BEIS forecast. Those are the Government numbers. That is what I have to use.

Drew Hendry: What the CCC is essentially saying is that of the policies and proposals there are a number that require further work. The CCC is not confident at the moment that they can put a specific emission reduction next to those without fully finalised policies. That is something we accept. That is why we go through the process of consulting on proposals, to strengthen our ability to deliver emission reductions, which builds precisely on the proposals that we set out in the strategy. You are confident enough to stand by the figure of 97%.

Tim Lord: Against 1990 levels, that is what our predictions indicate. I will be very happy to provide a note setting out the background to that.

Q57 **Drew Hendry:** So they are projections.

Tim Lord: They have to be projections.

Claire Perry: They have to be projections because they are for 14 years ahead.

Q58 **Drew Hendry:** They are ambitions. They are not achievements.

Tim Lord: They are a quantified assessment of where we think the current quantified policies will get us to, but inevitably they are projections because they are talking about carbon budgets in the future.

Q59 **Drew Hendry:** Can you provide tracking that measures that directly—achievements matched with policy measures that are actually going to reach 97%?

Tim Lord: They are set out in our energy emissions projections, which we published in January this year.

Q60 **Chair:** The CCC is saying that around 40% of the ambition for emissions reduction in the Clean Growth Strategy has no specific policy for delivery. It is not that you have policies that need to be worked up a bit. The CCC is saying that 40% of the ambition—and you are ambitious, Minister and we give you credit for that—has no specific policy for delivery. Since we last met, have you developed specific policies to get to where you need to go? With 40% of the ambition—

Claire Perry: Yes. It is a good question. Thank you, Chair.

If we take the ambition around home energy efficiency, where we set out in the Clean Growth Strategy for the first time an ambition to have as many homes as practicable reach EPC band C by 2035, and therefore we were able to calculate what the carbon savings reached within that ambition would be, we then have to bring forward policies to achieve that, and we have done so. For example, we have reformed ECO in the last 12 months. Sadly, the Opposition chose to vote against those reforms, but we did lay reforms to ECO that would focus on fuel poverty and also drive down energy consumption in the most fuel-poor households. We have also brought forward the cap on the landlords. Essentially, we will raise the cap there.

Q61 **Chair:** We are going to come on to issues about energy in homes but of that 40%, I assume you agree with the CCC that 40% of the ambition has no specific policy, or at least did not when the CCC published. Do you agree with that?

Claire Perry: I am afraid I cannot answer that question because I have not gone through, and audited against, what they said. Tim, do you have—

Tim Lord: Yes. It is based on their assessment of risk for policy delivery, which obviously is for the CCC to do the working. We do not see all of that working. We would have said, absolutely, that there is further work to do in order to flesh out some of the ambitions in the proposals that we have set out in the CGS.

Q62 **Chair:** What the Minister is saying has happened since then—how much of that gap has been closed? The CCC is not just coming in and having a look at your numbers. You set up the CCC. You appoint the Chair of the CCC. If the CCC is saying—and I expect that you value their work—that 40% has no specific policy, presumably you take its comments on board, look at what it is saying and make sure that you are closing the gaps.

Claire Perry: Yes.

Q63 **Chair:** Mr Lord, do you agree with the CCC that 40% of the ambition has no specific policy for delivery?

Tim Lord: I cannot talk to the 40% number specifically. That is a CCC number.

Q64 **Chair:** I know it is a CCC number but what is the point of setting up the CCC if you do not look at what it is saying and try to address its concerns?

Tim Lord: When you break down the 40% and look at the areas of risk that the CCC has identified, in all of those areas we are bringing policies and proposals forward in more detail to address them.

Q65 **Chair:** My question is, is the CCC correct in saying that 40% of your ambition has no specific policy for delivery?

Claire Perry: If I may say, Chair, this was relating to the publication of the report, which was over a year ago. You will have our subsequent response to the CCC's progress report, which set out all the things that we have done since then. Of course the CCC is an independent friend in this and if it wanted to say that 40% of the ambition was without policy 13 months ago, that is up to the CCC. If I look at what we have done in the last year, however—we have brought forward clean growth as an industrial strategy grand challenge; we have secured funding in the Budget for decarbonising industrial clusters; we have put more money into the CG allocation. What I am suggesting is that of course we always have our known policies and we know what we need to do going further, but I do hope the Committee would agree that based on our response to the CCC we are bringing forward very rapidly, and putting flesh around these assumptions so the gap between the ambition and the policy can be closed.

Chair: Perhaps you need to get back to us with some more information. I would like to understand what proportion of the ambition still has no specific policy for its delivery. If it was 40% when the CCC published, what is it now? Perhaps we will write to both Lord Deben and you to get your views, your separate views perhaps, on what proportion of the ambition has no policy at the moment. You are ambitious and we support your ambition, but it is important for us to know and understand—and it is important for your Department to know and understand—what proportion of your ambition has policies for delivery and what proportion you still need to work on. Perhaps you can come back to us with more information.

Q66 **Stephen Kerr:** My question is quite simple. The worst performing sectors in terms of emissions in our economy are outside the direct influence and control of BEIS and yet the Department is accountable for the delivery of these budgets. How is that going to work? What more can you do?

Claire Perry: That is a very important point. This is why again I remain really proud of the fact that we are in a possibly tiny handful of developed-country Governments that are trying to tackle these things right across the economy with policies and proposals.

First, we have to have government sign off on the Clean Growth Strategy. Secondly, we have an interministerial group, which meets to make sure that the Road to Zero strategy, or the DEFRA land use proposals, or indeed the new proposals in the Agriculture Bill around environmental protection and improvement, meet against our ambitions. From a ministerial point of view, we absolutely do work together. From an official point of view, there is a very close working relationship. Anything that is done is put into the calculations.

Tim Lord: That is accurate. As the Minister says, the IMG is driving action and meeting again shortly. At an official level, it is a challenge, working across Whitehall but I do think the Departments—DfT, DEFRA, MHCOG and so on—are galvanised and very actively engaged in the delivery.

Q67 **Stephen Kerr:** Mr Lord, specifically, what was BEIS's input in relation to the Road to Zero?

Tim Lord: We worked closely with the Department for Transport on that. We have a shared unit called the Office for Low Emission Vehicles, which is co-sponsored by BEIS and the Department for Transport, to support the delivery of that strategy.

Q68 **Stephen Kerr:** Inasmuch as the work of the Committee involves the scrutiny of the work of BEIS, you are more than happy to be held to account for the work of other Departments. You do not have under your jurisdiction—you do not have their work under you jurisdiction—but you are going to carry the accountability.

Claire Perry: I attend Cabinet, a deliberate choice by the Prime Minister to ensure that the clean growth ambitions of Government are reflected around the Cabinet table. It has been the Prime Minister's leadership particularly around, for the example, ambitions to host the upcoming conference of the parties, or to ensure that we are one the first generation to leave the environment in a better place. I do brief Cabinet on aspects of environmental matters, on the BEIS area of the policy, and I also challenge Cabinet on what more needs to happen in other business areas.

Q69 **Stephen Kerr:** I am just checking that you are quite happy to answer for the work that goes on in Departments in relation to our work in scrutinising your work.

Claire Perry: Of course. We also have a joint objective in sometimes lobbying those who hold the purse strings to ensure that we all get the cashout that we need to carry forward the policies.

Q70 **Mark Pawsey:** Chair, may I follow Mr Kerr's question with regard to a specific area? I want to talk about transport. We know that emissions from transport at 27% to 28% of the total mean transport is the biggest sector. Clearly transport is an area where we need to so some work. This Committee has looked at the role of electric vehicles in achieving a reduction in emissions. On the one hand we want to encourage the take-up of electric vehicles to reduce emissions but on the other hand, Government has just reduced the plug-in grant by £1,000 and taken it away from plug-in hybrids. Is there not an inconsistency of policy there?

Claire Perry: Again I will speak with joint responsibility. It is a really interesting question.

The constant interplay between what Government has to do and what the market does is fascinating. There is an argument that says that by subsidising not-particularly-low-emission vehicles, we have allowed manufacturers to hold up their margins in a way that would not have been possible if we did not have the subsidy there. Remember that many manufacturers are investing in all-electric manufacturing facilities in other parts of the world while maintaining often a hybrid-based or diesel-based fleet in Europe. I believe there is a challenge for the industry. The industry knows that consumers increasingly want to buy these products. There is, of course, maintenance for grant for the least-polluting vehicles.

However, the decision was taken, and I support it, to move away from buyer subsidy—which frankly has bought, potentially, vehicles for those who can best afford them and has not helped drive forward any change—and to invest more in infrastructure, both in cash terms, where of course the spend has gone up, and in terms of helping local authorities to provide infrastructure.

Q71 **Stephen Kerr:** Minister, the comparing the price of an electric vehicle on a like-for-like basis—looking at Nissan products and comparing their internal combustion engine product, which is available for maybe £10,000 to £15,000, with the equivalent electric vehicle, available for £25,000—there is massive deterrent. Would you not agree that the subsidy is a driver? The Committee visited Norway and saw some of the very substantial incentives that exist there, leading to 30% of their market currently being made up by electric vehicles. Why are we not being equally ambitious?

Claire Perry: Of course, the manufacturers that argue that we should maintain these grants are selling all-electric cars for very low cost in other parts of the world. There is interplay, constantly, between market forces and what other markets want. We have seen a drop in the reduction of electric vehicles—I think it is down by about 9%—so there is an argument for removing subsidy, and we do of course continue to offer incentives and disincentives, such as car tax and parking top-ups. In addition, of course, Norway is not a car-manufacturing nation. We also have a duty of care, if you like, to the people who work in the car industry and a requirement to make sure they are part of the journey. The investment we have made in the Faraday Institute, which is about capturing the value of that next generation of electric vehicles—you are not just assembling them; you are capturing the IP—is really important. There is a constant interplay between Government setting the right incentives or penalties and developing the infrastructure market.

Q72 **Mark Pawsey:** Going back to the earlier dissent, the CCC said that the policies were insufficient to provide the necessary emissions reductions and that was, I think, before the reduction in subsidy. How are we going to get there?

Claire Perry: This is a market in which consumers will demand lower-cost electric vehicles and manufacturers will respond to the demand. This is a constant challenge, we need to monitor it and see, but ultimately we cannot transition to a low carbon economy through government subsidies. Somebody has to pay, taxpayers, consumers or shareholders, and there is a constant interplay between those three pots—often they are the same people in those pots—and constant decisions about how ambitious you can be in a government area and what can you pull.

