HOUSE OF LORDS

Select Committee on the European Union

Energy and Environment Sub-Committee

Oral evidence: Brexit: Environment and Climate Change

Wednesday 2 November 2016

10.30 am

Watch the meeting

Members present: Lord Teverson (The Chairman); Lord Cunningham of Felling; Lord Curry of Kirkharle; Viscount Hanworth; Lord Krebs; Duke of Montrose; Lord Rooker; Lord Selkirk of Douglas, Baroness Sheehan; Lord Trees; Viscount Ullswater and Baroness Wilcox.

Evidence Session No. 2 Heard in Public Questions 23 – 45

Witnesses

I. Jacob Hayler, Executive Director, Environment Services Association; Sarah Mukherjee, Director of Environment, Water UK; and Alan Andrews, Clean Air Project Leader, ClientEarth.

II. Bob Ward, Policy and Communications Director, Grantham Institute; Jonathan Gaventa, Director, E3G; and Professor Michael Grubb, University College London.

Examination of witnesses

Jacob Hayler, Sarah Mukherjee and Alan Andrews.

The Chairman: We will start this session on our inquiry into Brexit and the environment. I welcome our witnesses and remind you that this is a formal evidence taking session for the Committee. Notes will be taken and it will be webcast. You will be sent a transcript of what we record for the official record and you will have the opportunity to change that if there are any errors. I remind Committee members to declare any interests that they have. I am a board member of the Marine Management Organisation, in case we get on to marine issues. Other members will declare their interests as we go through. This session is particularly around transboundary issues on the environment, clearly a core part of issues around Brexit, what they are and how we manage them for the future and what the challenges are. I will ask our witnesses to introduce themselves.

Sarah Mukherjee: I am Sarah Mukherjee. I am director of environment at Water UK which is the body that represents all the water companies in the UK, as our name suggests.

Alan Andrews: I am Alan Andrews. I am a solicitor and lawyer at ClientEarth where I head our air quality programme.

Jacob Hayler: I am Jacob Hayler. I am executive director at the Environmental Services Association. We are the trade body that represents the waste and recycling industry.

Q23 **The Chairman**: Thank you. I will start with a fundamental question and perhaps something to which you would all like to contribute. Would you identify what you see as the key transboundary issues to which we should draw the Government's attention in our recommendations and report?

Sarah Mukherjee: For the water industry, as you may suspect, our key issues are more transcatchment than transboundary. There are two areas where there is concern. Obviously I preface all of this by saying, as with so many sectors, this is all very emerging thinking at the moment and we do not have any defined policy. We are talking to our members about where they are sitting regarding Brexit. The two are obviously in Ireland, the Northern Ireland Water and the transboundary issues with Irish Water in southern Ireland and potentially, hypothetically speaking, should there be a referendum and should there be an independence movement which is successful in Scotland, there may be transboundary issues. That is obviously hypothetical.

The Chairman: I think we probably will not work on that assumption at the moment. It is an interesting question but we will not take it into consideration for this inquiry.

Sarah Mukherjee: It may be beyond your scope but it is still something we have to think about in our back pocket.

The Chairman: Of course, thank you.

Alan Andrews: Air pollution is obviously a transboundary environmental problem par excellence. I am going to focus today on the environmental and health impacts of air pollution rather than climate change, but it is worth saying that climate change remains one of the biggest transboundary problems that we face in the UK. Regarding air pollution that is harmful to human health and harmful to the environment, I have just come from the High Court where the Court has ruled in favour of ClientEarth in our challenge against the UK Government, finding that their current plans to achieve nitrogen dioxide limits in the UK are illegal and they will now be required to prepare an improved plan by a required timeline. That is a perfect example of where EU law is relevant to the transboundary issue of air pollution. That case is based on EU law. It is based on a right to go before courts and enforce EU laws. Obviously Brexit poses a serious risk to that.

It goes without saying that air pollution knows no national boundaries but the Government's own evidence suggests that of the $PM_{2.5}$ pollution, the microscopic harmful particles that we breathe into our lungs and which are very harmful to human health, causing something like 29,000 early deaths each year, only about half originates in the UK. There is a huge amount of transboundary air pollution that we currently deal with through EU and international law which we need to consider very carefully how Brexit will impact.

Jacob Hayler: There are two aspects for the waste and recycling sector, one on the policy side and the other on the practical side. I do not know exactly what is within the scope of the inquiry but certainly the policy sets the strategic direction for the industry across the whole continent, so we are obviously affected by the levels of recycling and recovery we might wish to achieve and the amount of material we might wish to divert from landfill. On the policy side it also sets technical standards for how we manage our treatment facilities, how we engineer our landfill sites, et cetera. In addition to that, there are practical issues. We export around 15 million tonnes of sorted materials to be recycled back into products around the globe. Just over a quarter of that currently goes to the EU. In addition to that, we export around 4 million tonnes of waste as fuel to the EU, principally to parts of Scandinavia, Germany and the Netherlands, for example. A big fear for the industry at the moment is that we are facing what we consider to be a bit of a looming capacity crunch where landfill capacity is closing throughout the country. We are not bringing forward investment in new domestic energy recovery facilities. To date we have been relying on exporting a lot of that material to other parts of northern Europe but already we have seen the sterling impact which has massively increased the costs of that option. There are fears about potential future tariffs that might come on top of that and might limit that even further.

All of these would drive up our costs and create difficulties for waste management in the UK.

The Chairman: This is not a criticism but you have all answered that very much in your own areas of very specific interests. Are there any broader ones such as migration of species, natural environment, invasive species, marine? Are there other areas that we need to make sure we take notice of?

Sarah Mukherjee: To pick up on Jacob's point, if we look at the policy area then a lot of water company investment is driven by European environmental regulations, primary among them the Water Framework Directive, the Urban Waste Water Treatment Directive and the Drinking Water Directive. I will save some of my comments for your next question, but there is an awful lot tied up in water company operations that is European based. The great uncertainty is: what will happen on Brexit day one? That is causing considerable concern not just within water companies but in the water sector more widely, including environmental NGOs.

The Chairman: We will come on to that.

Baroness Wilcox: Alan, you said something about us creating 50% of something but the other 50% of it comes from somewhere else.

Alan Andrews: I was talking about a particular pollutant called $PM_{2.5}$. This is a form of particulate matter, basically microscopic particles commonly regarded as public health enemy number one when it comes to air pollution. Exposure to $PM_{2.5}$ is thought to be responsible for something like 29,000 early deaths each year. That is based on the Government's own figures.

Baroness Wilcox: How would I see that if I saw it in a street? Is it from a car?

Alan Andrews: You would not be able to see it. It is largely invisible. When it gets to very high levels, maybe about 10 times a year, you might be able to see it as a haze in the sky. You might remember the Saharan dust episode from a couple of years ago. That was blamed on the Saharan dust particles which made it visible. That was really a marker for the invisible pollution.

Baroness Wilcox: Did you we say we create 50%?

Alan Andrews: Of the average levels of $PM_{2.5}$ only around 50% originates in the UK. Another big portion is from natural biogenic sources but a big chunk of it originates on continental Europe and blows over. Equally, prevailing winds tend to take our pollution over to the continent more often than not, so we are a net exporter.

