



Energy and Climate Change Committee

Oral evidence: [EU Referendum: Energy and Climate Change](#),
HC 98

Wednesday 25 May 2016

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Members present: **Angus Brendan MacNeil (Chair)**, **Rushanara Ali**, **James Heappey**,
Matthew Pennycook

Questions 1 - 48

Witnesses: **Antony Froggatt**, Senior Research Fellow, Energy, Environment and Resources, Chatham House, **Michael Grubb**, Professor of International Energy and Climate Change Policy, University College London, and **Tony Lodge**, Political and Energy Analyst, Centre for Policy Studies, gave evidence.

Q1 Chair: Thank you, panel, for coming to give evidence this morning. We are trying to put our own biases aside as best we can to provide some information in the energy space on what a Brexit or a Remain might mean. Questions will probably be of a devil's advocate nature. I hope that we can inform the wider debate on energy in the UK. For the record, could I ask panel members to introduce themselves, please, and state their organisations?

Tony Lodge: I am Tony Lodge, Energy Research Fellow at the Centre for Policy Studies.

Antony Froggatt: I am Antony Froggatt, a Senior Research Fellow at Chatham House.

Michael Grubb: I am Michael Grubb, Professor of International Energy and Climate Change Policy at UCL.

Q2 Chair: For the record, are there any declared positions on Europe?

Tony Lodge: I believe the United Kingdom should leave the European Union.

Antony Froggatt: I don't think it is in the best interests of the UK to leave.

Michael Grubb: Similarly, I do not think it is in our, or the international, interest to leave.

Q3 Chair: Thank you. Panel, some commentators have suggested that the UK has been a leader on climate issues in the EU, and pushed for very strict emission targets. How does that square with the suggestion that EU directives to reduce emissions have caused significant damage to the UK energy sector? Tony, I will invite you to start with that one.

Tony Lodge: Yes. There are two things I would like to focus on. The United Kingdom has on its own taken a very strong line on carbon emissions and on decarbonisation: we first had the Climate Change Act, a piece of British domestic legislation to have very ambitious carbon reduction targets by 2050; we have the Energy Act containing inside it things like the emissions performance standard, which bans any new coal-fired power stations and does not apply on the continent; we also have the carbon price floor, which is Treasury legislation—again, domestic legislation—that makes carbon pricing three times more expensive here than in the rest of the European Union, with its failing ETS; and we have a number of other domestic policies that have shown the United Kingdom leading on decarbonisation, without the need for the European Union directives effectively to push it along. I think that is something the United Kingdom can be proud about. I do not want to go into too much depth now, but I can come on later to how EU directives have been very damaging to the United Kingdom, particularly with regard to its electricity generating sector. I can go into some depth now, or later, Chair.

Q4 Chair: Gentlemen, we have just heard that the EU makes no difference to the UK's stance on climate change, so if we were out, it would not matter very much at all. How would you respond to that?

Antony Froggatt: I would say that addressing climate change needs to be done on different levels. It needs to be done on the international level—so the Paris agreement, and countries coming together and making pledges to meet internationally agreed targets—and the UK has played a strong role in that, historically and in the run-up to Paris. It is also important at the regional level—so the EU level—and, again, the UK has played an important role in that; the previous Government said that the EU should reduce emissions by 50%, and what was finally agreed was 40%, so the UK is pushing on the European level. Also, as Tony pointed out, there is lots of different national legislation that enhances the UK's ability to meet its contributions.

I will make two additional points. First, the UK being part of the EU has an additional advantage in terms of the EU and negotiations. The EU is a key partner and player in international negotiations, and the UK has a seat at that table, because it is part of the EU. If it were no longer part of the EU, it would not be able to play such a significant role. Secondly, while the UK has domestic legislation in this area, being part of the European Union ensures that that stays in place. So if the UK were to leave the EU, it would only require national

legislation to overturn that, but if it remains, it must consider its European commitments as well.

Q5 Chair: Any views, Michael?

Michael Grubb: Briefly, part of your comment may have referred to other emissions, under the industrial emissions directive on sulphur and NO_x, where the EU has been a substantial driver. In terms of climate change and CO₂ emissions, yes, I think the UK is leading, or certainly among the leaders, in terms of the level of declared ambition and the clarity of the legal framework—it is good, at least, to be clear that the EU does not get in the way of that—but there are many dimensions. There are also issues around innovation and industrial development, where the EU has been helpful in terms of driving a number of areas, including fully Europeanising an effort around renewables and associated cost reductions that flowed; and interconnectors, the ability to trade more energy across Europe in a single energy market, which on the whole I think is an environmental good.

Q6 Chair: Tony, at the beginning, you gave this as an example of the UK leading. Therefore, the EU is not putting upon the UK, as is often the case. Climate change is of course global, but do you have any fears that the EU might backslide? The UK might have been leading the EU in this; therefore, without the UK, the EU might not be as determined to tackle climate change and emissions.

Tony Lodge: I think there is evidence that the European Union has been backsliding for some time. Again, that is a matter for the vested interests inside the EU, whether it be Germany building new coal-fired power stations to burn lignite, whether it be Poland lobbying very hard in Brussels for its coal sector and depressing the ETS. I think if there is a model for decarbonisation, the recent cancellation of carbon capture and storage is regrettable, but there is a lesson in the UK in how to show leadership, and we have done that. The reason the Government have had to introduce the carbon price floor, they made quite clear, is that the European emissions trading scheme was failing at just €6 a tonne. We are now £24 a tonne for CO₂ emitted in this country, which, in theory, makes it more economic to divest in fossil fuels.

Q7 Chair: Thank you. With respect to the large combustion plant directive, what might be the consequence for existing coal plants if the UK were to leave the EU?

Tony Lodge: The large combustion plant directive has already seen off 12,000 MW of coal and oil-fired power stations: plants like Cockerzie, Didcot and Kingsnorth have already all gone. The LCPD is behind us and 12,000 MW of coal and oil plant have gone and been bulldozed—and the oil plant was important because it was peaking plant. The next worrying one is the industrial emissions directive, which will see off the rest of the coal plant by 2020-21. I argue that those two directives particularly have actually destabilised UK energy policy, and that is why we are seeing all the problems at the moment with the capacity market.