May I share with the Committee a recent experience from the Environment Council? We were negotiating the CO2 reduction package from cars and vans. There were three countries pushing for the maximum level of ambition—minus 40%. They were the United Kingdom, Sweden and the Netherlands. We could do it because of the Road to Zero. There was more than enough headroom to push for those levels of emissions reductions. Other countries are nowhere near that in terms of their ambitions. We are a very large car-manufacturing nation and we do have to be mindful of people's jobs, and of not shocking the market too quickly. I imagine we will overachieve on the transport reduction front because I think the world is evolving so rapidly in this area and prices are coming down. Manufacturers who claim that they cannot sell without subsidy manage to sell very cheap models in other parts of the world.

Q73 **Chair:** What other parts of the world are you talking about?

Claire Perry: China. Several manufacturers are setting up all-electric manufacturing and assembly plants in China, where electric vehicles, electric scooters and other things, are becoming an absolute part of the transport infrastructure.

Q74 **Chair:** Are you saying they do not have a subsidy system there?

Claire Perry: I do not believe there are buyer subsidies in China for electric vehicles. I do not know that. I am aware that they are able to manufacture at much lower cost because of course the sale price of a car would have to be lower.

Q75 **Chair:** Obviously in Norway, which has the highest proportion of electric vehicles from new car sales, has very large subsidies as well as the infrastructure that you mentioned, Minister. What evidence is there that you can move to a world with more electric vehicles without the subsidies?

Claire Perry: I do think it is a very important percentage challenge, but the number of new vehicles sold in Norway is tiny and there is no manufacturing industry in Norway. In terms of absolute net CO2 reduction, us transitioning down a pathway, even if we transition to hybrids, I imagine we would have a net greater contribution. I am not denying the need for this but when you are the wealthiest nation in western Europe, and you have a tiny car fleet, it is quite easy to be very generous with subsidies.

Tim Lord: To add to that, the other key piece of evidence is what is happening to the cost of electric vehicles, and batteries in particular. As cost comes down, as the Minister says, it is important that we review the subsidy levels in exactly the same way as we have done for renewable technologies; where costs have come down, subsidies have also come down. A lot of analysis indicates that the crossing point for electric vehicles against petrol and diesel vehicles is not too far away. As a result of that, you would expect to see the deployment of electric vehicles rise without subsidy in the future.

Claire Perry: I know this Committee will not make this mistake, but we can no longer be in the business of defining success as how much government subsidy is going into a particular technology. We need to define success based on what is happening. I know the Committee will not make that mistake.

Q76 **Mark Pawsey:** Putting cars to one side and looking at other sectors—for example HGVs—what steps can we take to reduce emissions from commercial vehicles, bearing in mind the weight issues of commercial vehicles?

Claire Perry: It is an important challenge. In a way, the answer for light vehicles, both cars and vans, is easier. For HGVs, in Road to Zero we did announce a new voluntary target of reducing emissions by 15% by 2025. There are interesting trials going on with hydrogen usage for HGVs, and also for trains. There is a lot of potential there. Also there is potential for bio-diesel mixes. There is a lot of innovation in this space.

I do agree that if we think we are moving on the car trajectory in the right way, we do have to tackle the HGV challenge.

Q77 **Chair:** I want to go back to what the Committee on Climate Change has said about electric vehicles. The Committee said, "Government should commit to extend support for EVs until they become cost-competitive with conventional vehicles, and that the level of the grant is sufficient to provide an effective incentive for prospective EV customers". This is the second time in this 20-minute session today that you have suggested that Committee on Climate Change is not right, both on the scale of the ambition and now on electric vehicle subsidies. Are you happy with the work the CCC is doing and do you respond to the Committee? Do you take on board what it says? Can you give us an example of where you have taken on board something the CCC has recommended?

Claire Perry: I do want to correct the record. If anything I have said suggests that the CCC is wrong—the Committee gives us advice and it is up to the Government collectively whether we accept that advice. The point I was simply making was that subsidising or not subsidising is not going to change the market. What is needed to change the market is a rapid reduction in technology costs, which is possible, and also investment in infrastructure.

I had a reception with the CCC only this week. I have their current land use report. The CCC does astonishing work. We are, I think, one of the few countries in the world with that level of commitment and expertise. The Committee is there to advise us.

Q78 **Chair:** But you do think, Minister, that the CCC is wrong when they say that Government should commit to extending support until EVs have become cost competitive.

Claire Perry: I think the CCC basically said something about buyer support.

Q79 **Chair:** I have just told you what the CCC said, Minister.

Claire Perry: The Government collectively did not accept the advice in that case.

Q80 **Chair:** So you disagree with them on that point?

Claire Perry: No, no. I do not set Treasury policy, Ms Reeves, as you know. The Government decided in this case that we could achieve those ambitions without subsidising that particular side of the market. The CCC advises Government. The Committee does not set Government policy.

Q81 **Chair:** Of course, Minister. I think we all understand that on this side of the table. What I am saying is that the CCC gives advice and of course you have much wider things to consider than the CCC has to consider. All I am asking you, Minister, is whether you agree with the CCC. You clearly do not, because you have made a different choice from what was recommended.

Claire Perry: We have continued support. This Committee is talking as if we ended support. We have not ended support. We continue to support, through direct subsidy from taxpayers, the rollout of the cleanest electric vehicles. We are investing over £800 million in low-carbon fuel innovation, and £1.5 billion of other people's money in rolling out the charging infrastructure. It is fallacious, therefore, to suggest that we are not continuing to support the rollout of EVs; we absolutely are. There is a constant challenge about when you do things and who pays. Ultimately our job is to drive down costs, and drive down carbon emissions, and do it in a way that splits the cost equably among the groups I have mentioned.

Q82 **Chair:** Can you give us an example of when the Committee on Climate Change has given you advice, or made a recommendation, that you have accepted?

Claire Perry: Gosh, well, there are so many of them.

Q83 **Chair:** Just one example will do, Minister.

Tim Lord: Continuing support for plug-in car grants is just one example in a number of areas, particularly some areas around innovation and the focus that we have on that.

Q84 **Chair:** But at a reduced level, Mr Lord.

Tim Lord: As the CCC would expect, we continue to dynamically look at that and to look at how the market develops and how—

Q85 **Chair:** I am not sure if the CCC would cite that as an example of when you have taken their advice, Mr Lord.

Tim Lord: One of the key areas that the CCC has encouraged us for a very long time to focus on is innovation in particular. The Clean Growth Strategy sets out our proposals to spend £2.5 billion on innovation through to 2021 on CCUS, which obviously the Committee will be looking at later. The CCC has also encouraged us to develop further policy and we are bring that forward as we speak.

Chair: We will come on to that specific issue.

Claire Perry: The CCC has also asked us very specifically to focus on land use and forestry, which is an area that had been neglected for too long, I might add. That has been a fundamental part of the environmental plan and indeed the proposals in the Agriculture Bill reflect that.

I am a little disturbed, Chair, because there seems to be a narrative developing that somehow we are cavalier with the advice the CCC gives us. We take that advice incredibly seriously. We interact with the CCC constantly. What you have not quoted is the CCC's warm response to many of the things that we are doing. Ultimately, as a Government, we ask for advice and then we have to choose and justify why we do not accept some advice.

Chair: Absolutely, and the role of the Committee is to also ask you to justify things. That is fine, if you do not accept advice from different quarters. As I said, you do have a wider range of objectives. However, you do need to be clear and honest about that.

Q86 **Albert Owen:** While agreeing with you totally that we are very proud, as a country, to have the Climate Change Act and to have the budgets in it, the CCC is an important part of it as well. It is an independent body of experts. It is not just an adviser. It is in statutes and it is there to plan the future. If the narrative is that we are having a go at you because you do not listen to the CCC's advice, it is because it is was set up to advise different Governments in the long term, not to be challenged by Government on each and every occasion. Do you agree with that?

Claire Perry: The CCC is a completely integral part of our success to date and our ambition for the future. The existence of the CCC also means that successive Governments, of whatever political colour, cannot deviate from the pathway.

Albert Owen: Good.

Claire Perry: The CCC will provide advice to us at times that we may—

Q87 **Albert Owen:** I am glad that we are changing the narrative and we are agreeing now.

Claire Perry: I was not aware that we were not agreeing but I am delighted to agree again with you.

Q88 **Albert Owen:** Good, good. No, it was not clear. That is why I mentioned it.

Claire Perry: Would you like me to state it again?

Q89 **Albert Owen:** No, I am comfortable with that.

Another thing you said, though, about subsidies, worries me. Can you name any generation of technology that has been successful without subsidies?

Claire Perry: Can I name a technology? I have no idea about how much originally coal and gas—

Q90 **Albert Owen:** It is just that I think subsidies are important and you seem to be dismissing them.

Claire Perry: No. Well, if I misled you in what I said, let me clarify.

I think we should not define success and ambition through how much subsidy we are spending.

Q91 **Albert Owen:** It is an important part; subsidy is not a dirty word. It is something that starts technologies

Claire Perry: Which is why we have maintained £557-worth of subsidy via the CfD pot in order to continue to bring forward—

Q92 **Albert Owen:** I want to move on. We have talked a little bit about generation, about the CCC, and we have talked about transport. Another big challenge for all countries, and for us as well, is the built environment. You talked about your intergovernmental group. What plans do you have to tighten building standards so that the construction industry can work towards stable and robust targets for energy efficiency in new homes?

Claire Perry: We have agreed that we are going to consult on reviewing building regulations. I believe that when we met last year we asked the Committee to be mindful of Grenfell and the post-Grenfell requirements to make sure we were doing that in a holistic way. We have committed to provide a detailed statement to the House on how we will implement a new regulatory regime focused on building safety. MHCOG is launching a consultation for the energy components on building regs. I will point the Committee's attention to the fact that we have strengthened EPC standards by over 30% since 2010, which has dropped household bills by over £200 a year, and that total emissions from homes are down by one-fifth since 1990. We continue to be absolutely committed to this agenda, but are doing it in a way that is most cost effective and particularly creates routes to market for some more innovative technology. We, I think, feel that much of the conversation around this has been around measures that are both expensive and also not necessarily applicable for a lot of the housing stock.

Q93 **Albert Owen:** Okay. Can I ask a question here about the intergovernmental group? How do you liaise with the devolved Administrations? When we talk about our targets, we are talking about the targets for the whole of the United Kingdom and I know that there are ambitious targets in other areas. How does it work, please? Do you have monitoring groups?

Claire Perry: Our UK-wide emissions are calculated across our four nations. Of course Scotland and Wales have their own climate targets and we are always happy to support them. I talk frequently to the Ministers in those areas and we are always very happy to learn from each other and work together. Tim, do you want to comment on how it works officially?