Viscount Hanworth: $PM_{2.5}$ is a measurement presumably.

Alan Andrews: That is right.

Viscount Hanworth: Do microcarbons come predominantly from our own cars? Can you break it down?

Alan Andrews: Yes, $PM_{2.5}$ refers to the diameter in microns. The sources of $PM_{2.5}$ are very varied. They can come from combustion sources, for example from cars, from industrial processes, from power generation, heating homes or whatever. They can also come more indirectly from condensation of gases. For example, ammonia from farming will condense and form $PM_{2.5}$ which then forms in the atmosphere and harms human health.

The Chairman: I do not want to get too much into a master class of chemistry. I am keen to move on.

Q24 **Baroness Sheehan:** We have read a little bit in a briefing we had about Britain failing to meet NO_2 targets. Where do we stand on meeting levels for particulate matter $PM_{2.5}$? I know PM_{10}s and $PM_{2.5}$s were quite a problem a few years ago. Have we met the EU limits on these?

Alan Andrews: In strict legal terms we are now in compliance with PM_{10} and $PM_{2.5}$ limits. London's compliance with PM_{10} is questionable; we are just there. I think it is worth remembering that the current EU standards for $PM_{2.5}$ and PM_{10} are quite lax and they are considerably more lax than the World Health Organization guidelines. We know from the scientific evidence that significant health effects occur well below the current EU limits, so people are dying or are admitted to hospital more when they breathe the higher levels of pollution.

Baroness Sheehan: Brexit is not going to impact too much on the way we deal with $PM_{2.5}$.

The Chairman: We will come on to all of that as we go through the questions.

Lord Cunningham of Felling: As a general comment, is it possible to benchmark the UK performance as opposed to the performance of other EU Member States in these areas? Is it good, bad, indifferent or very poor?

Sarah Mukherjee: For all three?

Lord Cunningham of Felling: Yes, for all three.

Sarah Mukherjee: With the Water Framework Directive—WFD—we have a certain amount of knowledge about other countries because we are all part of the same Directive. River basin management plans are done for every single EU country and, on the whole, compliance with that Directive across Europe is not brilliant, to say the very least. We are better than most but the bar is very low. If you look at countries such as Norway that are outside the European Union but part of EFTA, which have their own surveillance mechanisms and an EFTA Court to make sure they follow the directives that they have agreed to follow, compliance is not terribly high in some parts of Norway. Waste water treatment works are only 50%

compliant. Leakage is very high and so are bills. There is a certain amount of benchmarking that is available. There is the Bathing Water Directive as well. All of this information is internationally compiled.

Jacob Hayler: With waste the way we would generally compare ourselves to other Member States would be headline figures for household recycling rates and for landfill diversion. There are targets for both of those contained in the Waste Framework Directive and the Landfill Directive respectively. We have come a very long way on recycling. We were among the worst performers back in the 1990s; we are now respectable mid-table. You could caveat that as well by saying that up to this point different Member States measure what constitutes recycling in different ways. One of the ambitions of some forthcoming EU legislation, part of the Circular Economy Package currently being negotiated, is to try to come up with a harmonised definition of recycling so that we can compare these things on a more equal basis. I suspect you might actually find that we are not doing too badly at all once you harmonise the definitions. In some of the best performing Member States they include items for recycling which we do not necessarily include in our definition here.

We have again gone a very long way on landfill diversion. We used to be quite reliant on landfill pre-Landfill Directive which was in 1999. There are targets for 2020 which we met around six years early. However, one could argue that they are not terribly stringent given that we have met the targets but are still landfilling about 15 million tonnes of mixed waste every year and, as I have already mentioned, exporting a further 4 million tonnes to the EU to be used for energy recovery. That is almost 20 million tonnes of material that we have not found a proper home for, yet we are meeting the target.

On the recycling side, we are currently struggling to meet the 2020 target which is set at 50% household recycling levels. We are around the mid-40s per cent but there is quite a lot of regional variation. In Wales they are already comfortably meeting that 50%. That is influenced by the different devolved policies that have been put in place.

Lord Cunningham of Felling: Air quality, Mr Andrews?

Alan Andrews: It is possible to benchmark but I am always a little wary of doing so. I do not think there is a very sound scientific basis on which you can do that. You would have to agree on the exact metrics you were using and which pollutants you were talking about, whether you are talking about human exposure to those pollutants, health effects and so on. It is difficult. The European Environment Agency does a very good annual report which gives an overview of levels of air quality and their effects in EU countries, which is a very useful tool. We know from that that air pollution is an EU-wide problem. The UK is not alone in having serious problems with air quality.

Lord Cunningham of Felling: What effect do you think Britain’s quitting the European Union will have on these performances?

Sarah Mukherjee: That is probably the thing we are all struggling with at the moment.

Lord Cunningham of Felling: You are not alone in that.

Sarah Mukherjee: It is a little bit like hacking your way through a forest. The minute you clear a little bit, there is another enormous tree that rushes up to meet you. We had a group of water company lawyers discussing exactly this question yesterday for about four hours. Every time we raised a question, there was another question behind it. For example, what happens on Brexit day one? If we assume we are transposing all the directives into UK law, then what is the status of ECJ verdicts and decisions? You cannot bind your successors but if there is anything less than that, what would stop a company with deep pockets deciding to challenge any piece of legislation or any Regulation that has been made on the back of an ECJ decision in a court on day one? That could happen not just in our sector but any sector at all.

Looking at the data itself, I think we do very well in this country and my colleagues will probably agree. The Environment Agency and companies are very good at collecting data and in many cases, in many parts of the Water Framework Directive, we have a far richer data set than many other countries.

Lord Cunningham of Felling: Is that reflected in a better performance? Having the data is one thing; solving the problems is something different.

Sarah Mukherjee: Exactly. It is better than some, not better than others. Having said that, how much of that is specifically driven because we have to gather that information because of the directive? Water companies would not want to see any diminution in the current environmental standards, but it is not necessarily a race to the bottom; it could be a stroll to the bottom. You could just have a little bit of this legislation taken off or rounded off, or at the next price review we are not looking so hard at this. We had a conversation recently with a colleague from Norway who said that it is very difficult, even with the EFTA surveillance and court process, to get the national government to meet WFD standards because it is not a national issue.

Lord Cunningham of Felling: And on air quality?

Alan Andrews: I am afraid I am going to be rather pessimistic. We understand that there will be a Great Repeal Bill which will transfer the current EU acquis over into UK law. Obviously the devil will be in the detail and I am deeply suspicious that during that very long, difficult and complex process we will see certain aspects of air quality law significantly weakened. We have seen that the Government have been trying to weaken the Ambient Air Quality Directive, particularly in relation to nitrogen dioxide, for years. The EU conducted a review of air quality law in 2013 and the Government were very open about their intention to use that process to avoid the risk of infraction, which is code for avoiding the risk of being sued by the Commission. That failed and the Ambient Air

Quality Directive remains unchanged. I think that shows the vulnerability of the Ambient Air Quality Directive in a post-Brexit world. It might be politically very difficult to actually try to repeal something such as the Ambient Air Quality Directive given the public profile it currently enjoys, but I think you could get to the same result by more subtle means. Some very subtle amendments could rob the Directive of its legal effect. Simply by not replacing the enforcement mechanisms that we lose when we leave the EU we could render the air quality laws pretty much ineffective. At the moment enforcement is primarily the responsibility of the European Commission. Post-Brexit they will have presumably no role at all in enforcement and it will therefore be left to national actors to enforce compliance through judicial review. It would be very easy to make judicial review difficult or impossible for environmental NGOs such as ClientEarth as it was five years ago when the cost of bringing legal action was so prohibitively expensive we could not even consider it. Either by repeal or weakening of the current laws or more subtly through eroding the enforcement mechanisms by which we uphold those laws, we could see a significant weakening in the legal protections we currently enjoy.

