HOUSE OF LORDS

Economic Affairs Committee

Corrected oral evidence: UK energy supply and investment

Tuesday 26 April 2022

3.20 pm

Watch the meeting

Members present: Lord Bridges of Headley (The Chair); Viscount Chandos; Lord Fox; Lord Griffiths of Fforestfach; Lord King of Lothbury; Lord Monks; Baroness Noakes; Lord Rooker; Lord Skidelsky.

Evidence Session No. 15 Hybrid Proceeding Questions 179 – 192

Witness

I: Mark Carney, UN Special Envoy for Climate Action and Finance.

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Examination of witness

Mark Carney.

Q179 **The Chair:** Good afternoon, and welcome to this hearing of the Economic Affairs Committee. I would like to welcome Mark Carney, who needs very little introduction at all. Thank you very much for joining us, Mr Carney. The subject we are discussing is very wide in scope, so, just for everyone's information, just to set the scene, the question we have set ourselves to answer through this inquiry is as follows: is the Government's energy strategy delivering investment in an energy supply that is resilient, affordable and in line with achieving net zero emissions, and, if not, what should be done?

Let me ask a scene-setting question. Across the world, especially in Europe, Governments are saying that they are very keen to wean their nations off dependency on Russian oil and gas. Here, the British Government are considering options such as new developments in the North Sea. In today's media, we are reading of the Government even considering a new coal mine. There is also the option of fracking, and we have had reports that our Prime Minister wants to give the gas industry a "climate pass" in the transition.

Meanwhile, as you know, many financial institutions are committed to net zero, and many of them are following the IEA net zero emissions scenario, the essential conditions, we have been told, for the global energy sector to reach net zero by 2050. As we all know, that means that there is no need for any more gas or oil developments, no more LNG infrastructure investment and no new coal mines. My first question to you is whether, given where we are and those commitments that have been, UK financial institutions should lend to energy companies seeking, for example, to open up in the North Sea or build LNG plants.

Mark Carney: Thank you, Chair, and may I thank the noble Lords for having me virtually in front of you today and for this very important work that you are doing. I will provide a word or two of context and then specifics. First, from a global and macro perspective, one of the consequences of Russia's unjustified and horrific invasion of Ukraine is that we will have, globally, more stranded assets. Many of those stranded assets may indeed be in Russia. That would be appropriate because of the short-term needs of, quite frankly, a scramble for alternative energy supplies and a look for bridging supplies until the accelerated application of clean energy is in place.

The consequence of that could be some development of other energy supplies that would displace Russian supplies, so, relative to the IEA's scenario, some additional investment will be required. What is crucial with this investment, and then to turn to the UK, is that it is of a magnitude and with an explicit timeline that is consistent with the transition and the objectives that are marked in law, such as the 1.5 degrees objective.

Let me give an example, which is for a new LNG facility that could be developed for Europe or for the UK. Historically, one would look for an LNG train—the entire soup to nuts, if you will, of LNG—to run for 40 years. That would be the economics of it. That is not realistic with the transition to 2045 or 2050, so the economics of it therefore shift. As part of this system we need a very clear, granular, fully articulated energy strategy of the Government as well as private financial institutions, in their net zero plans, which they should have, being explicit about the use of proceeds of their financing, the timeline that those facilities are expected to run and, of course, the greenhouse gas footprint that is there.

The Chair: What I am hearing is that, so long as a financial institution is confident that the company to which it is lending has a credible plan for net zero, it could deviate from the IEA's scenarios so long as, as I say, that condition is met. Is that what you are saying?

Mark Carney: I am saying two things. One is that I think the world will deviate from the IEA scenario because we are going to build additional reserves for energy security reasons. Just to be clear, the carbon budget is binding if we want to achieve our objectives, so by definition that means that we, globally, will strand more assets. Those assets should be in Russia. It is the aggressor. It has caused this situation. For our institutions to be consistent, the plan of the recipient of the financing needs to be consistent with the UK energy strategy and the net zero strategy, yes.

Q180 **Lord Fox:** My question follows up on the stranded assets point. Using your example of an LNG plant, what are the economics of building a new LNG plant if they are not to run for 40 years? In other words, who is paying to run them for 10 years or 15 years or whatever it ends up being? How does that work, and where does the money come from?