Q8 Chair: But could the UK meet its own 2050 climate targets with coal still on the system?

Tony Lodge: Well, it can indeed, so long as it is having a steady plant-for-plant replacement with gas-fired power stations, such as the CCGTs, the combined cycle gas turbine plants. The problem we have at the moment is that the Secretary of State has said that she wants all coal gone by 2025. I think you will find that all the coal has gone by 2019-20. It won't invest to conform with the IED; it won't conform because it is not economic because of the carbon price war.

There isn't enough new gas being built. Plants such as Cockerzie would like to have a gas station; it used to be a coal station. That is not going to happen by 2020. Actually, the directive has caused the energy crunch we are now facing. The Secretary of State is panicking and is giving subsidies to coal plant to try to keep it on, when she has actually asked for it to close, and that is depressing the capacity market to build new gas. I think that is the real problem.

Q9 Chair: Wouldn't stations such as Cockerzie benefit from greater EU regulation if they were to get rid of the UK grid connection charges, which are the most disadvantageous in Europe for plants such as Cockerzie that are away from large centres of power? That is not an EU regulation; in fact, the EU is trying to make that better, I understand.

Tony Lodge: Absolutely right, and hopefully the bootstrap will help on that. Sadly, Longannet has gone, but it will in principle help. The point I am trying to make is that we have lost plants such as Cockerzie early. Cockerzie could have run on until 2016-17, been replaced by a gas plant, with the economics right to build a gas plant there, with a good capacity market auction price. That is not there because we are now having to patch up coal to keep it on, and that has depressed the auction price. Behind all of that is a backcloth of the industrial emissions directive, where companies have to spend hundreds of millions of pounds to fit selective catalytic reduction on to existing coal. They are not going to make the investment.

Michael Grubb: Obviously, there are very real environmental issues behind the emissions that are controlled under the LCPD and the IED, which largely inherited those and systemised a number of directives together. The question is, given what one knows about climate change and from the Paris pledges, our own carbon budgets and domestic legislation, would it make sense for there to be substantial investments in cleaning up those coal power plants, given that you cannot clean up the carbon?

I think we are actually facing a necessary transition and there is no point in putting it off. We can come back to the capacity mechanism and so on later if you wish. The fundamental question is: given multiple environmental problems, including carbon, how much sense does it make to invest in cleaning up rather old and polluting equipment, knowing that it is not compatible with what we know about climate change?

Q10 Matthew Pennycook: Gentlemen, I want to talk about the internal energy market, but, just before I do, given that you seem to be in agreement that UK climate targets are unlikely

to change and perhaps be more ambitious than the EU's if we were to vote to leave, how destructive—if at all—would it be for us to readjust or renegotiate those packages to disentangle ourselves, for example, from the EU package under the UNFCCC and come up with our own NDC under the Paris agreement? Would that be particularly onerous or is that quite a simple readjustment to make?

Tony Lodge: I think that is a very simple readjustment to make. We will be meeting our second and third carbon budget targets this decade. We are on track, so long as we can replace coal with gas plant, to meet carbon targets. We know from the leaked letter from the Secretary of State last November that we are behind on the renewable energy target—we are 11% and not going to be 15% by 2020—but again I emphasise, and the Prime Minister has said, that we as a country must choose the right path to decarbonisation without making the poorest pay more. Carbon leakage—sending jobs overseas, and not to Asia but possibly to Europe—is a major problem. I think this is best done in this Parliament and in the devolved Assemblies, which have their own carbon targets, which ultimately means it is more accountable.

Michael Grubb: First point, the context: obviously energy is a long-term business and the industry keeps asking for long-term clarity. The LCPD and its follow-on, the IED, were set with quite a long time horizon and the UK legislative framework around carbon is set for the same reasons. We have a fourth carbon budget. There was discussion in the previous Parliament whether to review that and the conclusion was, no, it would stay as it is. That extends out to 2027. I would be surprised, and I would think it economically unwise to try to untangle that just because of the uncertainty that would create.

Bear in mind that a directive is something that member states transpose into international law. I think it was 2012 when DECC issued a consultation on implementing the IED and that has all gone through into UK legislation: it is on the statute books and came into force on 1 January. I would be interested to know what industry genuinely thinks about trying to unpick and unravel all of that. I am not at all sure that they would say that that was now a great idea because they have developed plans accordingly.

Antony Froggatt: Can I add one point? In terms of the EU as a whole and trying to unpick the legislation, potentially we will have this two-year negotiation period, then the UK would have to decide which of the existing EU legislation it wanted to change and then presumably Parliament and the Government would have to prioritise not just in the energy sector and environmental issues but across a whole swathe of society what to focus on. So in the same way that in the discussion around whether or not to leave you have not seen a high priority given to energy issues—many other issues like immigration and financial issues are given higher priority—potentially in that Brexit or post-decision-to-leave period, energy would not be given such a high priority, so it would create a longer period of uncertainty when the UK is deciding which EU legislation it would overturn.

Q11 Chair: You raise an interesting point. Are you saying that the debate has perhaps concentrated too much on financial and migration issues and missed a plethora of other

issues, so people might be going to polling stations without proper consideration of those other issues? That applies to both sides, in fact.

Antony Froggatt: Yes; the discussion is not over, but what we have seen over the last couple of months at least is that there has been more focus on those issues than others. I guess you are having this hearing because you feel the same.

Chair: It is, actually.

Q12 Matthew Pennycook: Turning to the internal energy market, various commentators have had various arguments, but some have suggested that were we to pull out of the European Union, the UK's direction of travel would mean that we would still retain and participate in many aspects of that internal energy market. Do you think that is likely? Are there important reasons for us to stay participating in certain aspects of the internal energy market?

Antony Froggatt: Obviously, it will depend on what model you have. There is a series of possible relationships that the UK would have with the EU in the eventuality that it leaves. What has been talked about in general is the Norway model, where the UK remains part of the European Free Trade Association and part of the European economic area. Within the electricity market, we see that Norway just adopts the European legislation. That may not be possible for other reasons. For example, freedom of movement may mean that that is not a consideration, but that would be the one that has the least change. In theory, the UK could join the European Energy Community. I think it is highly unlikely; it is mainly for Balkan countries. There again, you see them adopting en masse the EU legislation in this area, and that gives them access to the market. Those are two possible options.