Jacob Hayler: We are in a slightly different position in the waste sector in that all of the directives are currently being renegotiated; the main ones that affect us. At the moment we are anticipating that around the time that Brexit might actually occur in 2019 there will be a whole new swathe of rules, regulations and targets that might come in from the EU. We are expecting those to be quite ambitious in what they are trying to achieve in higher rates of recycling and recovery of waste. Those targets will be applicable for 2030. We are anticipating that none of that new legislation will come to apply to us here in the UK. We will have the existing suite of targets which will apply through to 2020 and then nothing beyond.

There are three main ways in which Brexit will impact us. There is the strategic direction, there are the technical rules and regulations and then there is the economic. On the strategic direction we can look at what the UK Government are saying is part of those Circular Economy negotiations in the Council. They are not altogether keen on some of the higher targets, some of the more ambitious aspects of those proposals. We can anticipate that perhaps the strategic direction might not be as ambitious as if we remained as part of the EU, if we chose to leave.

On the technical side, the Government are already looking at possible opportunities not so much regarding the fears already expressed of reducing environmental protection but having a bit more of a flexible risk-based approach to some of these regulations. There is a feeling that some of those rules might be quite prescriptive. The Landfill Directive is quite a good example where we are fully supportive of the direction of travel—getting material out of landfill—but that is accompanied by a lot of quite prescriptive detail on how sites should be engineered and how emissions from those sites should be monitored which perhaps are not necessarily applicable in a UK context. Maybe there is scope for making those a bit more flexible and risk based.

On the economic side, I have already touched on some of those transboundary movements and increasing the costs of that and putting pressure on our domestic waste industry.

The Chairman: You think that in your area there is quite likely to be a divergence between UK and EU legislative areas quite soon after Brexit is likely to happen, so that is quite an important point.

Jacob Hayler: Absolutely. Some of the regulations that might be frozen in 2020 may include things such as standards for end of waste which might govern some of the rules of those transboundary movements. We might freeze those at that point in time so they will be identical, but over time we would expect an increasing divergence.

Q25 **The Chairman**: Exporting waste into the rest of EU and international movement of waste are quite sensitive areas. By being outside the EU, forgetting tariffs et cetera, is there anything in our international obligations that will suddenly stop us from doing that export?

Jacob Hayler: Movements within the EU are governed by the Waste Shipment Regulation which is a transposition of international agreements such as the Basel Convention. We are currently able to export waste as a recycled material, which is a product and has a positive value. Within the EU we export waste which is more like an import of a service. The physical movement is away from the UK but the payment is in the opposite direction. We are paying German and Dutch facilities to treat some of our waste materials.

The Chairman: By being outside the EU, does that change what we can do?

Jacob Hayler: I would not anticipate that, no.

Q26 **Lord Cunningham of Felling:** Mr Andrews, given that we have this well-known and well-documented problem of particulate air pollution which is directly linked to serious ill health and death, does it concern you and your colleagues in the environment movement that there is apparently no dialogue going on between the EU, let alone the UK Government, with manufacturers of vehicles who go on producing more and more diesel engines which are the biggest source of the pollution? I could name one British company that refuses to sell petrol engine cars in the United Kingdom but it offers them for sale in the United States of America. That is the same manufacturer making petrol engine cars for the US but will not sell them in the UK.

Alan Andrews: We are certainly very concerned by the role that diesel has played in Europe's air quality problems. When it comes to particulate matter, diesel is starting to improve. The more recent diesel models contain a particle filter which is relatively effective in cutting out particle pollution provided it is not tampered with and works effectively.

When it comes to nitrogen dioxide, there is a big problem, especially with diesel cars emitting something like four or five times the legal emission limit when they are driving on the roads compared to when they are being tested in the laboratory. Here again the role of the EU in regulating vehicle emissions is critical. The Euro standards impose certain emission standards for pollution on new vehicle sales. We urgently need to improve those standards to ensure that manufacturers are actually producing cars that meet the limits on the road, not just in a test. The UK needs to play a very big leadership role in ensuring that the big car manufacturing Member States—that is, Germany, Italy and France—do not bow to the pressure from the manufacturing industry. What ability the UK will have to play such a leadership role in the light of Brexit remains to be seen.

Q27 **Lord Trees:** Picking up the governance issue, I do not think we have a question on that and it is very important. It has come up before in other evidence sessions and is a hugely critical issue. Let us suppose that everything in the great repeal Act gets transposed into UK law, we can scrutinise that in Parliament, everything is hunky-dory, we are all watching hawk-like for any sort of amendments. However, as two you have suggested, it is going to be the slower degradation that we have to watch for. We are not going to have the Commission; we are not going to have the ECJ. What single or double measures would each of you put in place to ensure continued oversight in the future, in the post-Brexit era, to ensure that the legislation was properly operating and being enforced and obeyed?

Alan Andrews: I have three points. First, transfer ECJ case law over into the UK system so that we benefit from case law which has guaranteed individuals' rights to enforce, hold governments to account, access information and so on. Secondly, there is an international treaty to which the UK is a party called the Aarhus Convention. We currently rely on the EU to implement that on our behalf; we should now implement that in UK law through an environmental rights Act. Thirdly, we need proper enforcement agencies armed with powers of inspection and the power to issue fines and penalties, something akin to the US Environmental Protection Agency.

Sarah Mukherjee: The reason I hesitate is that I think, without wishing to sound too "weasel words" about it, it depends on what sort of post-Brexit deal we have. If we are within EFTA then there are mechanisms, although as we have already discussed, not necessarily the most robust, to ensure that there is some following of whatever law was put in place. The ECJ case law is fine unless it gets challenged in the domestic courts on day one. I think the point about enforcement agencies is right. The Environment Agency is a good and effective enforcer and there needs to be a way to ensure that that rigour stays on after the impetus of the directives may have fallen away.

A lot of the data gathering and the enforcement is driven specifically by directives and UK Government concerns about being infracted against those directives. That of course is another issue; who becomes the infractee, as it were? At the moment it is the UK Government and that drives an awful lot of thinking by the Government about how not to be infracted. If it is not the Government, but a sector, or the Environment Agency in any of the four UK Administrations that raises the question, would there be that impetus and that brainpower behind assuring an avoidance of infraction?

Alan Andrews: Just adding to that point, the Commission's role is vital, not just in bringing infraction cases but its role in ongoing scrutiny of various quite technical matters relating to environmental legislation. One of the big air pollution directives requires the Commission to approve various flexibility mechanisms, but who is going to do that role post-Brexit?