Mark Carney: It means that the economics of LNG are not as attractive as they otherwise would be. That is the clear point. I was not part of the development of the Government's latest energy security strategy, but I would think that is part of the reason for the trebling of hydrogen, the use of nuclear for baseload and the increases in offshore wind. The relative economics of certainly two of the three of those, and there are other benefits for nuclear, are that much more compelling given the shortened time horizons and the return thresholds for gas.

Lord Fox: Presumably, that also follows with new platforms in the North Sea as well.

Mark Carney: Yes, absolutely. I will make a further point for illustration. Apologies for speaking on a global basis, but one of the marginal sources of energy at the moment, oil, is US shale. There are issues with US shale, but one of the advantages of US shale is that it runs off very quickly, so for new drilling they run off less than a decade for those fields. That is at least consistent with a transition use of fossil fuel. As I say, there are other issues with fracking and shale, as well as domestic issues in the UK,

but the horizon on which the facility is being developed is the only way to square the circle with climate objectives and the energy security objectives that require some diversification of fossil fuels

Q181 **The Chair:** Can I come back to the other side of the equation? We have been told, and it is quite clear, that there is huge investor appetite to invest in the transition and, in particular, renewables. Given that, why do central banks and regulators need to ramp up and tool up to encourage such investment? Should the market just be playing its part and there is no necessary extra encouragement required?

Mark Carney: There are two things. First, the interests of central banks, and, in particular, the prudential supervisory arms and the macroprudential arm of the Bank of England—those relevant committees—relate to the risks around the transition. Those risks are in changing energy policy, changing technology, changing the competitiveness of the exposures of the financial institutions, and whether our banks and insurers have thought through those potential risks and made informed decisions about their risk appetite and approach. As usual, as a supervisory authority—I know Lord King is there—you are looking for the macro-critical and important risks to manage. That is the first thing.

The second thing, which we may get into, is that broader regulators, particularly the FCA, market regulators, need to ensure that these markets can function effectively, that there is common, comprehensive, effective disclosure and that financial institutions have the information so that they can express those views and put money to work consistent with that appetite. I would agree with your characterisation that there is not just enormous interest in but action on these investments.

Q182 **Viscount Chandos:** Listening to you talk about the duration of an LNG plant, facility or whatever, my conclusion is that you are implicitly advocating a version of a scrappage scheme where mothballing beyond the optimal period of use to bridge the gap should be covered by government funding to enable the economics of a new plant to go forward. That leads me on to where you think private investment should be focused to help to deliver a reliable and affordable transition, both within the supply sector and between supply and demand. What government underwriting or support will be needed to steer that investment in the right direction?

Mark Carney: Let me start with the second leg of the question. There has been focus on the supply side in various government strategies: offshore wind, as you know, less so on onshore wind; acceleration of solar, appropriately, given the improvement in the economics; and appropriate higher ambition on hydrogen, which will be important. I know there is a range of views on this, but having sufficient nuclear baseload capacity is desirable in the context of the broader objectives. There is still a gap in the energy strategy relative to the likely needs of the country in the 2040s and 2050s, so there will need to be supplemental energy

strategies on the supply side if we are going to have safe, secure, reliable and competitive energy in the UK.

The biggest gap is on the demand side, where there has been much less attention to material policies on energy efficiency. It is well known, but I will read it into the record, that only about a quarter of homes in the United Kingdom are at the highest degree of efficiency and that there is substantial room for improvement in energy efficiency of housing. The strategy on heat pumps and/or hydrogen to homes for later-stage heating is not yet fully developed. It needs to be developed. There is a host of things on the demand side that the Government would do well to turn greater attention to. Some of these requirements remain on the supply side.

The way I would frame the horizon for new fossil fuel development is that it will be in the price in the energy market, so if an LNG facility is 20 years, not 40, that changes the economics and there will be expectation of reasonable return. Therefore, that is part of the judgment of whether that is a good marginal source for the UK energy market given the alternatives and given the fact that new LNG facilities, to use that example—it is true of most major energy facilities—take five-plus years from decision to being on stream. I am being a little charitable about that timeline. That really focuses the mind in terms of whether it is worth bringing some of these things on stream if they are going to run for only 15 or 20 years.

Viscount Chandos: Going back to the demand side, will that be best addressed by consumer finance in the area of eco-loans and green mortgages? Again, if so, what can the Government do to stimulate that market?