Tim Lord: There is a complex picture around devolution in some areas. Powers are reserved in some areas; on energy efficiency and other areas, powers are devolved. We work closely with our counterparts in the devolved Administrations and we learn from one another in terms of policies that we are implementing. We have been talking about the CCC and the Government's response. We published our response to the CCC a couple of weeks ago in Green Great Britain Week and the response included a chapter on the devolved Administrations to make sure that we are drawing that our clearly and not simply focusing on the action the Westminster Government is taking.

Q94 **Albert Owen:** The construction industry is clear that there is a level playing field across the United Kingdom. I know there are variations within, but they are usually improvements and there is a baseline for energy efficiency standards. Yes?

Tim Lord: Obviously there are aspects that are different, which reflects the fact that some of the arrangements are devolved but we work closely with our counterparts in the DAs, where that is the case, to make sure that the regimes are coherent.

Q95 **Albert Owen:** Minister, can you tell me how many new homes will be built with inadequate energy efficiency standards that will have to be refitted later, which is increased cost to the taxpayer and the bill payers, who, as you have quite rightly said, have to pick up the bills?

Claire Perry: I cannot answer that question. We have building regulations that I believe deliver new homes that are—what is the minimum standard for this?

Tim Lord: Band C.

Claire Perry: Band C, thank you—regulations that deliver homes at band C for all new homes built.

Q96 **Albert Owen:** That is the Energy Performance Certificate.

Claire Perry: Correct, yes. Band C is what we have set. We will aspire to have all homes, both new and existing, at C by 2035. My understanding is that—

Q97 **Albert Owen:** So between now and 2035, there will still be cost-effective affordable homes built under your strategy that will be below band C.

Claire Perry: No. Forgive me. I think what you are quoting from the Clean Growth Strategy refers to retrofitting of the stock. My understanding is that to build a home below energy efficiency band C now would be in violation of building regulations.

Q98 **Albert Owen:** Okay. A final question on housing. When will you publish plans to incentivise those able to pay for energy efficiency to do so?

I know that on cars, you said there is possibly no need for that type of incentive, but I am sure there is. If a person is not very wealthy, it is not their priority, but it needs to be done to help the climate.

Claire Perry: There are lots of really important conversations about how we persuade people who can afford to do it, to do it.

Q99 **Albert Owen:** What is your plan and when are you going to publish it?

Claire Perry: We will be publishing an action plan shortly. We have taken a lot of evidence. We have done a lot of work. We have been working with mortgage lenders—because of course there are real benefits—

Q100 **Albert Owen:** When will you publish the action plan?

Claire Perry: Shortly.

Q101 **Albert Owen:** Roughly?

Claire Perry: As soon as practically possible.

Q102 **Albert Owen:** You have people working on it now? Very soon? This year?

Tim Lord: Within the next couple of months would be my expectation.

Q103 **Drew Hendry:** Minister, you mentioned the £557 million CfD pot a few moments ago.

Claire Perry: Yes.

Q104 **Drew Hendry:** Why have you chosen to allocate only £60 million for next year's offshore wind auction and how are you planning to allocate proportionally the £557 million budget over the decade?

Claire Perry: We had a reception for the offshore wind industry yesterday. I don't know if you were able to attend. The number one ask from the industry—and I will ask Ashley, who is an expert on this, to follow up—was, "We now believe we can deliver offshore wind at very competitive prices"—we had wind offered at £57.50 in the last auction—"we don't need a whole bunch of subsidy from taxpayers. What we need is certainty so we can go to our investors and set out what the future project stream is going to look like". When we announced, back in the summer, that we essentially were going to be bringing forward those auctions with a target for the energy we wanted to procure, the feedback I got from the offshore wind sector was extremely positive. Yesterday we signalled something else that I think is hugely important, that this is part of a sector deal with offshore wind that not only will see us buying wind at very competitive prices, but will see the developers and the supply chain investing onshore in UK jobs and skills. Ashley, I don't know whether you want to comment further.

Ashley Ibbett: On the £60 million figure, that is obviously one figure in what is a package of figures. We announced the administrative strike prices for offshore wind for the two delivery years that we have opened and we have set those at £56 and £53, which is a reduction on the £57.50 in the previous auction but we are looking to the industry to continue to deliver cost reduction. It is worth bearing in mind that the Contract for Difference budget is a top-up on the wholesale price that the generators get in the market. If you look at our forecast for wholesale prices in the market, you will see that they have gone up since the last auction round, which means the amount of money that needs to be put into the budget has come down. The ambition we set out in July was that we would hold auctions around every two years—the one is in May 2019 and thereafter, every two years—and that could deliver 1 GW to 2 GW of offshore wind every year during the 2020s. The package we set out yesterday is entirely consistent with that ambition.

Q105 **Drew Hendry:** I think private comments and of course Energy and Climate Change Committee, might disagree with your enthusiasm for that, but let me ask you this. Given the commitment to decarbonise at least cost, why are the cheapest forms of energy production—onshore wind and solar—excluded from the bidding at the Contract for Difference auctions?

Claire Perry: I want to go back. It is a shame you were not able to attend the reception yesterday, Mr Hendry, to hear what the industry is saying rather than reading some of the debriefs.

Q106 **Chair:** With respect, Minister, there are other opportunities for the Committee to talk to the industry and I know that members of the Committee do talk regularly and take evidence from the industry as well.

Claire Perry: Thank you for clarifying that.

Drew Hendry: We met with representatives of the industry just last night, for your information.

Albert Owen: You should know that.

Claire Perry: Thank you. We announced the deal only yesterday. I was elected on a manifesto commitment that we did not think large-scale onshore wind was right for England and I believe in keeping to those manifesto commitments. I also think a lot of the debate around onshore and offshore wind does not focus enough on the yield question and the loading question so some of the numbers that are tossed around on cost comparisons are not necessarily particularly accurate.

I have also been amazed. If we looked at the offshore wind—and again this was a very welcome conversation we had yesterday with Baroness Brown and others—and what that industry has achieved in terms of the power output, which has gone up several-fold, and the cost reduction, which has dropped two-thirds in 18 months, we have an industry that is behaving more like a tech industry than a mechanical engineering industry. It plays brilliantly to our strengths, particularly in oil and gas and particularly to operating in very difficult environments, and there is an enormous growth opportunity around the world to export our offshore wind potential. I understand—and I know what the honourable gentleman is going to say—but the point is that we have no plans to carry forward that auction; that is the pot 1 auction. That in no way impedes our ambition with our renewables targets and it in fact it has allowed us to focus on an industry that is delivering incredible advances in yield and cost reduction and to focus on exporting those things.

Q107 **Drew Hendry:** So regardless of the low cost, it is a political ideological decision.

Claire Perry: I would challenge that. There are plenty of political and ideological decisions made about energy uses—

Q108 **Drew Hendry:** But what you say, you said—

Claire Perry: I was elected on a manifesto, which is that we do not believe more large-scale onshore wind is right for England.

Q109 **Drew Hendry:** But obviously that affects the other nations of the UK as well. While it might not be right for England, it certainly is right for other nations, particularly Scotland where renewable energy industry continues apace and would be even better if it had the correct support.

Claire Perry: That is the view of one political party in Scotland. It is not the view of others.

Q110 **Drew Hendry:** I do not think it is just the one.

Claire Perry: No, it is just the one in Scotland, Mr Hendry.

Q111 **Drew Hendry:** No, I don't think it is the view of just the one political party in Scotland. There are many political parties—the Greens, for example, and others—that are on board with that.

Let me ask you about solar. Will bill payers with home solar installations be adequately reimbursed for the power that they export to the grid in any gap between the end of the export tariff and the completion of the smart meter rollout?

Claire Perry: I will ask Ashley to come in on the detail but as I think I said to the House yesterday, we are actively looking at what we replace the feed-in tariff scheme with. We want to ensure that those who are generating to the grid are not basically being asked to provide the generation for free or indeed at negative cost, as has happened in other countries.

I also feel very strongly—and I met and discussed this with Ofgem this morning—that the value in decentralised energy mix that is unlocked by smart meters is worth something. We cannot just wait for Ofgem's tariff changes to bring forward what we want, which is aggregators essentially buying and selling energy. We are working really hard to try to come up with a policy that does not just address these near term questions but positions us better for the long term.

Ashley Ibbett: As you all know, we ran a consultation before the summer on the closure of the current feed-in tariff scheme, which was a commitment made in 2015. Alongside that, we ran a call for evidence on the future of small-scale generation and have received a large number of responses, which we have been working through and thinking about what any successor arrangement to the feed-in tariff scheme might look like. As the Minister says, we hope to say something more about that shortly.

Q112 **Drew Hendry:** One final question. You mentioned the manifesto commitment that you made but that was for no subsidy for onshore wind. If onshore wind and solar were allowed to compete in the CfD, they would be subsidy free, so why are they not considered for competition?

Ashley Ibbett: I think the no-subsidy—

Drew Hendry: I am interested in the Minister's response.

Claire Perry: I believe if you refer to the 2017 manifesto, it said "no large-scale onshore wind" without any reference to subsidy.

Q113 **Drew Hendry:** Without reference to the subsidy, we come back to the fact that it is just an ideological position.

Claire Perry: It is a bit like the SNP's position on shale gas extraction, if I might say. We were elected on a manifesto with a commitment and I believe in keeping commitments.

Q114 **Chair:** Going back to the issue of the £60 million for next year's auction, I think you have previously announced a budget of £557 million for CfD auctions over the next decade. If those auctions happen every two years and you are spending £60 million in this auction, are you planning to spend more in future auctions or is that £557 million not going to be used for the CfD auctions?

Ashley Ibbett: We have not taken any decisions on how we would use the remainder of the £557 million. As prices for offshore wind continue to fall, it is right that we provide less subsidy through the contract for difference scheme with the market revealing the price of the technology. No decisions have been taken on the rest of the allocated money.

Q115 **Chair:** But if you carry on spending at this rate, you are probably likely to spend only half of that £557 million, is that right?

Claire Perry: That is if you project just the offshore wind auctions. There are always, as you know, bids in for using CfDs to support other technologies and we remain interested in that because it is a possible funding stream. Back to the question about some technologies needing subsidy to get them going, absolutely agreed.

Q116 **Chair:** In the last couple of years, apart from offshore wind, how much have you spent on CfD auctions for any other type of energy technology?

Ashley Ibbett: With the last contract for difference auction we included a number of different technologies apart from offshore wind that were successful in that auction: biomass with combined heat and power and certain advanced conversion technologies.

Q117 **Chair:** How much was spent on those, Mr Ibbett?

Ashley Ibbett: I do not have that figure in front of me but we can let you know.