I personally think that the most likely option is the Swiss model, whereby it would be a sectoral negotiation between the EU and the UK. The problem that we see there is that it is subject to other political issues. The negotiations between Switzerland and the EU on energy market integration started in 2007, and those have now been suspended because of issues around migration and freedom of movement. In some ways, it would potentially suffer from the political negotiations between the EU and the UK in general.

You then have other options: a free trade agreement, a Canadian model and so on. With those, it would be less likely that countries would be able to have full access to the market, but it is important to consider, however, that the UK is fully integrated with the European energy market. There are interconnectors for gas and electricity, and of course there is Northern Ireland and Ireland. The idea that the UK cuts itself off and says, "We are no longer part of it. We are not going to trade electricity and gas", is highly remote and does not make any sense. On that basis, the UK will have to abide by many of, if not all, the European energy market regulations. From sitting at the table that negotiates those regulations, the UK would become more like Norway, which takes them on board.

Michael Grubb: First, on the previous question, I was involved in the debate yesterday about the administrative side, and Roger Helmer from UKIP stressed that it would not be anything like as bad as critics claim because the assumption would broadly be that legislation

is grandfathered unless and until we choose to change it, which is fine, but it implies that a lot of the legislation that we have been discussing could stay in place, or at least would be there for a long time, and industry would not know whether it might be removed.

On your core question about models, this is an area that underlines that we do not know what Brexit would mean. I think I disagree with Antony about the Swiss model, because it is quite a mess. It is in a state of gridlock. There are some issues that are frozen because of the disagreement with the Swiss on migration, and the EU has flatly said, “That is not on offer, because it is a complete nightmare to have a whole series of bilateral agreements. It is a package deal.”

The package deal, as Antony said, is broadly characterised as, “You can do a Norway”, in which case we would remain part of a single energy market. Almost all the economic gains would remain; the big difference is that you would in effect be signing up to regulations that you are no longer part of negotiating. There may be queries about emergency sharing provisions. It is unclear whether EEA members would accede to those, and funding on interconnectors is another grey area.

Under a customs union, which is the Turkey model, you would not have the security sharing procedures. You would not have access to interconnector funding. The big issue is whether you would still be part of the internal energy market. I think it is unclear. I do not know, but my guess is that we and Europe would have such a strong economic incentive that we would negotiate a way of being part of the single energy market, but there is then a question on the deal on the single energy market. There is a level playing field underneath, which is why, for example, Norway has renewable energy targets and all the other paraphernalia that goes along with that.

Your third option is a kind of free trade agreement. To my mind, the big issue is that you don’t gain anything from moving to an FTA. Unlike in other sectors, you cannot trade electricity outside of the European Union or the EEA, so you don’t actually gain access to other markets. I find it very hard to see how one would go the full free trade route—you know, exit the single market and the customs union. I don’t really see how one would easily remain part of the integrated single energy market under those conditions. We would certainly be in a very weak negotiating position, because we are a net energy importer from the EU.

Tony Lodge: Yes, I think the key point, which Michael has just raised, is the important point that we are a net energy importer because of the energy problems at home, without enough CCGTs being built to replace closing coal. The Government—as you probably know—want to see 9 GW of interconnector built by 2022, which is considerable. This will be new connections with France, the Benelux countries and Norway. This country is going to become increasingly dependent on European states for electricity and gas. There is a fundamental there.

I emphasise the example of Nord Pool, which is Germany, Norway and other Scandinavian states and how they trade and deal in electricity. Norway obviously isn’t in the European Union. The United Kingdom actually has an opportunity now, outside the European Union, to take a lead, with Norway, and develop the whole dream and concept of a smart grid, and of being able to remove regressive, draconian and, I would argue, corrosive

EU directives, which have forced the problems that we are now facing: coal plant closing too early, and not enough gas plant being incentivised. With new interconnections with the continent, we would be able to deliver the decarbonisation strategy, whether inside or outside the internal market—I do not think that is the big issue everyone claims it is.

One thing I think is important regarding interconnection—I am going off on a slight tangent—is that if you are importing electricity to Britain from a Dutch coal-fired power station, you do not pay the carbon price floor. That is huge market arbitrage.

Q13 Matthew Pennycook: I think we will come on to discuss interconnection separately.

I have two specific questions, which need only brief answers. If the Norway option is the most likely, what is your view on those aspects of the internal energy market, leaving aside what could come in future, that come with the EEA—the second common market package and those other things? From the UK’s point of view, is there a good rationale to go for the Norway model, if that was the option, because there are benefits from having bits of the internal market applied as they do to EEA countries? Is that right in everyone’s view?

Antony Froggatt: It is the least disruptive, but there are the other political considerations. The future relationship between the UK and Europe will not be decided by the requirements on energy; it will be other, high-profile considerations. From a wider political perspective, the idea that we would move to a Norway model is highly unlikely. It may be attractive from an energy sector perspective because it is the least disruptive.

Michael Grubb: Could I add something? I speak having tried to work through these options for a UCL European Institute paper, which in fact comes out today. The thing that really strikes me is that there is just a trade-off between the politics and the economics. Economically, I think we are better off in the single energy market, the EEA, with all the things that go along with that, but politically that is fantastically unattractive if the purpose of Brexit is to regain freedom over various things that, on the whole, I would submit, a number of people don’t like. Norway has to sign up to the four freedoms. It is part of all the things that matter in terms of goods, services, migration, free trade et cetera, and the bulk of legislation underpinning that, although it is not part of the CAP—there are bits that are absolutely exempt, which is an important part of the difference.

It is very hard to see how politically you are saying, “We want to leave because we have problems with migration, or because we have problems with the renewable energy directive or whatever kinds of regulations,” and then say, “But, actually, our model is going to be to retain the economic benefits by signing up to all those things after all.” So it is politically very unattractive for Brexit, but the more you move away—this is why you work through these various options—to independence over all these things, the more you have problems remaining in the single market with the various components. I wish we had a more honest discussion. That is what the trade-off is. It is independence versus the economic gains of co-operation.