Jacob Hayler: In ensuring that domestic environmental standards are maintained at waste sites, the role of the Environment Agency is very important. I am not sure I would necessarily agree with Sarah that the Agency is good enforcer from our perspective, given that about 2 million tonnes of household and commercial waste goes missing every year and ends up bailed in farmers' fields. However, I would agree that is an important role to play.

Q28 **Lord Rooker:** I am more pessimistic than when I started listening. In some ways question 3 starts off optimistically but I do not think it is. We have already identified that a loss of Commission functions is pretty catastrophic and there is no mechanism to replace it. Before I pose the question, you did refer to the Great Repeal Bill and I would put money on the fact that when the Great Repeal Bill appeals it will have a clause in stopping judicial review. Whitehall will not want this. They will argue that it is complicated, it has never been done before, we have to incorporate all this legislation and we cannot afford to have anything messed about with. I would put money on the fact that there will be an attempt to stop it being available for judicial review. There will be arguments about deregulation and getting rid of a bit of "red tape"—the Brexiteers love that. If you are going to be optimistic this morning, this is the one opportunity to do so. Is there an opportunity in the UK for us to make the regulations that govern transboundary protection more effective from a UK context? I fully accept that we do not know under what conditions we will be out, but is there anything that we would like to do now, but cannot because we are in the EU, that we could do to help ourselves because we were out? In other words, could we make things better for the public, on a transboundary point of view, and are not able to do now but could do if we were out?

Sarah Mukherjee: The one little ray of sunshine that I can bring to the table is what happens after the end of the Common Agricultural Policy. This is very early days. It is talks about talks at the moment with colleagues across the sector. There is an opportunity to produce a system where farmers can be paid for public goods, such as water management, flood protection and environmental management, more than they are already. As with all these things, the devil will be in the detail but we can maybe move towards a system where there is a much more direct and obvious benefit for the public. At the moment is quite diffuse. CAP money goes into Brussels and it comes out again and the vast majority of people have no idea how the Common Agricultural Policy works, and why would they? Once it is actually on the Government's balance sheet and you can see there is a direct link to the amount you are paying farmers, questions will inevitably be asked about what we are paying for.

Lord Rooker: You are saying "Put it all in Pillar 2" in a way.

Sarah Mukherjee: Yes, moving towards a more Pillar 2 idea. There is a lot of enthusiasm and optimism with not just water companies but the wider water sector about what we could do, what we have the opportunity to do, but we realise it is a very small window.

Alan Andrews: Theoretically, yes. The current legal framework from the EU is far from perfect. I have already spoken about the problems with vehicle regulation and I will not repeat that. Theoretically, there is an opportunity here to correct and come up with a world-leading legal framework. We have been calling for a new Clean Air Act 60 years after the Clean Air Act 1956. There is a whole host of things that you could do to improve current regulation. The question you have to ask is: is that likely, given the current Government's position? We have seen it negotiating very much the other way in Europe. From a more practical point of view, is there going to be parliamentary and Civil Service time for these kinds of things? At the moment the priority really has to be holding on to what we have got and making sure that the Great Repeal Bill really does transfer all existing legal protections. Only then can we think about actually taking things forward and improving them.

Jacob Hayler: There are certainly opportunities and we should all be optimistic for the longer term about what those opportunities might be. I have broken things down into strategy versus technical. On the strategy side, some of the future targets proposed by the Commission are certainly ambitious and, some would say, perhaps unrealistic when coupled with how they might define recycling to meet those targets. We could perhaps come up with something that is more focused on meeting our environmental ambitions and creating value from our resources in a more sensible way and in a more industry-friendly way for the users of those resources. On the technical side, the important thing about regulations is that they are sensible and they are enforced. I have already mentioned that there are gaps in enforcement that could be tightened and there is nothing to stop us tightening that domestically. There are opportunities for more UK-specific risk-based approaches contingent on our unique, specific geology, et cetera. There is certainly scope for opportunity in a number of technical areas on some of the regulations.

Sarah Mukherjee: We would agree on waste as well. The water industry is the biggest user of anaerobic digestion. A lot of waste water treatment plants are completely self-sufficient in energy as a result, but some waste regulations hinder the circular economy rather than supporting it, such as in co-digestion and those areas. There may be an opportunity for a regime in which waste is really what you are left with when you cannot do anything else at all with it.

Q29 **The Chairman**: That is a very useful comment. Mr Andrews, perhaps I could just challenge you a bit. Partly because of the work that ClientEarth has done, and partly because there has been a movement in people's understanding of the issues about air quality, can you not be a little optimistic and say that, because public awareness of this is getting so much greater, which is what you said earlier, there is an opportunity here and that the British Government could ride some of that and respond to public demand maybe quicker than Brussels would be able to do?

Alan Andrews: I hope you are right and, now that we have the legal case out of the way, that is going to be the focus of my work. It is going to be a real challenge for the reasons I explained. The cultural mindset that we see within the Government—the mantra, really—is "Flexibility, flexibility, flexibility".

The Chairman: I have to remind you, we will not necessarily have the same Government forever. It may seem like it but perhaps we can take a slightly longer view.

Alan Andrews: In a different political climate then certainly there is an opportunity. The Clean Air Act 1956 was an excellent piece of legislation that was replicated across the world. We would like to develop the same thing to tackle modern air pollution.

Q30 **Baroness Sheehan:** We are told that Brexit means Brexit so let us cut ourselves adrift from Europe. How far is it possible to deal with transboundary pollution through purely domestic measures?

Alan Andrews: With air pollution, because of the statistics I mentioned, it is possible to almost come up with numbers. Putting it very simply, if we produce about half the air pollution, we can deal with about half and then we are left with the other half. I know it is a very crude explanation and I am not trying to be flippant; it just shows the challenges we would face outside the EU. We would then be relying on bilateral and other multilateral negotiations with European countries to bring down pollution. The main mechanism for doing that will be an international agreement called the Gothenburg Protocol but you would be relying on political horse-trading between the UK and other European countries.

Baroness Sheehan: Would you not just deal with the pollution here in the UK and let the continent deal with their pollution? Would that be a good way to tackle it?

Alan Andrews: Certainly we can and should get our own house in order first. There is a lot that we could do to improve air quality.

Baroness Sheehan: We do not differentiate between pollution that comes from the continent. We just accept that some comes from there and we deal with it here and that some of ours will go there and they can deal with it there.

Alan Andrews: We can do that but that is an approach that has not been enormously successful in the past, looking back to the problems with acid rain in the 1970s. At the moment central and eastern European Member States in particular have very high emissions of pollution. We will no longer be at the table and able to influence those Member States in bringing down their pollution.

Viscount Hanworth: Are we not exporting more sulphates than we are importing? Can you give us some notional balance of these things?

Alan Andrews: We are a net exporter of the precursors to $PM_{2.5}$ because of the direction of prevailing winds.

Viscount Hanworth: How important is Saharan dust?

Alan Andrews: Not very. In southern Spain it contributes quite a high percentage but for the UK it is negligible.

Viscount Hanworth: What about nitrates and microcarbons?

Alan Andrews: I could not give you numbers but certainly agricultural emissions lead to a lot of the nitrate particles—80% of ammonia emissions come from agriculture. That gives you some idea.