Mark Carney: It is interesting. There have been some developments on eco-loan and green mortgages, but not on the scale of what is required. I will confess that I am not directly close to and active in these discussions, so I am probably not as current as I should or could be for the UK. If we are going to have a proper heat pump strategy, one worthy of its name that will reach a critical mass of UK homes, there needs to be some risk-sharing and return-sharing between the private financial sector and the home owner. Designing these schemes, which are conceptualised but not built out at scale, is necessary. Regarding the proper role for the Government and the degree of subsidy, I do not want to venture off without having done more work, quite frankly.

The Chair: Just to be clear, before we move on, you mention and you flag the need for much more focus on the demand side. When you read the government strategy, is that what your view is, given where we stand right now and the timeframes it will take to build new wind farms and get new sources online? If so, given what you have just said, are you saying that the financial sector could play a role, but that, really, it is up to the Government to address the demand side in a much more ambitious way?

Mark Carney: First, unfortunately, the short-term demand side has been addressed, as we all know, by a very severe energy price squeeze, one that will only get more difficult. The demand side elements that I am referring to can include heat pumps, upgrading the grid, improvements in insulation, retrofitting, smart technologies for better managing heating systems and all those aspects that can help with the demand side. It is important to have an element of prioritisation for those and to determine what role is appropriate for the Government.

I am sorry. I am talking somewhat in generalities because I have not dug into the details of this, but the extent to which there will be consistent support for this would help the private sector, particularly private banks, to ramp up their green mortgage programmes to a scale that is necessary. One of the things that the UK's climate policies and energy policies have done very well in a number of cases is make clear commitments a few years hence that have helped to drive the types of investment that are necessary for the adjustment. One example is the commitments in the auto sector, but the history in offshore wind and contracts for difference is globally seen as a success story.

Q183 **Lord Fox:** In your March Paul Volcker lecture, you said, "Climate change is now macro critical, and climate policy has become the third pillar of macro policy", and that is alongside monetary and fiscal policy. Why stop at climate? We have seen the pandemic demonstrate its effects, and we are seeing global insecurities demonstrating their effects. Why do you focus particularly on climate, or is there in fact a catalogue of other things that should be macro-focused as well?

Mark Carney: Certainly there is a catalogue of other things, and there always will be, that affect the macroeconomy. There are a series of shocks, both positive and negative, to the macroeconomy. Let me draw out a bit what I meant by "macro critical". I meant material impact on growth, both positively and negatively if unaddressed, positively through investment multipliers. I meant material impact on investment itself and orders of magnitude of investment required being around two percentage points of GDP of additional investment, which is a huge number in terms of a swing. As a third point, such a swing would, on the margin, have an impact, in my judgment, on the equilibrium level of interest rates with direct consequences for the calibration of monetary policy.

Fourthly, which is another very important macro element to this, we have touched on aspects of the impact of the energy transition on prices, inflation and disposable income. To make the point more positively, what I try to draw out there is some of the lessons that Lord King has drawn and lived through monetary policy, which include the value of credible and predictable monetary policy and the ability to smooth adjustment with credible and predictable climate policy. The latter is something that Janet Yellen and I worked on before she re-entered public life.

The point is that, unaddressed or addressed in a haphazard way, it will have a material impact on all the relevant macroeconomic variables. Deliberate and co-ordinated policy has the prospect of smoothing the

inflationary impact. Ultimately, we will have a disinflationary impact as the transition accelerates, but we will also get more of the growth benefits and less of the disruption. The final point is that the monetary policy authority, as a monetary policymaker, has to take into account the inflation impacts of the climate transition. I am not saying that we use monetary policy to affect the climate transition, but we have to take it into account given the scale of the effects.

Lord Fox: I see that, and I understand, but many of those causes or effects of climate that you have described could also be applied to something like the examples I gave such as geopolitical tension. What is it? Is there a difference in scale or the sustained time?

Mark Carney: It is both those points—scale and sustained time. It is the persistence of the impacts as opposed to a shock. Let me give an example. The high-level panel reported to G20 leaders in Rome an analysis of global resources required to address future pandemics, which was in the order of $75 billion of global resources. This is a rounding error for UK investment in the climate transition. It is absolutely compelling that those investments should be made, and, unfortunately, at least on my read of things, the G20 has not yet advanced those investments in a way that would help to protect us globally from future pandemics, which undoubtedly will come.