Q14 Matthew Pennycook: Very quickly, on state aid rules, I was at a panel event on the impact of Brexit on the energy market. A lot of the people on the panel with me last week suggested that in terms of state aid rules there would be a minor effect around the margins and it would not make a huge amount of difference. What do you think the impact would be on the UK and the need to comply with state aid rules as they are now constituted, were we to leave?

Tony Lodge: If we were to leave the European Union, I do not think the delays would be there. State aid issues are presently holding back Hinkley with the Austrian state aid challenge presently in the European Court. The relief for energy-intensive industry from European directives and carbon price floor took three and a half years to clear; it only got cleared in December. There was the consideration of state aid for the remaining coal mines last year. We have our own domestic compliance regulatory formula and the Competition and Markets Authority and so on that can decide on state aid from our perspective. I think that state aid rules in Brussels and elsewhere have actually held back energy development in this country, and that is a major problem. The real issue on Hinkley—I know you heard from them yesterday—is that, although they won't admit it, the Austrian challenge will delay that power station further.

Antony Froggatt: On state aid, again it comes back to the question of what model you adopt and what the future relationship is. If you have a Norway or an energy community model, existing state aid rules effectively will apply.

Q15 Matthew Pennycook: That's because the provisions are within the EEA.

Antony Froggatt: Exactly. If you move to one that is more separate in terms of the Swiss and the free trade agreement, they are less likely to apply. To come back to the Hinkley question, it is not the state aid that is stopping the signing of signatures. As you saw yesterday, the decision is with the French Government and whether they wish to proceed. It may come back to a state aid question. First, the question is the Austria and Luxembourg challenge to the agreement, and secondly, the extent to which the French Government have to bail out EDF through the various measures that are proposed and whether that is then approved by the European Commission. So there are a number of different issues that are, as you saw in the hearing yesterday, still to be resolved.

Q16 Rushanara Ali: I want to turn to the subject of investor confidence. May I have your perspectives on what the impact of Vote Leave would be on investor confidence in the energy sector, and your perspectives on the distinction between the impact of exit versus policy change in the UK that is affecting investor confidence? Perhaps you can start, Mr Lodge.

Tony Lodge: Absolutely; thank you. I think this is a domestic answer and it is all tied up with the capacity market, which is a British policy tool. The capacity market at the moment, which the Government are reforming, as you know, to try and get a better price in their next auction, is what this is all about. Investor confidence will be rewarded and will be delivered if the Government can deliver a real capacity market auction price in the autumn,

and if they can make it clear to investors that they are not going to continue handing out subsidies to 45-year-old coal-fired power stations under supplementary balancing reserve subsidy, black start subsidy, and rewarding small-scale polluting diesel generators under the short-term operating reserve subsidy. They need to move on from all of this, and from sticking a plaster on old and unworkable technologies. They need to reform the capacity market, bring it forward, set new rules and incentivise new gas build. They produced a document in 2012 called the “Gas Generation Strategy”, which envisaged 28,000 MW of new gas-fired power station in the next decade. About 2,000 MW is on the stocks. The policy has totally failed. Domestic policy and leadership is how you will reward investor confidence.

Q17 Rushanara Ali: So you don’t see any cost of exit to investor confidence?

Tony Lodge: I think the cost at the moment is being faced by people here struggling to run gas-fired power stations and losing money because of the failing capacity market.

Michael Grubb: I think you have to say which investors and which issues. To my mind, I largely agree with Tony about CCGT. It is more a function of the domestic energy policy situation and a number of complex things bearing upon it. It is primarily or largely about the impact of Brexit. We are set to build a substantial swathe of investment and interconnection, and one would expect investors to be a little uneasy about the political risks of withdrawing if one doesn’t even know for sure whether you will remain part of the single energy market, so I am a little worried about the impact there.

I think the impact on renewables is somewhere in the middle. It has quite a lot to do with domestic policy changes, but, unquestionably, there is at least a strong impression that many of those calling to leave the EU are also quite hostile to renewables. One would no longer have the context of the collective drive for renewables only from Europe. I put renewables very much as a mix of domestic and general Brexit issues.

Q18 Rushanara Ali: Could you put a figure on what the cost would amount to?

Michael Grubb: It is very hard to put a robust figure on investor confidence. The main figure that has been pushed around is the National Grid estimate that the value at stake from international trade and associated membership of the internal energy market would be about £500 million in the first part of the next decade. My back of the envelope suggests that that is entirely plausible and is partly a mix about whether you would lose some of the potential to import cheaper energy, plus the impact on slowing down interconnector investment.

Antony Froggatt: Just two additional points: one is the importance of policy creating certainty, and clearly Brexit will create more uncertainty, which has an impact on the potential cost of borrowing. It needs to be considered. For me a key point that should be mentioned is the extent to which new investment is needed within the energy sector, within the UK and within Europe and the EU as a whole. We need policy conditions that enable that investment to occur. The current estimate is that, through to about 2030, between £200 billion and £300 billion of investment is needed in the power sector.

Q19 Rushanara Ali: Some people, certainly those who want to leave, have advocated that if we were out, while there would be uncertainty in the short term, in the longer term there would be benefits, including expansion into new markets and creating new jobs. What are your reflections on that assertion?

Michael Grubb: In energy, what new markets do we have outside the EU/EEA?

Q20 Chair: It is an assertion of the leave campaign that our hands will be untied and we can do new and innovative things. I am not quite sure about the energy side.

Michael Grubb: I defer to Tony on what the new opportunities for energy trade are, if any. The striking thing to me is how much freedom countries have under the EU. I agree that state aid issues can be a pain, but, generally, they have been fairly permissive in terms of allowing the UK to do pretty much everything it has wanted to do.

The Lisbon treaty reaffirms members' choice over energy sources and strategy contingent upon, obviously, collective environmental goals. You see a huge diversity of energy policy and initiatives so to my mind the question is: what will we gain by leaving? That is the question from the energy perspective that I struggle with.

Tony Lodge: What we gain from leaving is to remove European Union directives that do not comply with United Kingdom national interest. The LCPD, as we have discussed, has closed 12,400 MW of coal and oil plant, and the IED will close 11,000 MW of remaining coal plant. We don't have the CCGT gas plant being built to replace it on time. The Government is now panicking, subsidising 45-year-old coal-fired power stations to stay on; the bills will be passed on to consumers through the capacity market. I think that is a disaster.