The Chairman: Did anybody else want to comment on Baroness Sheehan's question?

Jacob Hayler: Waste moves across boundaries in two forms: it is either for recycling or it is to be treated. Recycling is a product which operates in global markets and that will continue to be the case. We will continue to rely on overseas manufacturers to soak up the material we are collecting for recycling. We collect about 10 million tonnes of paper and cardboard every year but we only have about 3 million tonnes of domestic paper mill capacity. We are going to have to keep relying on those overseas markets to fulfil our recycling ambitions. On the treatment side, we are exporting a load of stuff to northern Europe which perhaps in the long term we should be looking to treat domestically and we should be looking to be more self-sufficient in the treatment of that waste material, but that is going to take a big investment programme. Estimates range from £5 billion to £15 billion of infrastructure that would need to be put into place to treat all that waste domestically.

Baroness Sheehan: That is a slightly different issue to water and waste pollution. It is more trade related.

Alan Andrews: Absolutely, yes.

Baroness Sheehan: Do you have anything to say about how we might tackle water pollution issues?

Sarah Mukherjee: Obviously we have our own water and the issues are much more around the policy aspects and how the various directives will or will not affect us. We have a similar situation to waste in that the water framework directive is being revised and we will probably have that revision in 2019. Again, do we follow that path? At what point do we lock in the water framework directive to UK law? At what point does it perhaps go its own way?

Baroness Sheehan: Air pollution and water pollution are very important issues. We have air pollution and we have water pollution. We can tackle the technology we need but the main issue is whether we have the will to enforce our own laws. Would that be correct?

Sarah Mukherjee: In order to ensure enforcement of the standards that we have at the moment the impetus is currently being driven through the directive. Before I joined the water industry I was a journalist and having seen this from this side and from the other side I know that governments pay a lot of attention to the risk of being infracted because it is very expensive and it is not brilliant for your reputation.

Baroness Sheehan: I think your point of who is the infractee is an interesting observation.

Alan Andrews: During the course of this last round of litigation against the Government it was revealed that the main driver behind their new air quality plan was not the Supreme Court order from the UK in 2015, but the threat of being infracted by the Commission. They aimed to comply based on when they thought the Commission might move to issuing fines.

Q31 **The Chairman**: Moving on to the next question, what ways could the geography of the UK and its physical location in relation to Europe affect its relationship with the EU on environmental issues? Brexiting is Brexiting but we are still going to be there geographically. Are there challenges with regard to Northern Ireland? Are there additional points to be made here that we have not gone through before?

Jacob Hayler: Certainly our proximity opens up the possibility of this 4 million tonne export of waste as a fuel. There is a lot of overcapacity for that sort of treatment in other parts of northern Europe and they are very keen for us to maintain those flows of materials into their facilities. It would be a cost issue. If we were further away it would be too expensive to do that, whereas for recycling that material has a positive value which means it can travel a lot further.

Viscount Hanworth: Can you say which countries?

Jacob Hayler: Scandinavia, the Netherlands and Germany are the principal ones.

The Chairman: Did we use to send a lot of plastics to China?

Jacob Hayler: Yes, some plastic goes to China. A lot of paper and card also goes to China.

Q32 **Lord Selkirk of Douglas:** I should mention that I am aware that one of my four sons is working on a drinking water project and my wife is supporting that. To that extent I have an indirect interest, although I have a direct interest in drinking water like all my colleagues here today. What action should the Government take to make certain that transboundary environmental concerns are properly addressed? Should the Government be pursuing co-operative arrangements to achieve transboundary environmental management? Do any cooperative structures need to be thought through and negotiated fully as part of the Article 50 process or can they be dealt with subsequently?

Alan Andrews: On air pollution the structures are already in place and are pretty effective. In information sharing and intellectual power the UK plays a very positive role. We have the Gothenburg Protocol which is the international treaty which includes the US and Canada, Russia, the EU and other European countries. That has various technical groups. It allows information sharing and sharing of scientific information. It has a very good architecture. We should remain committed and involved in those processes. At the EU level we have very good systems and structures in place under what is called the NEC Directive. That is essentially a directive that sets overall targets on emissions from all EU Member States. That directive was recently revised and it establishes a clean air forum which will allow for sharing of best practice and scientific information. Rather than trying to set up new structures we should continue post-Brexit to engage fully in the structures that are already in place and are relatively effective.

Lord Selkirk of Douglas: In your view should there be a presumption that there will not be a change rather than that there will be on the grounds that the protection should remain in place until something better is thought of?

Alan Andrews: I think that should be a very sensible assumption. Let us hold on to what we have until we have developed and put in place a better system that we know will work.

Sarah Mukherjee: It very much depends what we are left with when we pop out the other side from Brexit and whether we have a boutique solution or whether we have decided to join one of the extra-EU organisations that are already there. Bearing in mind we have this big review on the water framework directive already, for the UK it is very difficult to influence elements of that which of course still may affect us if we decide to lock in whatever happens after this review before we leave the EU. I sit on the board of our European federation of water industries and it is really only through that that we are being able to have any influence at all in what is one of the foundation structures for a lot of the environmental aquatic legislation in this country.

The Chairman: Is that a trade body or is it an official body?

Sarah Mukherjee: It is an organisation made up of the membership organisations of not just EU countries but Norway and Switzerland as well.

The Chairman: Whatever happens, would you expect to remain a member of that group?

Sarah Mukherjee: The argument we would make to our members is that that is all the more important because it becomes the only way we have of directly influencing. EurEau is considered a super-stakeholder by the Commission. We have a lot of conversations between the Commission officials and EurEau.

The Chairman: There is no question that that organisation would expel you from it?

Sarah Mukherjee: No, because we pay our membership fees—paying the piper and calling the tune.

The Chairman: There could still be that quite significant influence through trade bodies into the Commission?

Sarah Mukherjee: I would not say that the influence would be significant but it certainly is a lot more than we, as Water UK, can expect at the moment, even now whilst we are still a member of the EU.

Jacob Hayler: We are a trading sector with the EU so like every other trading sector we think we are incredibly important and would like to see us included as part of the negotiation process. The big fear for us is that all of Defra's capacity is going to be used up focusing on agriculture and farming and what on earth is going to happen post-CAP. There is a real fear in our sector that we might be overlooked, which has economic implications of cost increases and environmental implications of a lot more waste going to landfill.

Lord Trees: What are the World Trade Organization's tariffs for waste or recycling? Is it fixed very low?

Jacob Hayler: To be honest, I do not know. I would have to come back to you on that. The fear is that any tariff is more than no tariff. You could export waste for about £60 a tonne to northern Europe. Currency movements could be pushing that up closer to £75. Landfilling it domestically is about £100. It is all adding up to quite a lot.

Q33 **Lord Curry of Kirkharle:** Incidentally, the concern in the farming industry is that they are well down in the pecking order of priorities anyway. To declare my interest, I farm in Northumberland. To some extent we have encroached on my question but nevertheless I think there is probably more to come. I would like to ask about non-EU countries and our current relationship with them. We have mentioned Norway and others that clearly have a relationship with the European Union currently and we will be in that position afterwards. To what extent are they able to influence us and are we able to influence them currently as members of the European Union? Where do you think we would sit afterwards in that positioning?