Q118 **Chair:** Is it 85% that was spent on offshore wind?

Claire Perry: As you will know, Chair, the point of the auction was essentially to try to bring forward what experts have told us is required, this technology neutrality, as best as possible. We are not picking winners, we are trying to deliver the most carbon reduction at lowest cost for consumers.

Q119 **Chair:** Apart from your excluding the onshore wind, yes.

Claire Perry: Well, that is a different pot. This pot is technology neutral. Other technologies can bid in. It is a challenge, of course, because I absolutely accept that there are technologies that are further away to market that might bid in for some of this funding. Equally, if the purpose of this subsidy is to maximise the purchase of zero carbon energy, it is hard to defend if we could buy lots of it at a very competitive price from one technology pot versus others.

Q120 **Chair:** If you spent more money on the auction, presumably you could deliver a larger amount of energy from offshore wind, would that be fair to say?

Claire Perry: From the next auction?

Chair: Yes.

Claire Perry: It depends on what gets bid in.

Ashley Ibbett: Obviously, we set the parameters for the auction against the context of the ambition we set out in July for one to two gigawatts a year every year during the 2020s, but it is the market that will reveal the price of the technology. There is a six gigawatt overall cap for the next auction, so the maximum amount of capacity that we will buy is six gigawatts.

Q121 **Chair:** The market will reveal subject to the parameters that are set; you are setting the market with the £60 million, so that is the parameter of the auction. Presumably, if you put more money into the auction, you would be able to deliver more energy. Would that be right?

Ashley Ibbett: The auction system is designed to deliver a competitive liquid auction because that is in the best interests of the consumer. We obviously do not know how many people will bid into that auction. We know some of the pipeline that—

Q122 **Chair:** I know that, Mr Ibbett, but all I am saying is if you put more money into it, presumably you would get more energy out. Is that roughly correct? If you spent £30 million on it, presumably you would get less than you will for £60 million?

Ashley Ibbett: You would presumably get more energy out but the overall package would probably be less value for money for consumers.

Q123 **Chair:** Fine, so that is the trade-off you are making. It is cheap compared to, for example, what you are paying for energy from Hinkley. If you are saying £57 compared to £96, is it, for—

Claire Perry: £157 two and a half years ago. I am not sitting here suggesting I have the skills to balance the energy grid, but we are trying to respond to what industry is asking us to do, which is, "We will bring forward to you highly competitive offshore wind projects if you give us certainty about the future pipeline of those so we can go back and talk to our developers". Of course, the debate about nuclear and what it provides to the grid versus intermittent renewables and different loading is a separate one.

Isn't it amazing that we have got ourselves with this technology to a place that people said was completely impossible? That is a function both of subsidy but also of an incredibly good policy framework and companies who see the UK as one of the most forward-leading places to do renewable energy business in the world. That is an incredible achievement.

Chair: Yes, I would agree that a combination of the market with direction from the Government but also subsidies has got us into this place, which is why the earlier discussion about subsidies is such an important one, Minister.

Q124 **Albert Owen:** Just on that, you are absolutely right, it is amazing and I think Vernon and I are the only two in this room who voted for ROCs to get the offshore because we did see a future. In fact, the then Leader of the Opposition, David Cameron, called them bird blenders and he was dead against offshore wind.

Claire Perry: He had one at his home, didn't he?

Albert Owen: No, he did not do it. He talked about it; he was all talk.

Claire Perry: Everyone makes mistakes, Mr Owen.

Albert Owen: Yes, but it was a massive mistake to vote against this policy. It is your flagship policy now and at one time you were dead against this.

Claire Perry: I am not sure I was here, Mr Owen.

Q125 **Albert Owen:** You were not here but your party was and had we not done the legwork then and had we listened to your party, we would not be in the position we are today. We argued that it be market and subsidies; not one or the other, it would be both, and I think that we were proven right. I do agree with you that the onshore jobs are significant as well.

Can I move on slightly? We have never had a discussion with you about shale gas. How is that going, Minister, and where do you see it in three to five years' time? It is a fair question because it is one of your policies. It is, in my opinion, a transition period for gas. Would you like to take this opportunity to sell—

Claire Perry: I hate talking politics and climate change, but it was actually our coalition Government that brought in the auction structure that has driven down these incredible price reductions. ROCs was a very, very expensive subsidy.

Q126 **Albert Owen:** You would not have had any investment had it been prior to that. I am sorry, it has been going on for about 20 years and some of us have been here for most of that time, with respect.

Claire Perry: With shale, it is a really important question. We in this country are very good at trying to make energy policy in a fact-based way. The challenge with shale, as you will know because you have been around this space for a long time, is we are using with fracking a technology that we have been doing for many years, including onshore. There are oil and gas wells being fracked right now in the UK that have been done so for decades. It is a perfectly proven technology. We are told by our world-beating British Geological Survey that the Bowland shale formation has up to 500 years' worth of supply in it. Of course, if it is recoverable is a key question there. We are also extremely proud of the fact that, learning from our offshore oil and gas extraction, we have some of the toughest and best environmental standards in the world.

I share your view about gas, although it is an interesting question because every single model of the energy system I have seen, including put forward by the deepest greens, requires some level of thermal generation on the grid. It is required for the cold starts. Technology, we know now, cannot deliver through renewables plus battery. Everyone accepts, I think, that there needs to be some, including the CCC, who have gas in every single—

Q127 **Albert Owen:** This is very interesting. I do not disagree with you, but my question was do you have any ambitious targets. You were boasting about all the targets you had and how ambitious you were, and the Chair was agreeing with you on how ambitious you were. On shale gas, where do you see production in three to five years' time? I am sure you have some predictions.

Claire Perry: I never boast about anything, Mr Owen, particularly not with energy—

Albert Owen: You are always boasting, Minister.

Claire Perry: I think that is a rather harsh and unfair and unpleasant thing to say, if I might say.

Albert Owen: No, it is not unpleasant. It is a compliment to you. You are so proud of what you are doing and you do it in that manner.

Claire Perry: Thank you. It did not come across as a compliment. However, with shale, we have a possibly incredibly valuable resource that we can extract safely, that can reduce our energy dependency, and which could create highly productive jobs in parts of the country that have really suffered since the decline of coal mining. It seems to me that what we need to do is soberly test: is this worth doing? Can we extract this safely? Can it be done in our very tight environmental framework? Can it be done in a way that satisfies public concerns, many of which, I might say, are subject to the most absurd mythological campaigning?

That is the process we are in. We have granted two shale extraction licences or fracking licences. We are going through those tests right now.

You are aware, as I am, of the seismic events. The most powerful seismic event is the equivalent of me standing in my kitchen in Devizes and dropping a one-kilogram bag of flour on the floor. That does not feel like a life-threatening event. However, our traffic light system means we have to stop.

The question is do I have ambitious targets. I want to soberly go through this process to see if we can exploit this energy resource, and then we will see where we go with that. We will stick to our environmental targets and we will sensibly assess a potentially very valuable resource.

Q128 **Albert Owen:** Okay. Coal is out of the equation now. New nuclear is part of your policy and you are moving forward. What happens if we have another Moorside or others down the line where you do not reach your ambitious targets of new nuclear? The sites have been identified, yet they are not all coming onside. I am very pleased at the Government's support of Wylfa in my own constituency. Is that the sort of model you will be using in other areas?

Claire Perry: I think that you are my nuclear expert, Ashley. Why don't you answer this one?

Ashley Ibbett: For today.

Claire Perry: Expert for today.

Ashley Ibbett: Certainly, we see nuclear as playing a very important role in our electricity mix. It has done historically and we think that it should continue to do so in the future. In terms of what happens in the electricity system if new nuclear does not come forward or does not come forward on time, then we have a capacity mechanism, which is designed to continue to provide security of supply for electricity consumers. We are confident that we have the tools that we need in the box to continue both to maintain security of supply and decarbonise our electricity system.

Q129 **Albert Owen:** From where? What are the sources of technology that you think will plug the gap of nuclear?

Ashley Ibbett: We have seen obviously dramatic falls in the cost of renewables, but they provide intermittent generation. We see advances in battery or other storage technologies. They can continue to provide reliable generation. I think that we will be coming on later to talk about carbon capture and storage, and gas fitted with carbon capture and storage is clearly something that continues to provide low carbon power.

Claire Perry: If your concern, Mr Owens, is if there is ever a conversation about coming off our commitment to phase out coal, the answer is no. We will phase out coal from the generation mix by 2025. Again, it has been a good combination of pricing policy that has driven it, but that is going.

Q130 **Stephen Kerr:** Minister, were the Government wrong footed by the ECJ ruling on the capacity market?

Claire Perry: The Tempus ruling. I would not say wrong footed. I think that disappointed would perhaps be a better description. We have obviously been in very close contact with the energy suppliers and intend to both try to obviate the impact of this but also take forward what we think is a capacity market structure that works. Ashley, do you want to comment on this?

Q131 **Stephen Kerr:** What risk assessment did you make for this outcome?

Ashley Ibbett: We obviously were prepared. We hoped that the outcome would be the other way from the one that came out. It is important to reflect that the judgment was a question of the procedure followed by the Commission. It does not call into question the instrument of the capacity mechanism itself. We are confident that we have the capacity we need in place for the winter ahead. Clearly, the judgment removes our state aid approval as it stands for the capacity mechanism, but we will be talking to the Commission about that and we continue to believe this is an effective instrument so we will be looking to get it approved again.

Q132 **Stephen Kerr:** Where does it leave the auction for next year? There was going to be an auction early next year, wasn't there? What is going to happen with that?

Ashley Ibbett: We are obviously working through the implications of that at the moment and we will say something about that in due course.

Claire Perry: Of course, it was a challenge on procedural grounds. We are seeking immediate state aid approval for a T-1 auction to cover next winter and alongside that we are obviously working to reinstate the full capacity market regime. We are also working with Ofgem and the industry to ensure that payments that are due under the regime are adequately handled because, of course, all the decisions around consumer energy like the price cap are premised on making sure the whole investment chain, including generation, is protected. It is a number of—

Q133 **Stephen Kerr:** Have any payments been made that will need to be refunded?

Ashley Ibbett: Following the judgment, we suspended all payments.

Q134 **Stephen Kerr:** All payments were suspended?

Claire Perry: They are still due, so there are still liabilities for the companies. It is just that the current process of payment would not be compliant with the judgment, as I understand it.

Q135 **Stephen Kerr:** Just talk us through the implications of that. I am not clear. What is going to happen then?

Ashley Ibbett: We have suspended all payments and we plan to renotify the capacity mechanism to the European Commission to get state aid clearance reinstated.