Just that aspect gives a sense of the scale of the macroeconomic multipliers. It is not to diminish, as we all know and have lived through, the very severe macro consequences of Covid.

Q184 **Lord Griffiths of Fforestfach:** Mark, I have always been concerned about the distinction between monetary and fiscal policy, and now you add another dimension to it. There is a difference between being Governor of the Bank of England and being Chancellor of the Exchequer. When you mention things like growth and investment and the recent discussion in the G20 and so on, it seems that you want to recreate the central bank as, effectively, concerned with virtually the whole of economic policy.

In macroeconomic policy, in terms of macroprudential policy, it seems that you are de facto giving the central bank fiscal policy because you are directing resources to certain areas that you feel are preferential and you are penalising lending to other areas. It seems that there is a fundamental distinction here. My concern as a result of going down that route is that the Governor of the Bank of England faces this choice of how, somehow, instead of being concerned with the sole object of getting inflation under control, he or she now feels responsible to the whole electorate for everything. That is not just unemployment and so on, but growth, climate change, trapped assets and everything else.

The road you are taking us down and indeed have taken us down is really a very dangerous road. I can see that, if I was attacking myself, I would say that you cannot have an absolute black and white distinction, but, in terms of shades of grey, I feel it is a problem.

Mark Carney: I really have to disagree with virtually everything you said. The Bank of England Act gives the Bank of England responsibility not just for monetary policy but for prudential policy and for macroprudential policy and for oversight of the payment system. That is the law of the land. That is the Act that the Governor, in the role as a member of the three relevant statutory committees of the Bank of England, has to discharge.

The Governor of the Bank of England does not have one responsibility, price stability. Certainly he or she has that, as a member of the committee, but they also have to discharge these other responsibilities. In that context, what the Bank of England has done and continues to do and has shown leadership in—you will see that other central banks, within their constructs, have done similar things—is to help to ensure that the financial system is resilient to climate-related financial risk and that it understands those risks.

I would remind you that the Governor of the Bank of England, through the prudential committee, is responsible for the property and casualty insurance industry in the UK and is the supervisor of Lloyd's of London. Now, if we think that climate risk is not relevant to the property and casualty industry in the UK or Lloyd's of London, I do not know what is. You could bring in the authorities from those institutions who view it is as one of their most important risks in the course of repricing.

Until Parliament changes the Bank of England Act—I am not expecting that it will—and restricts the responsibilities of the Bank, the Bank has that responsibility to ensure that the institutions and the system are appropriately resilient. What it is not doing—it resisted when I was there and, rightly, continues to resist—is changing the capital charges of banks or the pricing, through other prudential regulation, of certain activities, as you suggested, to favour certain activities or other activities. It is to ensure that institutions are well run, understand the risk, and are taking, in those institutions' judgment, appropriate steps.

The last point I would make, which you will be familiar with, is that, consistent with the Bank of England Act, the Chancellor of the Exchequer has reminded each of the three committees of the Bank of England of their responsibilities to take into account climate-related issues as appropriate. This is secondary guidance to those committees in writing, so official guidance, consistent with the macroeconomic import of it. The system is set up entirely differently to the way you depicted it.

Lord Griffiths of Fforestfach: This is really a separate debate, and I do not want to carry on along that line. The question that I have been asked to ask is about the extent to which you feel we need greater transparency in disclosures by companies regarding data on their approach to climate.

Mark Carney: We do need greater transparency and consistency in data and disclosure by companies. It goes a bit to the second question the Chair asked at the outset. We have had a period of time over the last decade where disclosures have been driven by the private sector. They

have been voluntary and well-meaning, but it has meant more than a bit of a patchwork, fragmented and sometimes burdensome approach to both the providers and users of capital.

Consensus is formed around best practice of that disclosure based on something called the TCFD, the Task Force on Climate-related Financial Disclosures. The UK led the way, with the Chancellor announcing in the run up to COP26 that the UK would move to mandatory disclosure for large companies. That process is under way. It has been followed by the European Union, and, as of last month, the middle of March, the Securities and Exchange Commission of the United States has put out its consultation for these disclosure standards.