Sarah Mukherjee: Through the work that we do through EurEau, through our European federation, we do have this but it is bilateral, particularly around technical information. Again this is a very interesting point that has come out of our conversations with those members of EurEau who are not members of the EU. The reason they are there is because it is very difficult otherwise to get that sort of technically specific information. If you have agreed to mirror the water framework directive, or other directives which you need to have but which are not necessarily available to you, you cannot just rock up to a Commissioner and ask, "What are you thinking of doing on pipe lengths or pipe widths or diameters?" Another potentially significant issue for the water industry would be exactly those technical specifications. At the moment we have them across Europe. If we close the door and decide to stay with what we have, we could end up with a niche threepenny-bit type of piping infrastructure which would be incredibly expensive because no one else will produce it or their standards will have changed. It is that sort of technical information that we will all struggle with potentially when we are outside the European Union.

Lord Cunningham of Felling: Sarah, would your main contact be through your trade bodies?

Sarah Mukherjee: Yes. We have good relations with Norway and Switzerland as a result of that.

Alan Andrews: Perhaps it is useful to think of this in three categories. There are countries such Norway that are in EFTA. There are other European countries that are not—Switzerland being the obvious example. There are then non-European countries. Norway is bound by the ambient air quality directive, which is the NEC directive that I mentioned. Last year, it was found guilty by the EFTA Court of breaching the ambient air quality directive. The EFTA Court does not have power to issue fines so that is not nearly as dissuasive as it would be against an EU Member State. Norway is bound by these EU air pollution laws but has very little say in how they are shaped. I have sat in stakeholder expert group meetings and the chap from Norway is there. He listens and takes notes and makes the odd helpful comment, but he really has very little say. When the chips are down, Norway has very little influence on the process. It is a similar story with Switzerland. They are not bound by EU air quality laws but they follow them very closely through their domestic legislation and in some cases really lead the way. Sometimes the EU looks at Switzerland as an example of best practice. That might happen post-Brexit but I think it quite unlikely. Outside the EU, under the auspices of the Gothenburg Protocol, the international agreement, it is really the big power blocks who have an influence. It is Russia, the US, to a lesser extent Canada, and the EU as a negotiating block. Individual countries, Norway for example, have relatively little influence other than through soft power, funding research, contributing good ideas and that sort of thing.

Jacob Hayler: Regarding transboundary movements of waste we are in quite a unique position in the UK because nobody else is closing their landfill capacity faster than they are developing alternative capacity and therefore relying on that movement of material into the EU. It will become a trade issue rather than an environmental one.

Q34 **Duke of Montrose:** I speak as a farmer and land manager. We see that the effort will be made to maintain all the controls, so that they come across as they are, although you worry that they will be nibbled away later. Obviously, there should be no problem maintaining regulations on emissions into the atmosphere that impact negatively on human health. However, on greenhouse gases—there are quite a lot of them—when it comes to CO_2 there is quite a strong lobby trying to weaken the regulations on that. Where do you see that going? The other question that the Committee is asking is: what information does the Government need to manage transboundary environmental issues? How can we ensure that they get access to it?

Alan Andrews: On CO_2 we are a little less worried partly because the UK has played quite a leadership role and has been relatively good on climate change. Of course we have the UNFCCC providing the negotiating and legal framework for addressing climate change. When it comes to information on air pollution, you need to know the source apportionment, so you need to know what is causing the air pollution and where it is coming from so you can manage it. You need to know what impacts it is having, so you need to know the health impacts and other impacts, such as impacts on environment, crops, water and so on. You need to be able to share best practice on the solutions and how to come up with strategies to address those problems. I would say they are the three most important things. Scientific research is essential. At the moment the UK contributes excellent first-class science on air pollution issues. There might be a risk that that is undermined by the UK not being able to access EU scientific grants and not being involved in these big cross-European studies which are so important.

The Chairman: Does much of the research come from the Horizon 2020 programme?

Alan Andrews: Not being a scientist myself, I could not tell you any sort of estimate but certainly my sense is that European money is very important at the moment.

Sarah Mukherjee: We could agree with those points. The Climate Change Act was the first of its kind in the world and Lord Krebs has been an intrinsic part of making sure that governments have been kept in order on those particular targets.

The Chairman: We also have Lord Rooker who actually steered it through the house.

Lord Rooker: I was the legislator.

Sarah Mukherjee: I am sorry, my Lord; I should have acknowledged you as well. We have a unique piece of UK legislation and companies are very keen to ensure that we keep our carbon down as low as possible and we recycle as much as possible. Regarding the information points that

Alan makes, again it is back to this idea of soft influence as well. Without those conversations that happen at European Commission special interest or expert committee meetings that we have access to at the moment, which we will not in the future, without the international research projects that go on and in the coffee-break moments that you have that are so important, I think we lose an awful lot by not being at the table and actually not even being in the room.

Q35 **The Chairman**: We often talk of product divergence and product standards, but regarding data standards, is Eurostat the body that defines what the statistics may be? As we have seen with devolution within the UK, sometimes we will start measuring things slightly differently to the others, so we have a divergence. Or is that something I do not have to worry about at all?

Alan Andrews: Certainly in air pollution there is already quite a bit of divergence between how air quality is measured. Member States are given a certain amount of leeway in, for example, where you position a monitoring station.

The Chairman: So it is pragmatic.

Alan Andrews: It is, yes.

The Chairman: That is all I need to know.

Sarah Mukherjee: Likewise there is already a certain divergence.

Lord Rooker: Could I ask a brief supplementary of Jacob because I am not clear. On the waste that we are exporting to Europe, other than paper and board, what in the main is it? Are we exporting material for digesters? What is the main waste that we are exporting to Europe?

Jacob Hayler: It is less organic material, because that is heavy and tends to be low value. It falls under two broad categories. One is recycling, so that is paper, board, plastics, metals, et cetera. The other is waste-derived fuels which is where mixed waste is taken, often from commercial sources. It goes through some sort of treatment process to make it suitable for input into an energy plant, so it is shredded to a certain level of consistency. It is blended to make sure it is the right calorific value. It is essentially mixed-waste inputs.

Viscount Hanworth: I find it very hard to imagine what are the substances involved.

Jacob Hayler: It could come from small shops, for example, from retail. A lot of plastic and paper. It is the same sort of stuff but it is mixed up predominantly. Then it is shredded and blended to create a relatively consistent fuel.

Lord Rooker: Do you send food waste?

Jacob Hayler: Not deliberately.

The Chairman: Colleagues, we need to bring this session to an end. I thank our witnesses very much for going through this with us and the important evidence you have given us today. Thank you very much indeed. I bring this part of today's session formally to an end.

Examination of witnesses

Bob Ward, Jonathan Gaventa and Professor Michael Grubb.

The Chairman: Good. Let us start this second session today, which is of the EU Sub-Committee on Energy and Environment looking at Brexit and the environment. This session is primarily on the issue of climate change. I welcome our witnesses. Thank you very much indeed for attending. Perhaps I could just remind you of the blindingly obvious: that this is a formal evidence-taking session. It is being both recorded in shorthand notes and webcast, so you are on the public stage. You will be sent a copy of the transcript and if there is anything that you think is inaccurate in it, you are very welcome to come back to us to change that. I remind members once again to declare any interests that they have, and I will declare—although I probably will not get into this area—that I am a board member of the Marine Management Organisation. I am also now a designate director of the Green Purposes Company, which holds the golden share in the Green Investment Bank.