Q21 Rushanara Ali: Mr Froggatt, did you want to respond?

Antony Froggatt: To which point?

Rushanara Ali: To Mr Lodge's point.

Antony Froggatt: About what the advantages of leaving are?

Rushanara Ali: Yes. Is it a complete disaster?

Antony Froggatt: There are lots of different elements to it. It would create more uncertainty within the energy sector, and in terms of the questions about investors I think that is important—it is problematic. It reduces our access to EU funds; we haven't talked about the European Investment Bank; 90% of its lending goes to member states. You have specific EU energy funds such as the connecting Europe facility, which are in the form of grants, so it helps to encourage the creation of pan-European infrastructure. You can see a number of clear advantages, from an investment perspective, in remaining.

Q22 Rushanara Ali: So what would that kind of investment in the various funds total in the short term, in terms of a reduction? What would be your estimate?

Antony Froggatt: EIB loans were €9 billion over the last couple of years within the energy sector. There are a range of different possible sources of funds; I can send over a list.

Q23 Rushanara Ali: In the short term, you don't see us being able to access those funds. In the longer term, what would we have to do to remain in a similar position? We would have to renegotiate; how would that work, in your view? How long would that go on for? Or would we lose access to those funds altogether?

Antony Froggatt: It keeps coming back to the question of what the future relationship is. So, for example, Norway does have access to the connecting Europe facility, but you can imagine that in other scenarios you wouldn't. It would depend on the extent of the future relationship. As I mentioned, the vast majority of the EIB's lending goes towards member states, so presumably we would be lower down the priority list for the institution to lend to.

Q24 Chair: Thank you. An observation, Mr Lodge: you gave perfectly reasonable answers to the questions on investor confidence and the capacity market issue, but I noticed that most of the problems you identified were more UK than EU. I just wondered whether you were reading from any of the Scottish nationalist literature that the SNP has been producing over the last number of years.

Tony Lodge: Not that I am familiar with!

Q25 Chair: It has been suggested that, if the UK votes to leave the EU, EU energy policy will become more centralised, rather than market-led, and that that is the influence, perhaps ironically, of the more right-wing voices in the UK, if I might be so bold as to call them that. The more right-wing voices in the UK, who are market-led, are also the ones that want the UK out of EU. We might therefore see a more centralised EU energy policy, which could have a knock-on effect for a UK tagging into the energy union. Any thoughts on that—about how Europe might develop without the UK in its energy policy?

Antony Froggatt: On the market question, yes, the UK has been one of the drivers behind the energy market liberalisation. It is important to bear in mind that the Commission is about to publish its next wave. We have had three waves of market liberalisation, and the fourth wave, effectively—the new market design legislation—will be put forward. That is about capacity markets; it is about integration of renewables; and it is about a fair deal for consumers. Many of the issues that the UK has been looking at from a national perspective will also be looked at from a European perspective. That will be published soon. It is also really important to note that the UK is scheduled to hold the presidency of the EU in the second half of 2017. This will be an important time not only for electricity market legislation, but for the effort sharing decision on renewables, the energy governance question and the renewables target itself. So there are a whole series of really important issues from an energy

perspective that are due to maybe not land, but at least that there will be important questions or discussions on during the scheduled UK presidency.

I have had a number of conversations with people about what would happen in the event of a vote to leave and the UK presidency. There obviously isn't a precedent for it, so it is a big question mark. It has been suggested that maybe you would just move up some of the countries, but the UK, I think, is followed by Estonia and then Bulgaria. They have fewer capabilities and less experience in negotiating significant files from the European perspective. I can imagine that this is not in the best interests of the UK, given the very specific bits of legislation that the UK has a keen interest in.

Q26 Chair: Andrea Leadsom, the Minister at DECC, said that “energy security is not dependent”—this is about the UK—“on the EU.” Do you agree with her?

Michael Grubb: On the prior question, it is worth remembering that the UK has been deeply involved and has really helped to spearhead the liberalisation of energy markets—through three packages over 15 to 20 years, and the 2014 package is largely a culmination and vindication of that effort. We still chair the Agency for the Cooperation of Energy Regulators. We have had a strong influence, and it would be a pity to lose that influence. I think it has helped to improve European energy policy and there are areas in which countries' policies—including the UK—have been improved, conversely, by the compromise and learning from each other in the frameworks.

On your specific question about energy security, I read Andrea Leadsom's speech carefully. I thought some aspects of it were, frankly, somewhat misguided or even disingenuous. Of course, UK security does not hinge on the EU, and it is a question of how much you have to invest and in what ways to maintain security. First, she said that the EU has to approve any international energy arrangements. Well, no, the EU has asked to see contracts to make sure they are compliant with the agreed EU law and that is partly, for example, in dealings with Russia. You cannot have different member states trying to undercut each other in terms of what sorts of deals they might cut, which is why there are rules developed there.

On the energy security or solidarity mechanism—as it is an advanced stage of development—what it is saying, in effect, is that member states should agree to help out the essential uses in other member states in the event of an emergency. The UK has already gained assurances that you do everything you conceivably can with the market mechanisms in place before any such situation is triggered. But you have to think what the conditions are, and scenarios on gas security are either some kind of horrible blow-up in the Middle East, with respect to our supplies from Qatar or through the Strait of Hormuz, or a problem with Russian supplies.

In the former, broadly Spain and the UK would clearly be most exposed, because we are the most dependent on LNG supplies from the Middle East. I would have thought we would be extremely grateful—and our security would clearly be enhanced—if other member states were under obligation to help out for essential uses. A Russian interruption is more complex. The central European area would obviously be the most exposed, but Norwegian gas also trades heavily and on larger scales. It is unclear, but I imagine that, as a member of

the EEA, Norway would be under obligation under security mechanisms—if they encompass the EEA—to help out other EU member states’ essential uses before a non-member state, were we outside.

As I say, you can get around any of these issues if you invest enough, but the UK has modest gas storage capacity and it is declining. Similarly, in electricity, we benefit—and have benefited over the past couple of winters—from electricity imports to countries that have a surplus capacity. So I simply do not understand her assertion about energy security. It seems to me entirely the other way around.