There is a very high degree of similarity between the UK's path, what the Europeans are doing, what the US intends to do, what the Japanese are also doing and the work of a series of other countries. Something that the UK and its leadership of COP26 helped catalyse is the International Sustainability Standards Board, which is a new pillar of the IFRS. As you will know, that is the body that sets financial disclosure standards in 130 countries, including the United Kingdom. It is setting climate disclosure standards based, again, on the TCFD, so we have the prospect of having truly global coverage that would have a very high degree of consistency and go a long way to addressing the issue that you are raising.

I should flag something that is incredibly important, though, which is that the demands from the financial sector for this information have increased quite rapidly, more rapidly than the ability to develop the answers to the question. The biggest issues are around the so-called scope 3 emissions for companies. Scope 1 emissions are your own emissions of your operations. Scope 2 emissions are emissions of the power that you use, and scope 3 emissions are the emissions of both your suppliers and also the users of your products. Gathering that information in a reliable way and disclosing that is probably the biggest challenge.

All the approaches, whether it is the SEC, the UK, the Europeans or the global approaches, are looking for this information. My last point is that it is reinforced by the Transition Plan Taskforce initiative that the Chancellor has launched literally last week.

Q185 **Lord King of Lothbury:** Mark, good afternoon. You talked earlier about the need for bank regulation to take climate issues into account. During the financial crisis and afterwards, we both spent a lot of time worrying about the gravitation of activity from the regulated to the unregulated sector. In response to the Chair earlier, you said that some revision will probably be needed to the view, a few months ago, of the transition to net zero and some new investments, whether it is fracking in the US or natural gas storage elsewhere.

How serious is the risk that the financing of this new investment will be carried out outside the banking sector as they stick to their original remits, leading, perhaps, to more expensive financing for that and less-regulated activities? Do you think that moving from the regulated to the

unregulated sector is an issue in this particular area?

Mark Carney: Yes. It is a very important question. First, as a general point, as you know, this move of financing from the regulated banking sector to the unregulated shadow banking sector and private equity world is a phenomenon that has gathered pace in recent years and is a source of general macroeconomic risk, and has to be a priority for prudential and macroprudential regulators. As a general point, this is an issue.

Within that general point, there is this risk with respect to the climate transition and energy transition, because all the world's systemic banks now have net zero commitments. They are part of the Net-Zero Banking Alliance. All the world's largest insurers and asset managers also have commitments, so it is broader than just the regulated banking sector, but it is not all the financial sector. It is 40% of the global financial sector. That is a big proportion, but there is 60% that is not there, so the first thing to say is there is this risk, without question, from the macroeconomics of what is happening in our financial sector and then within that, climate incentives.

Here are a few things that can reduce this risk. The first and most obvious is that you get more people in the financial sector. You bring in those who have not made these commitments to make those commitments. If you are a major financial institution or considerable family office and you have not made a commitment to net zero and the transparency associated with it, why not? You are just playing carbon arbitrage, effectively. That is the first point. That is the best answer to your question, but that will take time and we have to be realistic about it.

The second point is a mitigant but not a solution. It is a mitigant in the sense that the major financial institutions are in, and they provide much but not all of the leverage for financial transactions. Therefore, because they provide that leverage, those transactions are in scope and the emissions from them are in scope, and the discipline is there.

The third thing that can mitigate but not solve this is that we need a much better structure around energy financing, and the Glasgow Financial Alliance for Net Zero will be releasing a series of proposals on this in the coming months. The structure around energy financing needs to be more granular so that we know what it is for, the time horizons and why it is consistent. That is the first point.

Secondly, if regulated mainstream institutions can manage the phase-out of a stranded asset—in other words, be explicit about the time horizon over which they are either invested in or lending to the asset and why that is consistent—again, with the time path for the transition, they should retain the incentive and ability to continue to finance appropriately in this sector. We want to avoid a very simple binary world where all the incentives are just to push fossil fuel and transition financing out of the regulated sector into the shadows. You know the rest of the story.

Lord King of Lothbury: Would this not add up to a further case for a

carbon tax that could reach parts of the financial sector that regulation cannot reach?

Mark Carney: The Heineken solution, yes. The case is very strong for a price on carbon being widely applied. I will just acknowledge that there could be some appropriate rebate for less well-off households to ensure that it is resilient, but, yes, it does.