Perhaps we could have the witnesses explain who they are and go from there. Professor Grubb, perhaps you could start us off.

Professor Michael Grubb: My name is Michael Grubb. I am professor of international energy and climate change policy at UCL.

Bob Ward: I am Bob Ward. I am the policy and communications director at the Grantham Research Institute on Climate Change and the Environment at the London School of Economics.

Jonathan Gaventa: My name is Jonathan Gaventa. I am a director at E3G, a not-for-profit think tank focusing on climate and energy issues, with a presence in the UK, Brussels, Berlin and Washington.

Q36 **The Chairman:** Thank you very much indeed. Perhaps we could start with the fundamental question of what you view as the opportunities and challenges for the UK post-Brexit in the area of climate change policy. I am going to ask each of you to do that, and perhaps, Professor Grubb, you could start us off.

Professor Michael Grubb: In a slightly academic fashion, to kick off, I will run through the areas, because I think it is quite important to be clear. One is legal dimensions of energy policy per se, where in legal terms there are not huge implications, in the sense that energy has always been the preserve of national policy and is protected under the EU articles as such. Countries have very divergent energy policies and the UK has in many ways ploughed its own furrow. Technically, legally, that would not change. Obviously, what could change is environmental policy, where the EU has had a much stronger hand, and its dimensions of climate policy, and those would include, for example, EU ETS, renewable energy targets, and energy efficiency and ecodesign directives.

There are the economic impacts in the short term—and here a lot of analysts were in a somewhat different position from the politics; on the politics of Brexit, a number flagged concern over short-term costs. There have been some impacts arising from exchange rate effects, some impacts on investor uncertainty, but probably the bigger issues accumulate over the longer term.

There are definitely regulatory issues that will be among the challenges, in the sense that EU energy regulation has been increasingly bound up, particularly with the third package of European legislation. The UK has chaired the Council of European Energy Regulators and ACER, and as from about 2019 there would therefore be questions over where and how the UK derives its specific regulations. We would also lose the legal protection of an independent energy regulator, which is stipulated under European law; it has to be independent.

My headline is that it seems to me that all the above are broadly subsumed by the political ramifications, which I think have both opportunities and threats, but those I can return to perhaps in the second area of questioning: carbon pricing, the EU ETS, et cetera.

Bob Ward: As Michael described, there are many areas, but the main thing to stress is that the UK has very clear national legislation that guides primarily our action on climate change, the Climate Change Act. It provides the overall targets that we aim for. Inasmuch as Brexit will affect UK policy, it will be in implementation. As Michael said, there are question marks over whether we are inside or outside of the ETS, which will make a big difference. There will be opportunities around, for instance, whatever replaces the Common Agricultural Policy in the UK which gives you an opportunity to make reduction of greenhouse gas emissions and climate resilience a greater priority for the agricultural sector.

Probably one area worth stressing is that one of the downsides, which we can say without uncertainty, is that the UK will participate in international negotiations as an independent state rather than as part of the EU bloc. That seems likely, and that will make it less influential, because the EU collectively is the third largest emitter of greenhouse gas and has considerable influence in the negotiation process, as was seen in Paris, and the UK has been playing a leading role. The UK will, for instance, have to ratify separately the Paris Agreement, and will need to submit its own nationally determined contributions outlining how it will contribute to the Paris Agreement. Those are some of the major implications.

Jonathan Gaventa: I would add two things to that, and I agree with the previous comments. First of all, we are not looking at this purely as a question of maintaining existing standards, because we are facing a context in which both the EU as a whole and we globally need to move further and faster on climate change. The Paris Agreement set out the context for that but it also recognises that we are not yet on track for those goals.

Within that context there are two areas: the end state, which UK and EU climate arrangements will eventually reach, but there are also some issues around managing the transition risk of what happens between here and there. There are a couple of concerns to put on the table as part of that transition risk. At a time when, internationally speaking, we realise we need to go much further in developing the arrangements under the Paris agreement and increasing ambition internationally, there are challenges around diplomatic capacity, political leadership and focus, in getting bogged down in a very complex area of disentanglement with the EU.

On potential opportunities or areas of benefit, it is hard to say there are particular areas in which we could act that we could not have done previously, but it is certainly the case that there are some big questions about the UK's economic direction as a result of its changing relationship with the EU. As a result, I think there is an opportunity to focus on how the UK's economic and industrial policies can be aligned with some of the opportunities that arise from a global transition to a more sustainable energy system, and how the economic industrial policies align very closely with the objectives of our own Climate Change Act.

The Chairman: Thank you very much.

Q37 **Baroness Sheehan:** Are there any particular elements of EU climate policy and mechanisms that the UK should either maintain or repeal, and why?

Professor Michael Grubb: I think it is worth saying in this context that the UK has traditionally placed more emphasis upon market mechanisms, carbon pricing, as part of the strategy, and rather less perhaps on standards and targets. We acknowledge that carbon pricing has not been clear or strong enough to deliver a great deal, and a number of EU policies around energy efficiency, the ecodesign directive, the energy efficiency package and targets, are valuable; they are cost-effective and I think it would be wise to maintain those.

The renewables targets are obviously more controversial. We have the implementation framework in place for renewables policy, with energy market reform for the electricity sector at least. It seems increasingly likely that the UK will over-deliver in electricity and under-deliver in the other sectors concerning its renewables target, and collectively perhaps would have been facing infringement proceedings. Whether in practice that would have had much impact is hard to say; we would presumably not face that per se. Personally, I am of the view that having renewables targets—one could debate whether or not they were too ambitious—is a helpful organisation framework within which to judge the objectives and adequacy of delivery mechanisms. I am not expecting the UK to adopt renewables targets for 2030, but there would be a case for at least shaping our expectations and ambition levels on renewables. Those would be the most obvious headline areas.

Baroness Sheehan: Are there any we should repeal?

Professor Michael Grubb: No.

Bob Ward: We will come on to a detailed discussion about the ETS, which I think is of particular interest. As Michael described, there are plenty of regulations around efficiency which would be worth adopting in UK law—around fuel efficiency standards, for instance, in the vehicles sector, energy=-0efficiency standards for electrical appliances, those sorts of things. It would make no sense for the UK to step out of line, because whatever the trade between the UK and the EU ends up being, there will still be a considerable flow, one would expect, of products and services that will need to meet a common set of standards. It would make sense to adopt those.

I mentioned the Common Agricultural Policy. I think there is definitely scope there for using whatever replaces it in the UK to give greater emphasis to the agricultural sector reducing emissions and making the UK more resilient, including looking at, for instance, crop mixtures and which ones will be best for our climate in the future.

As Michael described, for UK policy we have tended to set targets for emissions and then let the market decide how best and most cost-effectively to do that. It is certainly the case that the renewables target and the energy efficiency target have helped to undermine the carbon price of the EU ETS; nevertheless, there are elements of how you provide a framework that allows a forward signal that would mean that companies act with a view to the future rather than the near-term, and standards that give a very clear direction can be very effective.