Claire Perry: We are working with the industry domestically to ensure that those payment flows essentially happen and that nobody suddenly feels they have a winter cash bonus that they could then use to do things with their own business. It is a very robust market and we want to make sure that that market is maintained.

Q136 **Stephen Kerr:** What is the contingency? You have put all of these plans in place, but what if all of that falls flat as well? What if you do not get a co-operative Commission? What will the impact be on wholesale electricity prices, for example?

Ashley Ibbett: It is obviously very difficult to assess exactly what the impact will be on wholesale prices. They move around in response to all sorts of factors. The fact that we have a very healthy margin for the winter ahead means that we are very confident about that. As the Minister says, for next year's auction we plan to seek urgent approval from the Commission to run an auction.

Q137 **Stephen Kerr:** My concern on this is coupled with the fact that the regulator has decided in its wisdom to do away with the safeguard tariff cap and go to the default tariff cap. If we see movements upwards, as seems likely, in wholesale prices of energy generally, not just in gas, the very people that we wanted to help are going to be vulnerable to these price movements. What has your conversation been like with the regulator?

Claire Perry: In the conversations with multiple energy companies and with the regulator, the absolute commitment to keeping prices low has not been challenged as a result of this particular judgment. This is a challenge on procedural grounds, not the actual fundamental nature of the market, which I suppose raises my comfort level that we will be able to go back and successfully run a capacity market that is procedurally compliant. No one has raised with me, and I can check with other Ministers and officials, that this poses a threat to the price for retail customers in the market.

Q138 **Stephen Kerr:** That is so important because in the whole of our efforts around the energy cap at no point was it suggested that the safeguard energy cap was going to be removed. What have your conversations been with Ofgem as a result of their decision?

Claire Perry: Sorry, Mr Kerr, I am not sure I understand the question.

Stephen Kerr: Ofgem has decided to move everyone to the default tariff cap. It was never countenanced when we had the debates in the House and other places that that was going to happen. Was that in your calculation that Ofgem was going to do that?

Claire Perry: We obviously debated this during the pre-legislative scrutiny. I responded to a letter from the chair of the Committee, and I think that this question about how we ensure the most vulnerable customers still enjoy the best possible protections is an important one. Ofgem has made it clear that they believe that this new cap that we will be bringing in does provide those protections, but they, of course, have the right to monitor this on a very regular basis. If there is a sense that prices are moving away from where we want them to go, they can, of course, change that.

Q139 **Stephen Kerr:** It is an issue that came up repeatedly in the debates about the most vulnerable people, and I must confess it came as a surprise to me when Ofgem just decided to scrap the safeguard tariff cap in favour of the default one. You do not seem to be surprised about it, Minister. BEIS was not surprised? Did BEIS make no representations to Ofgem?

Claire Perry: Multiple representations about the need to protect both customers on SVTs but also to ensure that protections, which are statutory obligations for Ofgem for the most vulnerable customers, are considered. Ultimately, we believe we have a good, strong regulator. We believe that it has done a good job in setting this price cap. We were told that this was going to be highly controversial and that we are still not out of the woods. Certainly, in terms of potential legal challenge I am not aware of any, but it could still happen. I think that we have to trust their judgment on this that this does provide protection for the most vulnerable customers.

Q140 **Stephen Kerr:** My last point is that the problem is that trusting their judgment got us to the point where a Conservative Government had to introduce legislation to introduce a tariff cap. Trusting their judgment is not a place I feel particularly comfortable to be as one of your colleagues because they have not functioned to the remit. They have been afraid of the authority they already had. I am really concerned about it.

Claire Perry: It is a strong point you make, Mr Kerr. I am not sure that I entirely agree with it because what has been very clear, including the appointment of the new chair, Martin Cave, is that Ofgem absolutely understands its remit is to protect consumers as well as delivering an orderly market. Of course, the other thing that we have done is pass those regulations around disclosure of information that will help the whole system target the most vulnerable customers better. There are both legislative improvements but also a really strong sense of Ofgem rising to the challenge and being very committed to what is one of their statutory duties.

Q141 **Stephen Kerr:** They are going to rise to the challenge and they are going to be more effective in protecting the people that we all want to see protected from the kinds of price movements that could arise from the changes that may be forced on the Government by the ECJ ruling?

Claire Perry: That is a hypothetical question, which I guess I am not comfortable answering because I have not had any representation that this ruling could have an impact on retail pricing.

Q142 **Stephen Kerr:** On wholesale prices?

Claire Perry: On wholesale or retail pricing. Again, I go back to the cap being set at a level to absolutely ensure what underlies this, which is to ensure that the investment we need, which is effectively reflected in the prices being charged in the capacity market to cover investment costs and margin, is maintained.

Q143 **Chair:** I think that Stephen speaks for the whole Committee when he says that we are concerned about replacing the safeguard tariff cap. That was not the intention of this Committee when we did our pre-legislative scrutiny. As you know, Minister, we have written to Dermot Nolan at Ofgem to encourage him not to do this and I have met with you, Minister, to express my concerns about this. We are disappointed that Ofgem has taken this decision. It was not a necessary decision. They could have introduced the default tariff at the same time as keeping the safeguard tariff. A policy that had the intention of ensuring that all customers, but particularly the most vulnerable, are protected could potentially in the future have the opposite effect. Getting rid of the safeguard tariff could mean that those customers who we most want to protect—you, Minister, and all of us on this Committee—may end up paying more in the future. I think that it is a disappointing decision by Ofgem and we would urge you, Minister, to speak to Ofgem again, both the new chairman and the chief executive, and encourage them to rethink this to ensure that the poorest consumers and most vulnerable consumers are not paying more than they absolutely need to for their energy.

I wanted to ask you about the Paris agreement. The premise of the discussion today, and especially the first set of questions from Drew Hendry, was about limiting increases in global temperatures to two degrees. Of course, the Paris agreement is about one and a half degrees and moving towards net zero. What factors might persuade the Government to shift the UK to a one and a half degrees emissions strategy?

Claire Perry: That is exactly the thinking that drove us to ask the CCC for their advice on what essentially is a net zero target. Last time we received advice on this we were told it was not technically feasible, which was why it was not included in the budget-setting process. I have to pay tribute to the contribution of British scientists to what is an extremely stark and sobering report. We want to understand trajectories, timelines and costs. I know from meeting members of the CCC at multiple times they are excited by that challenge although aware of the magnitude of the task. Again, going back to our point about our trusted experts, we want their advice on that.

Q144 **Chair:** You spoke in answer to the first set of questions about potentially using our flexibilities. You have said that you do not want to but we could use our flexibilities because at the moment we do not have all the policies in place to meet our fourth and fifth carbon budget. If we wanted to be more ambitious and get to one and a half degrees, then obviously we would need to scale up both our ambitions but, more importantly, the policies to meet those ambitions. How confident are you that we would be able to meet our Paris commitments?

Claire Perry: To be clear, the reason I raise flexibilities all the time is that they are there in the Act, put very sensibly in place by the Government. We always seem to forget about those and we get—

Chair: No, our Committee is fully aware of them.

Claire Perry: The intention is not to use flexibilities. I will perhaps ask Tim, who is an expert in this area. I think that it is a huge challenge. We need to be really careful about setting those targets, particularly if it relies on technology that we do not know we need or do not yet have a cost-effective way of deploying. I imagine part of the policy response to that will be a whole series of no regrets choices. I know we are going to talk about the Katowice COP and our ambition to host COP26. If we as the first developed industrial economy to request this advice cannot deal with that challenge, then we cannot look other countries in the eye and ask them to deal with it, too. There is a real point of international influence at stake here, I think.

Q145 **Chair:** Is there a decision to be made in the not too distant future by the Government about whether we move to one and a half degrees? Presumably, that is why you have written to the CCC asking them for their advice.

Claire Perry: Do you want to answer that?

Tim Lord: Sure, yes. The CCC has been asked for their advice by the end of March next year, as you know, which is a pretty tight timeline for them to do that. The Government will then obviously look at that advice. We have accepted their advice previously, apropos your earlier question, on carbon budget levels, for example. We will look very closely at that advice when it is received.

In terms of the levels of ambition, it is worth saying that when you look at the Clean Growth Strategy, we set out some pathways to 2050, which is a 165 megaton target. That leaves some significant and difficult areas to tackle, particularly aviation emissions, shipping emissions, agricultural emissions, and some parts of industry. The key question that the CCC is going to need to look at is how you address those hard to mitigate sectors. The Royal Society has done some work on this recently, so I think that the UK is really in the forefront of developing the thinking around that. That will be one of the key things that the CCC will be thinking about and obviously that we will be thinking about when we receive their advice.

Q146 **Chair:** Is there any sort of timescale at the moment, Minister, for when you might—

Claire Perry: No. I think that would be wrong. We have to absolutely ask for the report. It is not a cosmetic exercise. It is a serious look into the future and we will then need to very carefully sit and think about what we want to do and what we need to do in this Parliament versus what we might do with carbon budgets going forward. There is an element of people saying really ambitious things on climate and then knowing damn well that they will not be alive, certainly not in ministerial post. That is absolutely not what we believe our team is about.

Q147 **Anna Turley:** Carbon capture usage and storage is an issue very close to my heart, obviously from Teesside. It is not just an important issue for my area. The Committee on Climate Change, whose advice you may or may not take, has said that the failure to deploy CCUS will double the costs of meeting the UK's climate change targets. It is clear there is urgency and an imperative here on this policy. Can you reiterate the Government's commitment to CCUS? Can you talk about it as part of the broader industrial strategy, particularly in the light of focusing on those areas that need to see a real growth in productivity, tackling low employment and those heavily industrialised areas that really need a shift to a modern industrial strategy?

Claire Perry: I will try to answer some of the policy questions and bring in Ashley, who is an expert on CCUS.

I think that you are absolutely right, Ms Turley. The acceptance of CCUS, not just as a way of decarbonising power, which is where it had typically been positioned, but as an absolutely fundamental part of decarbonising heavy industry, is something that we entirely accept. It is not clear that other countries do accept that. We are holding a very well-attended, global CCUS conference in Edinburgh next week, and one of the key asks of the IEA and others, one of the key things we need to land, is the importance of doing this, that we will not be able to achieve our targets without it, but also—and with your local expertise—the need to route that into industrial clusters so that it becomes part of a local industrial emissions reduction strategy both for the benefits, for lower carbon businesses, but also as a way of sharing, effectively, the cost. I was really proud that we convened the CCUS taskforce. We got some excellent recommendations about how you might fund essentially the creation of a new carbon infrastructure with transport and storage infrastructure.