Q186 **Lord Monks:** In the earlier discussion on the Chair's first question about the measure, perhaps, of hostility in the financial world to investing in fossil fuel producers in the future, you suggested that an exception might be made if they had a credible plan for transitioning to net zero. Are financial companies equipped to make finely tuned judgments on plans of that kind on fossil fuel investment, whether it is necessary and so on? Will they almost certainly tend to look for an easier way of assessing these things, which is likely to be, "Don't touch fossil fuel investment with a barge pole"? Is that not likely to be their approach, rather than expressing a view on the particular merits or otherwise of investment plans?

Mark Carney: You put it in stark terms. I will make some suggestions as to what the framework is, but without a proper framework that will be the conclusion they come to: not to touch fossil fuel financing with a barge pole. If it is so extreme that the view is that there is no fossil fuel financing at all ever, even though we need to have a transition, there are no guidelines or constraints, and those institutions of finance will not operate consistently, even in the broadest sense, with the transition.

We need common standards for net zero transition plans of financial institutions. As I just referenced, it is the job of the Transition Plan Taskforce that the Chancellor launched last week to come up with that. We need that on a global basis, so GFANZ, the Glasgow Financial Alliance for Net Zero, will be releasing in June a very comprehensive approach to just that for public consultation.

Secondly, we need what are called sectoral pathways. For oil and gas and other heavy-emitting industries, what is the emissions pathway that is consistent with 1.5 degrees? There are various attempts at that that are partial at this stage. Think the Science-based Targets Initiative, Mission Possible Partnership and other approaches on that. They need to be brought together so that there is a reference point as to what is on transition and on target, if you will, and what is not. Again, we will be releasing an approach on that in the summer, and an approach on what I just referred to with Lord King on managed phase-out, so that all those elements come together and provide the guidelines and rigour to appropriate financing as a bridge for fossil fuels.

Now, the other component, which we have touched on a few times, is outside of the financial sector, which, of course, is an energy strategy that is sufficiently detailed and articulated and is consistent with 1.5 degrees.

The Chair: When you talk about appropriate financing for fossil fuels, is that not what the Prime Minister might be getting at when he says that he wants to give gas a climate pass? Is that basically what you are saying: that if we meet these criteria, we can give gas and LNG a climate pass.

Mark Carney: I did not see the Prime Minister's comment. I would not have used the word "pass", because "pass" implies exemption as opposed to being consistent with that strategy. It is transition-aligned. This is about being aligned with the transition, so if a gas development is consistent with that and can be shown to be, yes. What we cannot have is that any gas is okay and any oil is okay. You understand the point.

Q187 **Viscount Chandos:** Can I go back to our earlier debate about the economic life of a fossil fuel—production, storage or distribution? You said that that life would be in the price. A number of our witnesses have emphasised that energy security has to be caveated by the price. Therefore, if there are bridging measures to provide energy in the transition but only at a price that compensates for a shorter economic life than would otherwise be the case, does that really give us the right degree of energy security? That goes back to my question: does there have to be government underwriting or support to encourage new investment but with a limited life?

Mark Carney: Yes. I understand your point. We are, in effect, paying an insurance premium for energy security, and someone has to foot the bill for that. It can be in the price in the market, but if the blended price in the market is too high for consumers' and for businesses' competitiveness, there is a role for government. These are the judgments that need to be made in a broader context of the energy market. Yes, we are absolutely paying a price with respect to the necessary diversification of our fossil fuel resources as a bridge, because of the Russian invasion and the dynamics in the global energy markets, and we will pay a price in the medium term for that if we are to do so in a way that is consistent with the transition.

It underscores the relative economics, the superior economics, of virtually every clean energy source, because what we are putting into the price is not as direct as Lord King's carbon price, but we are, in effect, starting to internalise the externality of carbon. That is why LNG is more expensive than it would be if you could just run it for the economic life of the actual facilities.

Q188 **Baroness Noakes:** I would like to shift to climate change stress testing. As we know, central banks around the world are starting to look at climate change stress testing in various ways, with some early results starting to emerge. What do you think central banks should do with these stress tests?

Mark Carney: It is a useful tool that does two things. It is a supplement to the supervision of those financial institutions. I will use the example with which I am most familiar—the Bank of England. When we launched

the climate stress test, it was along the model of what we had done with respect to fintech innovations, which was called an exploratory scenario or exercise. In effect, what Sarah Breeden, ultimately the Governor and their colleagues are doing is to use a disciplined, rigorous approach so that the banks can assess their own risks in this area and the supervisor can make judgments about how well the banks perform risk management.