Q27 Chair: Mr Lodge, the premise there is that the other members of the European Union or the EEA are obligated to help a UK that might have a shortage of energy. Don’t you see that as a sensible insurance policy?

Tony Lodge: The United Kingdom is an energy-hungry state. The United Kingdom will pay for gas and electricity. A lot has been said, and it won’t surprise you that I think Andrea Leadsom is right. The United States, up until recently, didn’t export much coal; it now exports growing percentages of coal, and we have been buying a lot of it. The United States will soon be selling gas, which it will be exporting from its east coast ports. The United Kingdom is about to become, if the gas-fired power stations get built, a very, very big gas consumer. The markets in the European Union, and not just in the European Union, particularly Norway, will sell to the United Kingdom. We are a large and competitive market, and I don’t see any issue regarding warnings.

Q28 Chair: Your argument is that this is underpinned by money regardless and that treaty obligation is secondary?

Tony Lodge: When Alan Johnson was Secretary of State at DTI—I am going back a little—there was an issue, and I can send you the *Hansard* reference, where we were running low on gas in storage. The point Alan Johnson made, and he was right, was that very, very quickly the European Union and the European sellers, including those not in the European Union, sold to the United Kingdom and reacted to market circumstances. There are also international suppliers, and one problem with the European debate on energy is that it doesn’t actually acknowledge the global changes in energy policy. We are about to see a lot more energy on the high seas, and we are about to see a lot more energy from countries who haven’t previously been producing it, and I think that is going to have a dramatic effect on who supplies it, what price it comes in at and from where we can do forward purchasing, which changes quite a lot.

Q29 Chair: You mentioned the UK being energy hungry. What impact would a vote to leave have on interconnection? I will start again with Mr Lodge and move across the panel.

Tony Lodge: I think that interconnection will go ahead. I hope it is not as big as 9 GW, because interconnection does two things: it possibly depresses the price of the capacity market auction to build new power stations here at home, and it also allows electricity to

come through from continental Europe on which the UK carbon price floor hasn't had to be paid in its native country, which I am amazed hasn't been challenged yet in the courts. It also does something that is a concern to those of us who want to see decarbonisation at price, which is that it offshores emissions. I think it is wrong for the British Government to try to build interconnection and claim that this is a renewable or low-carbon choice; if electricity powered by coal is coming through from Holland, I don't think it is.

Q30 Chair: Can I tag on what an exit of the UK from Europe might mean for the Irish Republic? What impact have you seen or thought about that may hit the Irish Republic?

Tony Lodge: Sorry, but could you repeat the question?

Chair: What impact might hit the Irish Republic from a British exit? Have you given much thought to the effects on our neighbours in Ireland?

Tony Lodge: As you know, we have an all-Ireland grid. I should possibly have said the GB electricity market, because Northern Ireland is part of an all-Ireland grid. They don't have the carbon price floor in Northern Ireland, so in actual fact, again, I don't see much of an impact there either. I have my concerns about the carbon price floor, which I think is too high—I think it is poor legislation—but I do not see an issue on the island of Ireland. They are very dependent on us, and we have interconnection with them, but the North has now been integrated into the Republic for quite some time.

Michael Grubb: First, on Ireland, I am inclined to agree with Tony. So long as we remain part of a single energy market, my impression is that the Irish arrangement could continue pretty much as is. I think it is still quite possible that Ireland would be more motivated to build a direct interconnector to France, because it would still seem odd to try to be part of the EU but having to trade through a non-member state. I think it would be radically different if we had to leave the internal energy market. It's not clear to me how you could operate the whole Ireland system as a system operator between a member of the internal energy market and a non-member, and you certainly wouldn't want to be sort of physically cut off from the benefits of the internal energy market by a non-participant.

On the carbon price floor, I think Tony has articulated well some of the issues, but to me it points in arguably the opposite direction in the following sense. If you take a view that we have a serious problem with climate change and you want a more market-based solution, you are very quickly driven to the view that a carbon price is a very efficient instrument for trying to deliver that. The EU Emissions Trading Scheme has certainly had its problems, but that was the philosophy that led to the UK price floor. If you take anything like the Paris commitment seriously and any of the economic analysis, it says, "The carbon price is not nearly high enough to do the job. It is not high enough to drive the switch from coal to gas," as Tony said. That should be a prime instrument for telling markets, "Emitting carbon's going to get more expensive. Inefficient old coal plants are going to pay a lot more than clean gas plants."

Having a floor price within the EU is, of course, problematic, given the carbon price differential, but we have seen now knock-on effects on Paris, where the French Government have announced that they will have a carbon floor price that will be very similar soon to the UK's levels. Surely, our strategy should be engagement to get the rest of Europe to establish a credible floor price, and that strategy is much more potent and credible if we're within the EU.

Q31 Chair: Anthony, do you want to come in here?

Anthony Froggatt: On which bit?

Q32 Chair: On the interconnection infrastructure.

Anthony Froggatt: Can I just add one thing on the security of supply, just very briefly, because I know we've moved on? I agree with what Michael has said, in terms of the solidarity issue, but I think it's also really important that part of those EU plans were about greater transparency, monitoring of plans and encouraging bi-directional flows. It's about creating a more stable gas market, which comes into your question, Tony. So, although it's specifically about energy security, it's also about creating a more secure market, and in that way I would agree; I think it's an important step forward and it's part of the response to the Ukraine-Russia crisis. Out of that, we saw the creation of plans for the energy union, so a more integrated and coherent response across different member states.

In terms of the interconnections, what we will see and what we have seen with greater use of variable renewables, such as solar and wind, is greater movement of electricity, and across borders. So the EU as a whole has proposed that, by 2020, 10% of maximum demand is matched by interconnection between different member states, and it is proposed that that may move up to 15% by 2030. So it's part of a plan to integrate the EU more and I think it is essential if we are going to have more renewables on the grid, because it is one of four balancing mechanisms: one is capacity markets; one is interconnection; one is storage; and one is interruptible or dynamic demand. There are a number of different mechanisms that will be needed, and interconnection is an important part of that.

Q33 Chair: Before I move to Rushanara Ali, just briefly: would leaving the EU have any impact on UK infrastructure projects that are currently classified as projects of common interest? Does anything ring a bell in that area for you?