I know that there has been disappointment, and Ashley knows it more than others do because he was responsible for this area, around cancellation of competitions. I still maintain that those were point to point decarbonisations, one about coal, one about gas. They did not engage a broader industrial base and they were not working with a private sector that has woken up to the fact that CCUS is fundamental to their long-term survival. The mood of needing to co-operate with the public and private sector I believe is completely different.

Ashley Ibbett: We set out in the Clean Growth Strategy our ambition to have the option to deploy CCUS at scale in the 2030s subject to its cost coming down sufficiently. We have been doing a huge amount of work this year following the publication of that strategy. As the Minister said, we had the CCUS cost challenge taskforce. They produced an excellent report for us. We have been going through and looking at those recommendations and we plan to publish our CCUS deployment pathway shortly, which again was another Clean Growth Strategy commitment.

It is worth reflecting that this is, of course, a global challenge as well as a domestic challenge. I heard Adair Turner on the radio earlier this week. His Energy Transitions Commission has just produced a report and it looks at the role of CCUS and, in particular, the role it can play in decarbonising the hardest to reach sectors of the economy. Getting the model right for CCUS is challenging, not just here but around the world. We are giving a lot of thought to what is the right model to incentivise private sector-led investment in CCUS and we hope to explore that at the summit meeting next week.

Q148 **Anna Turley:** That leads on to my second question. I am hesitant to use the "subsidy" word, but what will you be looking at doing to support British industry so that it can make this shift without losing its international competitiveness?

Claire Perry: That is the key point. First, I just want to be clear. We do understand the value of subsidy, but equally we have also spent since 2010 £365 million in CCUS domestically and internationally. We have continued to spend quite a lot of taxpayer money on this important technology.

We are looking at—and obviously companies are working with us and our team on this—how we might structure our financial support mechanisms. It is no mystery to say that sometimes these projects want to bid into the CfD structure as well. That is considered to be an area of support.

Equally, we are aware of private sector partners, the OGCI in particular who have been looking at your area, who want to know what they need to do and how they need to invest. Ultimately, there are a series of policy questions and some of them are unilateral. We could just have a carbon tax, which would then be an economic drag on some of our businesses who want to compete internationally with other countries that do not have that. That is a question. There are other questions about how you might share the cost of this infrastructure that you need to build or, indeed, how you might go further with oil and gas expertise and think about how you might change the long-term support and decommissioning regime to incentivise different forms of behaviour.

What I do know is areas like Teesside and others have a vision for how this industrial decarbonisation clustering might work. I was really pleased within the budget as part of the industrial strategy challenge fund increase that we were able to land this as an important part of our investment going forward.

I would also say, back to Ashley's point, that when no one is doing this at scale you have to believe there is a problem. We have, I think, 21 at-scale CCS plants globally; 16 are using the CO_2 capture to enhance oil recovery to produce more fossil fuel. There are only five operating essentially with large subsidy, and the closest to the model that I would like to see is Rotterdam, who are also coming to the conference, who are working out ways and working out what policy levers and incentives they need to pull.

I think we have huge ambition. We are trying to be really creative. If there is an ask for energy enterprise zones or decentralised policy levers, it is absolutely something we will look at because we want to do this correctly at lowest cost for taxpayers but at maximum contribution from the private sector.

Q149 **Anna Turley:** Finally, on storage in particular—because usage is important but storage has greater potential to reduce emissions—what actions are you taking to create markets to incentivise the profitability of this and how are you exploiting the UK's unique position given that we have a lot of geological storage space?

Claire Perry: We have the best aquifers in the world, don't we?

Ashley Ibbett: We do. Obviously, we have invested quite a lot in studying storage capability and potential in the UK, both as part of the competition that we have already referred to but also separately we have worked with partners to look at what the potential is. This is an issue that the cost challenge taskforce also focused on. I think that it is right; we do have tremendous storage potential. The North Sea is a brilliant base and we work very co-operatively with colleagues around the North Sea basin to look at what the potential is for us to use the competitive advantage we have in the storage space.

Claire Perry: We have also invested £21.5 million through the Mission Innovation Carbon Capture Challenge, and we are investing through the science and energy portfolio in things like C-Capture, which is Leeds based. We have this amazing University of Aberdeen Carbon Capture Machine, which is a kind of global "X Factor" for innovation. There is incredible innovation in this space, but we still need to crack the challenge of at-scale storage. We have lots of great ideas, lots of companies who want to put it into bricks and building things, and that is a great opportunity for a cluster to attract those, but ultimately I think that we need to crack the transportation and storage challenge if we are going to make a breakthrough.

Q150 **Mark Pawsey:** Minister, you told us about the experience around the world. I think that you mentioned 21 schemes globally. We have not as yet got anything off the ground here in the UK. We took evidence at our previous session about the need to establish these clusters, and you have just referred to them being necessary to crack the challenge. Do you agree with the principle that we need to get some clusters under way to road test how effectively we can manage it here and whether or not our supply chain, which will be in many ways using the skills that we have developed in other sectors, can meet the challenge of getting this under way?

Claire Perry: Yes, clusters and using the industrial cluster decarbonisation challenges is really important. I think that we have some of the best technical brains on this in the world. We have the University of Sheffield, which has the UK CCS centre. It is over 1,000 members strong. Our various taskforces demonstrate to us how rich the knowledge base is. It is a question of finding an economic model that adequately allocates the risks and the costs of doing this and making sure we can do it over and over again and it becomes business as usual.

Q151 **Mark Pawsey:** Given your support for the principle, when do you expect it to happen?

Claire Perry: Do you want to comment about our pathway?

Ashley Ibbett: Yes. The document we will be publishing shortly will set out how we plan to take forward the commitment we made in the Clean Growth Strategy to being able to deploy CCUS at scale in the 2030s subject to its cost coming down. We will be setting out more detail on our thinking on that in the next couple of weeks.

Claire Perry: The intention is obviously starting sooner in order to get to the end, yes.

Q152 **Mark Pawsey:** In realistic terms, when might you expect a project to be under way?

Claire Perry: Shall I put my neck out now and make you all really nervous? I would like to see an at-scale plant in operation by the mid-2020s, up and running and being absolutely part of these industrial clusters. That may be too ambitious, but certainly that is the conversation we have with private sector partners.

Q153 **Mark Pawsey:** That is very positive, so we are talking five or six years away. What criteria will you use in determining where the first clusters should take place?

Claire Perry: It will be a competition I think is the way it will be done, and we will be advised by our Innovate UK experts. Of course, there are always interesting conversations about hydrogen usage and deployment, both for heating in homes and in industry. There are going to be interesting, innovative combinations that come forward.

Q154 **Mark Pawsey:** I have a supplementary. On the use of hydrogen, which you have just referred to, that will require the gas safety management regulations to be changed. How quickly can that be done?

Claire Perry: I do not know about the speed, but I have been made aware multiple times that there are some regulatory barriers. We now have Keele University doing a trial for hydrogen heating homes, so I am aware that there are regulatory barriers. We obviously want to do nothing that compromises safety, but we are aware that we could be more innovative in the use of hydrogen. We will look at all of those things.

Q155 **Mark Pawsey:** Are you happy that the regulation changes can take place to meet the objective that you have just told us about?

Claire Perry: I have no evidence that they could not be. Ashley, do you?

Ashley Ibbett: The ambition on CCUS?

Claire Perry: Or hydrogen.

Ashley Ibbett: Or on hydrogen. Obviously, consumer safety and public safety must always come first. I think that you are right, there are technical characteristics to burning hydrogen that are different from burning natural gas, so there would be changes that would need to be made. I cannot say today anything about the timeline; we would have to go and look at that.

Claire Perry: I am happy to investigate and write to the Committee on this if it is useful.

Q156 **Mark Pawsey:** The issue is that regulation changing is not as easy as we sometimes suggest it might be. I am really flagging that and asking what steps are in process in order to ensure that there are no regulatory obstacles to achieving what we are aiming to do.

Claire Perry: We are obviously involved in funding a number of trials looking at hydrogen boilers, helping support some of this network innovation. I have been told that we will need to change regulations in order to deliver it at scale. That has not been flagged up as an insurmountable problem, but I do think that there is a sort of 'Hindenburgesque' element when we talk about hydrogen deployment, which is completely fallacious. Again, reassuring consumers if we are asking people to make a switch or even to have a blended mix that they do not notice, which is one of the HyNet proposals, it is really important that we do that safely.

Q157 **Chair:** The issue of the regulations came up in our previous session, so we would be interested in your thoughts on that and whether there are any problems with making those regulatory changes. As you both say, obviously safety is paramount.

Minister, when you came and gave evidence to us last November, you said that carbon capture and storage is necessary to meet the UK's climate change target. I assume you stand by what you said previously?

Claire Perry: I do and we have delivered the action points that we set out in the CGS in terms of cost reduction and the international storage. I absolutely believe it, but I also believe we have to crack the economic model of it. For me, it is more of an economic problem than a technical problem.

Q158 **Chair:** Okay. On that subject of the economics of it, what cost reductions are needed to enable us to deploy this at scale? Again, previously you have said that CCUS will only be deployed at scale if the costs reduce sufficiently. What does 'sufficiently' mean, Minister?

Claire Perry: Ashley, I will speak and then perhaps you would jump in. One of the really important insights of the cost reduction taskforce that was led by Charlotte Morgan from Linklaters, who had been the person doing the tideway—

Chair: Yes, and we have spoken to her as the Committee.

Claire Perry: There are technological cost reductions and, indeed, we have innovations like the Allam Cycle running now invented by Rodney Allam, which is a more cost-effective way of delivering power and CCUS. I would be wrong to say there was not technological innovation, but equally it is about how you create or repurpose a storage and distribution infrastructure in a way that adequately allocates the cost and revenues. Her insights into how they did that with the tideway to essentially create a more investable model and using Government investment potentially was really insightful. I think that is where a lot of the innovation needs to come from.

For me, a lot of it does come from this bottom-up approach. Rather than developing the theoretical model that says if only private sector investors would invest this much, if we have clusters that are prepared to do this and understand what their business model would look like around this, that would be the way we discover a lot of the price reduction potential.

Q159 **Chair:** One of the issues that we hear both in the public evidence session we have had on this and in private as well is that many investors and companies who might be interested in this have been stung twice before with the previous cancellation of projects and they are wary about getting involved again with Government schemes in case the Government change the rules and move the goalposts again. What assurances can you give to businesses that this time it will be different?

Claire Perry: In the pathway that we are publishing there are commitments. I talked about my aspirations. There are cross-Government commitments to the desire to deploy this at scale. That is worth something, but equally the pathway as to how you solve these policy challenges to bring it forward, from talking to the companies who were involved in the last two competitions, seeing their involvement in things like OGCI, I think that private sector investors have never been as keen as they are now to do this. Without this, the length of their business models shrinks very dramatically. It seems to me from looking at the OGCI and looking at the partners around the table that there is a real appetite to do this. Ashley, you were there.