As recently as in the last few weeks, I happened to see a comment from Sarah Breeden on this. The Bank of England is not and has no intention of setting or adjusting capital requirements as a consequence of the stress test. The other point I would make is that what the stress tests do and what the central banks can do with the information is take an assessment of system-wide risk to climate change, and particularly to transition risk, which can inform broader policy but, again, does not lead to specific capital or liquidity interventions in the sector.

Baroness Noakes: Could I just explore that, because not all central bankers seem to be taking that approach? Certainly, the US has said that it would not put a capital addition, but the ECB makes different noises. Do you think that, in the medium term, the use of these stress tests will continue to be exploratory to look at the nature of risk management within the institutions, or will it lead, inevitably, to capital requirements, and would that be justified?

Mark Carney: Two things will happen in the medium term. One is that, unfortunately, the physical aspects of climate risk will continue to mount, so the actual physical risks and the prudential consequences of that, the actual losses that come from those physical risks, will increase. By construction, it is like any other risk. It is present, on the horizon and there. With respect to transition risk, it really is a function of exactly the nature of your inquiry. It is how predictable, how well thought through and how effective climate policy is. The big risk is that, the more that is the case, the more it is a smooth transition, and the timing of loans and the turnover of capital is such that it is not impacting the capital of the institutions.

One of the risks here is that we have another rupture or a sharp change in our energy policy, climate policy, in the early 2030s because we just have not done enough. At that point, a considerable number of assets are stranded. It is then a moot point whether we debate whether that is a stress test or just the reality of the prospect of losses because of the change, but then it starts to come into capital and losses. It is not by the stress test imputing them into it. It is that it is mainstreamed, if you will.

This is helping to inform institutions to think about whether the UK, collectively, is serious about this. I think we are, but this is helping institutions to think, "If the UK is serious and policy will ultimately be strong enough to be consistent with the transition, where will I be exposed, and how can I help the companies to which I have an exposure to be ready so that that is not actually a credit loss at that point?"

Q189 **Lord Skidelsky:** My question relates to what Baroness Noakes has been asking, but I will come around to it, perhaps, at the end. We have been talking about energy security, mainly in terms of transition, and that has been true of much of this inquiry. Recently, energy security has emerged not just as a problem of the transition but as a major geopolitical problem in view of recent events. How do you think the dynamic between carbon emission reduction and energy security on geopolitical grounds might play out, especially in terms of a central bank mandate in which a green pillar is present? How should a central bank deal with that problem? Is that not a problem for government?

Mark Carney: First, the short answer on issues of security is yes, it is a problem for government, or it is a fundamental role of government to help to protect citizens, and it extends, I would suggest, to energy security, so it is properly there. With respect to the overlap between energy security and sustainability, I would make a couple of very quick comments. One is that the overlap is pretty complete once clean energy systems are built. That is an important caveat, because there are supply chain issues. I will come back to those, but once they are built it is the UK's wind off Tyneside and the sun when it shines. It is our hydrogen and our water for pump storage, et cetera. There is no broad supply chain that is supplying the ongoing flow of energy, so it is ultimately a domestic source.

There are issues with supply chain concentrations. A lot of the technology and production comes out of China, so there is a heavy exposure to China, certainly in new solar, and there are heavy concentrations in rare earths and minerals, as you are aware. In fact, there is very clearly insufficient global investment in those materials for the scale of the transition that is required, not just in the UK but more broadly, so there are security of supply issues there that need to be addressed and thought through.

As a general point and impression—it is not totally uninformed—the Chinese in particular have given a lot of thought and taken a lot of actions to secure supply, some of it domestically and some of it more broadly, whereas we in the G7 have done relatively little about that. I will quote Secretary Yellen from a few weeks ago raising the issues of "friend-shoring"—in other words, supply chains among friends and reliable supply chains. Having reliable supply chains for these critical minerals should be one of the top priorities for energy security, or else we will not be able to build out the sustainable platform that we need to marry security and sustainability.

Q190 **The Chair:** Can I bring you back, very briefly, to the point of capital requirements? Are you saying that tampering with capital requirements to reflect climate is a bad idea, period, both in terms of there being a possible brown penalising factor or a green supportive factor? Both of those should be ruled out.