Anthony Froggatt: Again, it is possible. Norway is part of the connecting Europe facility, so it is still engaged with funding those sorts of projects, but as I remember—I can double-check—it still has to have the engagement of two other member states. So it makes those projects more difficult, but it's still possible. Again, however, I come back to the question: what is the relationship the UK has with Europe?

Q34 Chair: Tony, you wanted to—?

Tony Lodge: No, no.

Q35 Rushanara Ali: I want to turn to the issues around cost to consumers. Can each of you set out your views on the cost of EU policy on consumers? I know there are differences of views, but it would be helpful to hear your opening remarks on that. I will then follow on.

Antony Froggatt: I think it is difficult to separate what is EU policy from what is UK policy. What you have seen being presented is that, domestically, the UK has unilaterally introduced certain actions, particularly in relation to climate change, that have an impact on the cost to the system. I am sure that Michael knows the figures better than me. Ofgem is suggesting that the environmental and social costs of the electricity bill are around £70 a year. In terms of gas, it is around £23 a year. It is of the order of 10% of the bills. That may rise, but it is suggested that it will then plateau and fall. The other thing that is just as important to note is that the wholesale price for electricity has fallen significantly. The gas and coal prices have fallen, and as you have higher penetrations of renewables on the grid, the market price for power also falls.

Michael Grubb: First of all, there were two publications in 2014 that claimed that EU legislation added well over £100 to the consumer bills. One of those was by Business for Britain and Matthew Elliott. When I looked through those, the key issues that struck me were that they did not take account of the fact that, although a number of those programmes cost, they also deliver benefits. Energy efficiency, of course, saves energy. Most evaluations of efficiency programmes say that there is a net saving to energy consumers, but those publications had only counted the costs.

Secondly, they were attributing much of the legislation to the EU. Virtually all renewables were classed as being driven by EU legislation or targets, whether that was the renewables obligation certificates, which we started in 2000 when there were no EU targets or anything, any of the energy market reforms, much of the energy efficiency, or the smart meter roll-out. In fact, the Business for Britain report acknowledged that there was a good chance that the UK would have introduced similar policies had it been outside the EU, so I am not sure why they were attributed to the EU.

Thirdly, repealing many of those measures would be inconsistent with UK legislation including, obviously, our Climate Change Act. I was left extremely unimpressed by those calculations, to put it mildly.

Q36 Rushanara Ali: So, in your view, essentially there are not additional costs.

Michael Grubb: There are costs associated with the energy transition and with decarbonisation. There are two key points around that. First, as Antony said, there is a bit of a distinction between the structure that you use to support capital-intensive investments such as renewables, with then run very cheaply. You see the up-front costs you are making and the wholesale price has gone down. Wholesale prices in Europe are lower partly because of renewable energy policies.

The other thing is that many of these things are investments and returns. We are looking at up-front investment in return for a system that is then much cheaper to operate in terms of the marginal costs. The question of what really is due to the EU and what really is due to decarbonisation gets very tangled. You could argue that, in another 15 years, Germany will be sitting pretty with a vast amount of investment for stuff that costs almost nothing to run, but they are paying for it through the nose today. Is that good or bad?

Q37 Rushanara Ali: Mr Lodge, you obviously think that it costs a significant amount. Do you want to reflect on that?

Tony Lodge: Absolutely. First, I will point to a Pöyry report for DECC, which pointed out the costs of the renewables obligation targets for EU renewables. The 2020 target for the whole EU was £259 billion and, for the UK, it was between £60 billion and £85 billion. That was a Pöyry report commissioned by DECC. There are lots of numbers being bandied around, as these two gentlemen have just pointed out. The fundamental point I want to try to make is where I started: the indirect costs of meeting and trying to mitigate EU directives and the capacity market and its failures because coal plant is closing but the Secretary of State is trying to keep the lights on—the cost of doing that, which is hundreds of millions of pounds of subsidy, will fall on consumers' bills. The coal plant is closing early because of an EU industrial emissions directive.

Eggborough, Fiddlers Ferry, Drax and possibly Aberthaw are all being thrown hundreds of millions of pounds to stay on for the next winter. They would have been staying on anyway if we had not had to close them and they had not had to opt into the IED and fit SCR—sorry for all these initials. The point I am trying to make is that the indirect costs of trying to avert an energy crisis, possibly brought about by EU directives, falls on the consumer.

Q38 Rushanara Ali: Some people might think that too much blame is being associated with our membership of the European Union and that we should take some responsibility for some of those policies and costs ourselves. Professor Grubb highlighted some of those points. To what extent do you think we might be cutting off our nose to spite our face? This goes back to the point about politics versus economics and the damage it does.

Tony Lodge: That is a very fair point. There are various examples of very bad domestic legislation, but the fundamental point—

Q39 Rushanara Ali: Should we not be assigning responsibility to domestic policy in some cases, instead of European Union policy?

Tony Lodge: I totally agree. The point I am trying to make is that there is a backcloth to all of this that is EU-based. That drives bad domestic legislation.

Q40 Chair: But are these not UK climate change targets?

Tony Lodge: They are indeed UK climate change targets, but the particular issue of forcing our power stations to close four, five or six years before they should close and before replacement plants are ready is a European Union point.

Q41 Chair: But are you not critical of UK policy?

Tony Lodge: I am critical of how the United Kingdom has responded to this with regard to the capacity market. I would have liked to see the Government in 2012 publish the gas generation strategy under Ed Davey, claiming that by the latter part of this decade, there would be between 8 GW and 14 GW of new gas plant being built. It is not being built. That is a failing here, but we need that extra plant.

Q42 Chair: Isn't that a British problem, created in the UK? As you say, it is against a European Union backdrop, but it is exacerbated by the UK Government's approach.

Tony Lodge: Absolutely, and I would blame the failings of the capacity market on the UK Government.

Michael Grubb: Surely, the core point is that the LCPD and its successor, IED, are applied equally across the European Union within the context of a single trading market. It is not obvious to me that the UK is in an inherently worse position than others in terms of implementing that. It maybe did not look as far ahead and acknowledge what was coming—I don't know—but do we really want a situation in which we are trying to stay within a single market but arguing that we can pick and choose which bits of environmental legislation we implement, while other member states may or may not do as they wish?