Ashley Ibbett: I was there. If you look at what happened with the CCUS cost challenge taskforce, we had tremendous interest and enthusiasm from industry to a level we did not really anticipate, and we are keen to build and capture and maintain that enthusiasm as we move forward. The summit next week, the attendees we have for that from oil and gas majors around the world, shows that there is renewed interest in CCUS. The Minister is co-hosting the conference with the International Energy Agency and part of our challenge here is to make sure CCUS is punching its weight in the debate about what technologies we are going to be able to use to provide the level of decarbonisation we are going to need across the globe. It has often sometimes been seen as the poor relation to other technologies, but I think that there is renewed commitment. We have seen it through the investments a lot of the oil and gas companies are making through things like the Oil and Gas Climate Initiative.

It is worth pointing out that the project in Texas, the Allam Cycle that the Minister referred to, a project called Net Power, is an entirely private sector-funded CCUS project. It has had some public funding. The public funding actually came from some innovation money from the UK.

Q160 **Chair:** I just wonder how you are going to square this circle. We all know that CCUS is crucial to meet the targets, but the Government are also saying that costs have to fall before they will commit to the technology. We are also not clear on what cost reductions are needed before you commit to the technology. Can you be a bit clearer about what cost reductions are necessary, Minister?

Claire Perry: I do not have a target, "If it can deliver this, then we will fund it". It is often expressed in the CfD space and in reference to Hinkley but that is, forgive me, the wrong question because that is implying its utility is to essentially decarbonise power generation. There is an element of that but clearly you can look at other power sectors and say, "Look, why would you do that? Why wouldn't you do just wait for offshore wind to fall to whatever?" For me it is about understanding how it fits into these really complicated industrial cluster arguments. We now have funding available through the Industrial Strategy Challenge Fund to bring forward those projects and considering those on a case-by-case basis.

I do take the point, Chair, about the private sector being stung. One of the challenges for me is that every time Government delays on these things or changes its mine, the cost of capital just goes up. That is why having a really clear pathway, being absolutely clear across Government that there is a commitment to do this, not having a perfect model as to what might work but being willing to fund and invest in these models is the right way to go. No one has cracked this. It is not like we can look around the world and say, "If only we were doing what they are doing in this country".

Q161 **Chair:** That is why it is so exciting because if we crack it first we will be able to export those skills and that knowledge.

Claire Perry: Exactly.

Q162 **Chair:** It just comes back to this point of how you are going to incentivise cost reduction, and what cost reduction is necessary, because if you are saying you will only commit to this technology until we have got the sufficient cost reduction, how does business know what it has to be able to achieve before you will commit to it?

Claire Perry: That is a negotiation, isn't it? Well, not even a negotiation, it is a conversation, which is exactly what we are having with OGCI, for example, who have been doing lots of work in Teeside and other areas looking at how we could bring something together, working with Government, that would be acceptable. We are trying to solve this problem together. The days of setting, "If you can hit this target"—and those targets often then move because of other technologies—

Ashley Ibbett: It is also important to recognise we are investing £100 million of innovation funding into industrial energy and CCUS up to 2021. We are looking across the chain. CCS is obviously a complicated beast but what we are doing is using our innovation funding to look across the chain to see where we can deliver cost reductions through innovative ideas to help drive down the costs.

Q163 **Chair:** The £100 million: when are you going to make a decision between these seven clusters of where you are going to take forward those projects?

Claire Perry: The £100 million is already committed and we have already been spending that. We have committed something like £45 million of that to date on various projects.

Q164 **Chair:** You have the seven clusters at the moment—

Claire Perry: Sorry, but that was for the previous year. That is what we announced last year. This year we announced the Industrial Strategy Challenge Fund, which was topped up to 1.2 billion in the Budget. Some of that will be spent to basically bring forward those criteria every soon. It is Innovate UK that administers that fund.

Ashley Ibbett: We also announced the Industrial Energy Transformation Fund at the Budget and part of that money might go towards carbon capture.

Claire Perry: Indeed, there are opportunities, there are other funds.

Q165 **Chair:** Does the CCUS have to bid against other technologies for that money in the budget?

Ashley Ibbett: Through the Industrial Energy Transformation Fund? We are working through what the parameters are and what criteria we will use for that process at the moment.

Q166 **Chair:** It is not just the CCUS, is it?

Ashley Ibbett: It is looking at industrial energy efficiency—

Tim Lord: And fuel switching as well.

Ashley Ibbett: And fuel switching as well, so it is a range of things.

Tim Lord: We will set out further plans on energy but there will be other ways of—

Q167 **Chair:** Is there any other money announced so far beyond that £100 million, which as you say is already being spent?

Claire Perry: There is the £1.1 billion ISCF fund, wave 3, of which—

Tim Lord: We are looking at potentially supporting some of those clusters through that funding.

Claire Perry: So the cluster funding, if you like, will come out of that investor competition and then the third pot, which we referenced, is if individual companies or industries want to be bringing in CCS as part of their energy efficiency, reducing their energy costs and reducing their carbon, there is a third one. We are not suggesting it is a cornucopia but there are reasonably substantial funds now available and we are now working with the bottom-up approach, industries and local areas, to say, "How could we make this work for you?"

Q168 **Chair:** There was previously money, around £300 million, available through the European Investment Bank for CCUS. That money is now not available. Are we going to replace that money?

Ashley Ibbett: There is funding. As part of the competition—I think it was new-entrant reserved funding, funding was earmarked towards the White Rose project, but obviously that project is not now going ahead. The Commission therefore will not be providing that funding. It was attached to that particular project.

Claire Perry: It is striking that in Europe, no other country is doing this at scale. Norway has been talking about it. They have been having struggles getting their funding.

Q169 **Chair:** There is a challenge getting funding. There was potentially money available through the IB that is not now available so we are not looking to replace that, that £300 million, to support one of the clusters.

Claire Perry: No. Not to my knowledge. I don't know, is the answer, but it is not something that has come up.

The point I was making, even with a EU commitment of funding presumably available to all countries in the EU, no country is managing to do this at scale because we have not worked out the right way to do it. Rotterdam, I believe, is the only place so far that is doing this on a cluster basis, which is why we are so interested to work with them.

Q170 **Vernon Coaker:** Building on what the Chair has been asking, what we are seeking is clarity on how we might achieve some of the laudable aims that the Government has. You recently announced at the Environment Subcommittee a significant increase in the Government's ambition to scale up or to deliver all this at scale. Given that we have no operational commercial scale CCS plant and only one CCU plant, how are you going to achieve your aim of deploying CCUS at scale by 2025, which is a significant improvement in the target? How is that going to happen, rather than wishing it to happen?

Claire Perry: We are going to continue the work we have been doing with local areas—

Q171 **Vernon Coaker:** Sorry, to interrupt, but can you try to spell that out—£100 million here, four clusters there, do you see what I mean, so it is really a practical pathway.

Ashley Ibbett: We do not want to steal our own thunder of the pathway we are working on to be published in the next couple of weeks, but it is designed to address exactly these sorts of questions about what are the steps we need to take to be able to have the option to deploy CCUS at scale in 2030, subject to those costs coming down.

Q172 **Vernon Coaker:** It is 2025, isn't it?

Claire Perry: No, no, 2030 was the clean growth ambition. My personal view is I would like to see, and I believe, that we could actually have plant up and running in the 2020s but that is not—

Q173 **Vernon Coaker:** Is that government policy or not?

Claire Perry: Government policy is to deploy at scale in the 2030s.

Q174 **Vernon Coaker:** Not 2025?

Claire Perry: I believe I was asked for my personal view, which I expressed, which is I would like to see a plant in the mid-2020s.

Q175 **Vernon Coaker:** It is the 2030s for deploying a CCUS plant at scale?

Claire Perry: At scale.

Ashley Ibbett: There is a question on if you want to be able to deploy CCUS at scale in the 2030s then you obviously need to have demonstrated it as a feasible technology before that. That is why you can—

Q176 **Vernon Coaker:** It is quite important, isn't it, Minister? We have the 2030s as government policy but the Minister responsible is saying 2025?

Claire Perry: To be clear, I was asked I think for a personal view.

Q177 **Vernon Coaker:** It was in the Environment Subcommittee, was it not?

Claire Perry: No, I think I asked it in response to—

Q178 **Vernon Coaker:** I think you said it at the Environment Subcommittee, as well, on 5 November.

Claire Perry: Okay. One of the questions is what at scale means. At the moment, where have nothing but demonstration plants, which essentially what the world has, deploying a plant, an installation as part of an industrial cluster, to me would be a really good first step. Is that at scale? It is certainly a bigger scale than we have now. Deploying it at the scale people tend to use, which is it is all over the place and it is starting to make a material difference. As Ashley said, you cannot get there until you do the first one. What we want is to do the first one properly, one that is not a demo, that is not doing a tonne a day.

Q179 **Vernon Coaker:** Is that what at scale is? What does at scale mean?

Claire Perry: We have never defined at scale, have we?

Vernon Coaker: I do not know.

Claire Perry: We haven't so that is okay.

Q180 **Vernon Coaker:** How can you deploy at scale without defining it?

Chair: How do you know whether you are deploying at scale if you have not defined it?

Claire Perry: I am sorry.

Ashley Ibbett: At the moment, Drax recently announced a trial it is running at its plant near Selby. Drax is running a carbon capture pilot on a small amount of their output. That is clearly a pilot facility. If it was applied to the whole power station, that would be at scale. So somewhere between those two, you move between two.

Claire Perry: The whole Drax station.

Q181 **Chair:** If Drax did it over the whole power station, that would be at scale. Is that what at scale means?

Claire Perry: I am trying really hard to understand what the Committee wants because I do want to work with the Committee.

Q182 **Chair:** We are asking you what the ambition—

Claire Perry: To define what at scale is?

Q183 **Chair:** We are asking you what the ambition is because—

Claire Perry: The ambition is to do better—

Q184 **Chair:** If you want to know what we want to understand, Minister, maybe you should wait for us to ask the question.

The Government target is to deploy at scale by 2030 but you are saying your personal ambition is to deploy at scale by 2025, the mid 2020s. That is our understanding. The question is this: there is one policy that is yours and you are the Minister responsible for it, and there is another policy that is the Government's—what does at scale mean. I think what Mr Ibbett has just said is that it is when the whole power station is doing it but we are asking you, Minister, what does at scale mean? We are not trying to be difficult. I am not sure why you think we are. We are just trying to ask you what the Government's ambition is and to be a little bit clearer about what that ambition is.