Mark Carney: That is a very strong way of putting it. I would not put it that way. I did not put it quite that way. I am of the view that the more

credible policy is and the closer the object is in the mirror, if you will—the point at which internal combustion engine vehicles are no longer sold in the UK or Europe, the point at which certain emission standards come into play, and that is a credible policy, or the point at which a carbon price is credibly floored and coming in—the more that is a mainstream credit risk. We can have a debate about whether that is a climate risk that has come into capital or is just a prudential risk, but it is there.

I do not think we are at this point, but one of the key issues is that, even in the most advanced jurisdictions—I would count the UK among the most advanced jurisdictions in both ambition and underlying policy, even if it is not perfect and has more to do—that there is virtually a gap between policy and emission reduction. At some point, the credibility of closing that gap could get high enough because of track record and plans, and then it becomes a judgment about whether additional capital would be there, but that is on the margin.

My view in general is that we should not be putting in carbon prices through the prudential capital system. Themes in some of the questions have been what the job of government is, who sets the carbon price and who sets security policy. We are making huge efforts to get a financial system, as you know, that is ready and financing and focused on the transition to net zero, so that the capital and finance are there for the transition and people can see which institutions are doing well and which are doing less well in that regard. That is different to using the financial system as climate policy.

Q191 **Lord Rooker:** Can I ask briefly about taxonomies? We have had evidence that they stifle innovation. On the assumption that you might not agree with that, what opportunities could we use the green taxonomies for to encourage investment in the transition? What would be the challenges in doing that?

Mark Carney: It is a very important question. I have some sympathy with the view that they may stifle innovation. I have a view that taxonomies have a specific but limited purpose in identifying that which is green. They have proven hard to adapt to be a true transition instrument to capture shades of green or shades of brown into green, which is really what we need for the system to get capital to the companies and the situations where there are emissions and we get those emissions down.

A more promising approach that is complementary to taxonomies but will be decisive as to whether we actually transition in time, at speed and effectively is an approach that is built up around net zero transition plans of companies and financial institutions and that has pathways for transition by sectors that are provided based on science and opportunities. That is what is being built out through the private sector, the Glasgow Financial Alliance for Net Zero, and the main building blocks of that are coming out over the next six months for consultation. That is what the UK Government are leading the way on globally with their Transition Plan Taskforce, which has just been launched, as I said, in the past week.

Taxonomy gets you to the end state, which is what is ultimately green, and we need this broader framework to move us, track and encourage progress in the transition, and to get capital to where the emissions are so that companies with plans and abilities can get those emissions down.

Lord Rooker: Does it make sense, therefore, for the UK to have a different system to the European Union?

Mark Carney: Do you mean in terms of taxonomy?

Lord Rooker: In terms of taxonomy, yes.

Mark Carney: I will make an observation. Even given my caveats about the difference between taxonomy and transition, it struck me that there were elements of what is green. For example, nuclear was not in green. I did not understand that argument, but those who are better informed certainly could make the judgment, given the UK's independence, to adjust the taxonomy. I would, though, underscore that the taxonomies have a useful but limited purpose and that, for us to get capital and to really get emissions down, we need an approach based on net zero transition plans.

Q192 **The Chair:** Just coming back to how we encourage citizens to go green and cut their reliance on fossil fuels, can you point to any nation that you think has a coherent and credible strategy that is having an impact and really enabling people to go green? Is there somewhere we should be looking at and emulating?

Mark Carney: That is a great question. The short answer is no, in terms of coherent strategies. It may be my failing in not knowing the details of that, and it cannot be quite that bad. None immediately comes to mind. Since I am sitting in Canada, I will give a two-second commercial for carbon price, which came up earlier. The carbon price here is now $50 a tonne. It is legislated to rise to $170 a tonne. It started out at $20 a tonne, so the credibility of that price is there. Crucially, the proceeds are rebated to less well-off Canadians. It means that almost 70% of Canadians come out net ahead, given what they spend on the one hand and what they get back.

Now, of course, as the committee will appreciate, the relative price of carbon has changed, and that is changing consumption patterns. That is one element, but I would not pretend that all elements of Canadian climate policy amount to a coherent consumer strategy.

The Chair: Thank you very much indeed, Mark Carney, for joining us from Canada. It is very good of you to do so, and we greatly appreciated your evidence.

Mark Carney: Thank you for your work.