Q43 Rushanara Ali: It sounds like a Trojan horse for the climate sceptics if we were to do that.

Tony Lodge: I believe in climate change, so I do not recognise that.

Q44 Rushanara Ali: Do you think you might be falling into that trap?

Tony Lodge: No, because I believe in climate change, but I do not want power cuts and I do not want electricity rationing. To suddenly close 16,000 MW of coal plant without a replacement causes problems.

Q45 Chair: Thank you. Can I leave that hanging there, given our time constraints and the number of energy areas we have to hit? We must not forget the oil and gas sector. I will ask a fairly general question. What do you think are the potential consequences of Brexit for oil and gas? Does anyone see any changes coming to oil and gas? Has any thought been given to how those will be affected?

Tony Lodge: I don't, Mr Chairman.

Chair: You don't? A fine answer.

Antony Froggatt: We have touched on many of the issues. It is about investment confidence. Obviously, the large UK oil companies have suggested that it will not be in their interests to leave the EU.

Q46 Chair: But there is nothing specific; it is just the views of oil companies.

Antony Froggatt: Yes. One area particularly is around the creation of the gas market, and the question that we have touched on, both in terms of security of supply and interconnections. The UK remaining part of the European gas market enables it to continue to import gas from places like Qatar and then subsequently export that to the continent.

Chair: Thank you. Matthew Pennycook.

Q47 Matthew Pennycook: Just a quick question on the EU ETS, which was raised earlier. I am not sure anyone would say it is the most brilliantly designed concept and that it has functioned well. There is probably broad acknowledgement that it should be reformed. If the UK opts to leave on 23 June, do you think we are likely to remain in the EU ETS? If we do, what challenges do you think we would face? And if we remain in the EU on 23 June, in what ways should we reform the ETS?

Tony Lodge: If we leave the European Union—I will not choose which model might accompany a renegotiation—the United Kingdom will still have carbon prices three times higher than the rest of the bloc. The carbon price floor taxes CO₂ at £18.08 a tonne. As for the Europeans—I checked this morning—the ETS is doing about €6.5 euros. Let us call that £6. So we are well ahead of them due to our own carbon price floor. At the moment in this country, fossil fuel power stations are emitting CO₂ at £24 a tonne, because you add the ETS on top of the carbon price floor, which makes it very expensive, I would argue.

What do you do with the ETS? They are trying, as ever, to grapple with it at the moment. Do you remove permits to try and boost the price? The problem that I think I have with the European Union on the ETS is what I call the grotesque lobbying that goes on in Brussels by the big emitters. That is what depresses the price; that is what keeps Euracoal and all the other guys busy; and that is why we are on €6. There has to be a radical departure in the Commission and radical surgery to the ETS or we will not be on €15 a tonne by 2018; we will be on €6 again.

Michael Grubb: I find it hard to see why we would be kicked out of the ETS if we left the EU. Of course, it could depend on the model; under EEA, we would absolutely remain part of the ETS, and we probably would under a customs union, Turkey-type arrangement as well. As Tony rightly said, it is a relatively small part of the carbon price in place. As for what should be done with ETS—oh boy, that could be another whole session. If it were easy, it would have been fixed. It is an indication that, for a multitude of different reasons,

delivering the targets established has proved to be far cheaper than people expected, which is at one level not a bad thing, but it makes it pretty useless for the purposes that we had expected.

If the European political machinery is unable to fix the EU ETS—arguably because it was a very ambitious instrument, in terms of the full coverage of a carbon price across all member states and the EEA—then, as we have seen, the UK and the French Government could now say, “There could be other ways forward on carbon pricing if Europe does not get its act together, collectively.” That has not been stopped by the EU, nor could or should it be.

Q48 Chair: If the UK voted to leave the EU, what do you think would be the most urgent issues that would need to be addressed in relation to energy and climate change policy? What would the risks be to energy and climate change policy during the two years that the UK would be negotiating its terms of withdrawal from the EU?

Tony Lodge: The main objective should be to keep the ambitions of the British Ene Act clear. It should be to get on with reforming the capacity market and get the new CCGTs built. If we were outside the European Union—I am not a lawyer—it is the extent to which there may even be a cushion without the EU IED in place to allow some of the coal plant to run off, so that we have plant-for-plant replacements in 2020, '21, '22, and '23. The Secretary of State said in her reset speech in November that if there is a need for coal plant in 2025, she will try to keep it on. There will not be any coal plant in 2025 if we keep the EU IED.

Michael Grubb: I think I would prioritise immediately reaffirming contractual certainty for interconnectors, whatever model the UK ended up following. Obviously, I would try to clarify as soon as possible whether we were going to try to follow a Norway EEA-type model or some other.

There would certainly be some outstanding questions around the targets on renewable energy. The UK has made much more rapid progress on the electricity component than expected, but overall it remains one of the few member states assessed as not yet being on track. Would the Government be saying that that would no longer be a goal? Those would be the priority things on the European front. I agree with Tony that we have plenty to get on with in sorting out our own domestic situation, including the capacity market and its relationship with the other bits.

Antony Froggatt: I think the important areas are about investor confidence and investor certainty. That comes to the points that Michael made about trying to clarify the type of relationship that we have with the EU and the importance of direct linkages—so, interconnectors and what will happen with them, and future targets. It is not just the renewables target for 2030, but what happens for existing targets. There is already a large degree of uncertainty around the UK's commitment to the 2020 target, which is slowing investment. I think there would be an absolute need for the Government to prioritise and clarify the key areas it wishes to maintain, in terms of existing EU legislation, knowing that it will take some time to unpick those areas that it does not want to keep.

Chair: Thank you. I thank the panel for coming this morning and taking the opportunity to air views on Europe and what it might mean in the energy space; that is the reason why we asked you: we were aware of the financial and migration aspects of the debate and nothing else. I thank you for the respectful way you have traded your opinions, which is appreciated.

We are not going to come to any firm conclusions. We have just created this space for others to make their minds up and have something to think about. I have a comment to make, tongue in cheek, or perhaps not so tongue in cheek. The criticism of UK energy policy has confirmed my bias towards thinking that the most pressing problem is getting Scotland out of the UK, rather than anything to do with the EU. Thank you for that opportunity.