Claire Perry: I feel, given this is such a very detailed point and that we are doing none right now, that we should come back and write to the Committee about the definition of at scale.

Chair: That would be appreciated, Minister.

Claire Perry: Otherwise we are going to be a fruitless conversation.

Chair: We would appreciate that further clarity from you, Minister.

Q185 **Vernon Coaker:** Thank you for that. Just moving on from that question, what about plans to assess the infrastructure needs of CCUS across the whole economy? What plans do you have to do that?

Claire Perry: A really important question is to understand, with the help of OGA and the oil and gas industry, how a pathway to deployment might fit with the decommissioning pathway and the decommissioning levers that we set on the OGA are about which assets at what cost. This is a conversation I have frequently with the CEOs of the various oil and gas companies involved. There is, I believe, a need to have a more strategic look at that and to understand vis-à-vis the decommissioning timetable—which is obviously very carefully agreed with Treasury because there is taxpayer support for it—how that might fit with a CCUS ambition. That is a piece of work that I think we should undertake.

Q186 **Vernon Coaker:** Did you want to add to that, Mr Ibbett? You were nodding so I thought you wanted to expand on it.

Claire Perry: We are in agreement. We have obviously agreed.

Vernon Coaker: You do not have to.

Ashley Ibbett: We have done quite a lot of work, commissioned work, to look at what the potential is for reuse of existing assets in the North Sea. There is also potential to develop new sites. We did some work on one of those through the CCS competition. There is a question about what areas of the economy you think you might want to deploy CCUS in, given it can play a role in all sorts of different sectors, be it from industry, the hard to decarbonise industries, through to transport potentially or through generating hydrogen or heating homes with hydrogen through to power generation. So, as you can imagine, we run lots of quite complicated models that look to see which areas of the economy it could be applied to.

Claire Perry: It is a very important point, Mr Coaker, that we have pipelines right now going out to these potential sinks for CO2 and we do not want to take things off the system unnecessarily if they could be—

Q187 **Vernon Coaker:** Here is the point then. We have all these pipelines, some are decommissioned, not used any more, but would be very useful for some of the work we want to do on CCUS, whether it is storage use and so on. Is that a national infrastructure, similar to electricity cables and gas pipelines? Should it be paid for either by consumers or taxpayers? Partly, if I remember rightly—and the Chair will correct me if I am wrong—some of the frustration that came up around the regulations at one of our last evidence sessions was people who were in this area were unclear whether you have these existing pipelines and whether they would be able to use them or not for what they were intending to use them for. We all said there must be a way—it seems crazy if you cannot use existing infrastructure to move on to new and emerging industries and technologies because the regulations do not quite work. Is that correct?

Chair: Yes, I think the Minister is going to write back to us on that.

Vernon Coaker: Yes, you are going to write back on that but you see how important that is?

Claire Perry: Sorry, I do not think I committed to write back. The point was that we were having the conversation, because this is right now owned by the companies I believe in larger part, but we right now do not have a perfect map of—we know which have the highest values—

Q188 **Vernon Coaker:** That is what you are coming back to us about?

Claire Perry: No, I have not agreed to write back. What I had suggested, I think, is that we were going to be starting a piece of work, working with OGA, to map that infrastructure. There is nothing to write to you on at the moment, Ms Reeves.

Q189 **Chair:** Is it that you do not know what the issues are or that you do not know—

Claire Perry: I think I have explained that.

Q190 **Chair:** This issue that Mr Ibbett was mentioning—and you as well, Minister—about the safety issues being paramount but we are not clear, and I am not sure if you are, about whether there is a safety issue.

Claire Perry: Is this about hydrogen? We were absolutely going to write on hydrogen regulation. The conversation I think we are having is about pipelines going out to North Sea storage sites, which right now belong to private oil and gas companies and a very important question as to how we ought to treat those and whether they should be kept in play rather than decommissioned because they are important. That was the work I was referring to that needs to be done working with the companies and the Oil and Gas Authority because we have a decommissioning schedule that is set by the Treasury with the OGA but we do not have thought about—

Q191 **Chair:** This is the issue, about why time is of the essence.

Claire Perry: The repurposing of those, very importantly, for potentially using them—conversations about that will happen bilaterally between the Government and the companies. There is, I think, a need to look at that asset base, even before Mr Coaker's point about should we treat that asset as a national infrastructure—that has never been proposed to me but it is very interesting one—because we need to understand what is there right now. We cannot just make decisions to decommission that we will regret when we have CO2 to sequester.

Q192 **Vernon Coaker:** I understand that. I suppose there is existing infrastructure, whoever owns it, that could be used in a different way. From my memory, there was some frustration that it may not be possible and you might end up digging out new pipes when you have existing pipes that are already there.

Ashley Ibbett: There are some pipes that are suitable for repurposing. Not all of them because of the way carbon dioxide is quite corrosive and is a very different chemical substance from natural gas. We have done some work looking at what assets that currently exist might be suitable for repurposing but not all of them are; there are differences between them.

Q193 **Vernon Coaker:** I am going to reread the evidence because my understanding was that one of the problems that one of the witnesses mentioned was that it was difficult sometimes to repurpose those pipes because of the way they had been used before and the regulations that surrounded that use. I will reread it because I do not want to waste everybody’s time if I am wrong.

Claire Perry: Again, if there are regulatory barriers and redoing regulation in a way that is safety compliant is absolutely again that is part of the challenge.

Q194 **Vernon Coaker:** Last question. You are going to be publishing an action plan for deploying CCUS at the CCUS summit next week, is that right? Can you guarantee this deployment of CCUS will be implemented by the end of 2021?

Claire Perry: We will be publishing—

Ashley Ibbett: We will be publishing—

Q195 **Vernon Coaker:** You will be publishing an action plan at the summit?

Ashley Ibbett: We will be publishing an action plan, yes. That is what we are planning to do this time next week, I guess.

Q196 **Vernon Coaker:** At the summit?

Claire Perry: Which you are all welcome to attend.

Q197 **Vernon Coaker:** Are you going to set targets in that for the amount of carbon you are going to capture?

Claire Perry: Again, I am really not trying to be obtuse about this but I think if you take the starting point that no other country in the world has managed to come up with an effective CCUS deployment pathway, that 16 other plants currently operating are basically selling CO2 to get more fossil fuel out of the ground, it could be completely wrong to have simplistic targets. This is a new way of doing business for Government and for one of the deepest pocketed industries in the world, which is oil and gas.

For me, what we are doing is taking our, frankly world-beating policy experts and frameworks and trying to come up with something that delivers a ground breaking way of doing it. The only other place in Europe that is doing this is the Port of Rotterdam. I feel it would be entirely wrong—

Q198 **Vernon Coaker:** You are not going to have targets?

Claire Perry: It would be pointless to have targets.

Q199 **Albert Owen:** Can I just ask, you said about the 16 plants, some of them have chemicals and by-products and animal feed as well, it is not just enrichment of gas and oil?

Claire Perry: I am told that the only way they have been managed to work as economically viable is because they sell their CO2 back into wells to extract more fossil fuel.

Q200 **Albert Owen:** That is part of it but there are innovative ideas about chemicals and—

Claire Perry: There is no question there is innovation.

Q201 **Albert Owen:** Are you dealing with other Departments on chemicals and so on?

Claire Perry: We obviously talk to the chemical industry and, again, this is where it is expressed best with particular—

Q202 **Albert Owen:** Animal feed?

Claire Perry: Yes, indeed the fertiliser production, all the things are very hard to decarbonise because of the production processes. I am genuinely not trying to not answer, but we could sit here and we could set a pathway, we could set a target and then next year you would say, "It is a theoretical target that you cannot deliver". There is no point—

Q203 **Vernon Coaker:** Are you going to announce any sites then?

Claire Perry: No, because we are going to run this competition through Innovate UK where we are going to ask the clusters seriously to come up with their bids. We know that there are many clusters that want to do it. We can sit around and we can make theoretical policy, because none of us are going to be here, when the CO2 is going out, to deal with it, or we can try and solve the problem, which is what we are trying to solve, which no other country has solved.

I want to be the Minister that tries to solve the problem, not gives cheap answers about theoretical targets.

Q204 **Chair:** If I could just end by going back to where we started and that is on the carbon reduction targets and the Clean Growth Strategy. You have said, Minister, that carbon capture usage and storage is essential for meeting those targets. You break down the different policies that get you there. What amount of carbon reduction does CCUS count for in those carbon reduction targets?

Claire Perry: As I understand, we have no reduction in CO2 through CCUS in carbon budgets 4 and 5, is that right?

Tim Lord: We currently do not assume that we will deliver carbon reduction through CCUS on carbon budgets 4 and 5. That does not preclude that it is possible and the Minister has obviously talked about some of the options there.

Q205 **Chair:** It is one of those areas where the CCC says you have an ambition but you do not have the policy in place to do it.

Claire Perry: No, because we have not put a number against that because we always talked about at-scale deployment.

Q206 **Chair:** You said it is essential, Minister, for meeting it?

Tim Lord: In relation to 2050 and through the 2030s and 2040s as we start to get into those really hard to decarbonise sectors of the economy that the Minister has talked about in terms of industry and so on—

Claire Perry: The minus 80% by 2050, which is our ultimate target, which we have set out through the—

Q207 **Chair:** To meet the 4th and 5th carbon budgets, are you saying that CCUS is not necessary?

Claire Perry: No, I am saying to meet the 4th and 5th carbon budgets we have not calculated a value for CO2 reduction from CCS because we had set out the view that it would be deployed at scale in the 2030s and the 5th carbon budget ends in 2032. We will write to the Committee with further thinking on what at scale means.

Q208 **Chair:** You do not need CCUS to meet the 4th and 5th carbon budgets.

Claire Perry: It is not included in those budgets.

Q209 **Chair:** That is not quite the same. Is the answer no?

Tim Lord: The emission reduction as we set out in CCS did not assume emission reduction from CCUS. That is not to say that it is impossible to deliver on that timescale, as the Minister has talked about, if it does then it will contribute to that and we were quite open in the Clean Growth Strategy that there are different pathways to meeting all our future targets. They will depend in part on technology costs and rates of deployment and so on and so forth. It is a conservative assumption. We have not assumed that we are going to deliver significant emission reduction from CCS on that timescale. The Committee on Climate Change advice has certainly been about being ready to deploy to the 20s, 30s and 40s, which is why they are certainly focusing on developing that through the 2020s.

Chair: Okay. Thank you very much, Minister, Ashley Ibbett and Tim Lord for giving evidence to us today.