I should have said this at the start: I think the Committee on Climate Change has already produced an excellent guide across the board to all the issues connected with climate policy and the potential implications of Brexit, and it is the expert in implementation of the Climate Change Act and the carbon budget, so I commend that document to you as well.

Jonathan Gaventa: I have two things to add. First, the UK currently negotiates in the UNFCCC as part of the EU bloc. By doing so it has gained considerably more influence than it would have as a lone actor; as part of a bloc of 500 million people it can marshal the forces of its diplomacy more effectively than it would be able to otherwise. This is an area where continuity would be beneficial.

The other area which will be much more complicated to separate out is investment. At the moment, the EU budget for research has had a major focus on climate change and sustainable issues, including for UK bodies. There is a question about how that will continue in future, but that is tied up in the much broader question of budget payments more generally. There are similar issues with the European Investment Bank, which, again, has been a very useful instrument for low-carbon energy infrastructure investment in the UK and across Europe, and there are, again, much bigger questions about whether and how the UK remains a part of that system.

The Chairman: I am sure we will come on to that later as well. Professor Grubb, I think you want to come back briefly, and then Lord Krebs wants to come in on this.

Professor Michael Grubb: Yes, just a clarification of my previous answer. I was referring to the electricity sector based on the current situation, and assuming we want to continue trading electricity and gas with the EU at scale. Obviously, there are problems in some areas of European policy: for example, around diesel for the transport sector; agriculture I am not really qualified to judge. I did not want my previous answer to sound too all-embracing or overconfident. I am sure there will be areas where I can be persuaded.

The Chairman: Thank you, professor. We note that. Lord Krebs, you wanted to come in on this question.

Q38 **Lord Krebs:** Very briefly, if I may, I will build on the commercial that Bob gave for the Committee on Climate Change, and I declare an interest as a member of the Committee on Climate Change, and chair of the Adaptation Sub-Committee. You referred to the report that we published a couple of weeks ago on the implications of Brexit for climate change, and I wanted to turn Baroness Sheehan’s question the other way round, because in the summary of our report we have a table that shows that 55% of the emissions reduction that the Government are now legally committed to to meet the fifth carbon budget is covered by EU-level policies. To put the question the other way round, if we did not comply with the EU-level policies, would we have any chance at all of meeting the fifth carbon budget?

Professor Michael Grubb: It depends what you did instead. It would seem odd to weaken something if you have to strengthen other things all the more.

The Chairman: I think that is as far as we are going to get at the moment. Lord Krebs, do you want to continue?

Lord Krebs: Thank you. My question relates more to adaptation than the mitigation we have been talking about so far, although Bob Ward has alluded to the fact that whatever replaces the CAP may give us an opportunity to build resilience in the agricultural sector. Can you broaden that and tell us what impact UK withdrawal from the EU might have on the national adaptation programme?

Bob Ward: I cannot claim to be an expert on this particular area, but it seems to me that in adaptation policy probably even more than mitigation policy, the UK's actions are largely driven by what it sets as its own agenda. The national adaptation programme I think is among the leading, if not the leading example of how a country should set about understanding the risks it faces and how to respond to them. The annual reporting, the structure of the Committee on Climate Change and the Adaptation Sub-Committee led by Lord Krebs, and the annual updates every five years, give a very clear direction.

It is not so much the direct impacts where the UK perhaps finds it most difficult to think—and we can see already the direction of the climate for the UK: that is, heavier bouts of rainfall, which increase the risk of inland flooding; rising sea levels, which increase the risk of coastal flooding; and we will probably see more bouts of drought and increased risk of heat stress, which will have wide implications. It is more understanding how climate change will affect the UK indirectly through other parts of the world, and I think there is good evidence at the moment, for instance, that the war in Syria partly had its roots in a record drought in the region, which seems to have been exacerbated by climate change. It is that kind of ongoing impact through the movement of people which it is most difficult for the UK to work out how best to respond to, because it could make a fundamental impact on all countries, of which the UK will be one.

That is an area in which ongoing co-operation with the European Union Member States, either in close relationship, within some formalised relationship, or separately, will be crucial, as well as understanding things such as impacts on food security and food supply. Again, the UK will not be totally self-sufficient in food inside or outside the European Union. We saw in 2010, for instance, with the temporary spiking in the price of wheat, which again is considered as perhaps one of the contributors to the circumstances that led to the Arab uprising; that was down to a series of extreme weather events around the world that affected major wheat-producing countries and Russia's response to that. That is another example where we are going to have to work with EU Member States and other countries to work out how the UK can best make itself more resilient to these impacts in the future. That is shrouded in uncertainty, the nature of resilience being not so much about understanding precisely what the impacts will be but about providing a degree of resilience against potential impacts.

The Chairman: That is certainly a broader canvas, and an interesting one on EU development activity in the climate change area. Would anybody else like to come in on this area? No. Lord Krebs, is there anything else you wanted to follow up on?

Lord Krebs: Just one small question which I do not know whether the panel has any view on: to what extent would the scientific evidence that underpins our risk assessment of the future impacts of climate change be affected by Brexit? The UK has, quite unusually, two major centres of climate modelling, namely the Met Office Hadley Centre and the European Centre for Medium-Range Weather Forecasts in Reading, whose future is in doubt; the future of the UK is in doubt, I think. I wondered whether Brexit interplays with those issues at all.

Bob Ward: The university sector in general is, I would say, very worried by the potential impacts of Brexit on both students and staff being willing to come to the UK. Some of my colleagues have already experienced this in proposals going forward to Horizon 2020: they have been basically booted off collaborations by European partners, who are not so much punishing the UK for having voted out as have anxieties about the implications for funding. It is well known that the UK has been a net recipient of research funding compared to its input.

The ability to work with the best people around the world is essential for producing high-quality research, and one would expect that if Brexit results in any kind of disincentive compared to now to working with other European researchers on understanding these common issues and finding solutions, that would be detrimental. I do not know enough about the specific case of the ECMWF, but anything that threatened its status or location in the UK would be detrimental to the UK. It is recognised around the world as a world-class institution. It provides information that the UK uses in its understanding of the change in the climate, and it also boosts the reputation of the UK internationally to be the host for such an important body.

Q39 **Duke of Montrose:** I think we have just been dealing with this question and I am not sure if there is any more to be said. What will be our ability to fund climate change and adaptation measures? That is the issue we have discussed.

Jonathan Gaventa: I see three angles for this question of funding climate change measures. The first is on our international climate change funding commitments, which falls under the category of overseas development assistance. By and large, the announcement of such funds is carefully co-ordinated on a political level with our European partners, so as to have the most impact during the international climate negotiations. However, the disbursement of those funds remains largely a national competence, and we do not expect to see too much change there, although of course continued alignment with our European partners on political announcements is very important.

The second issue around funding is on private-sector funding, and this is perhaps something that we can pick up in more detail. We have heard already that uncertainty about future policy direction and relationships has created concerns in the finance sector and energy investments. This is an area of concern. However, we are seeing support from the UK Government so far for the City of London, for example, to play a much larger role in green financing—potentially even as a partial response to some of the questions of how the City is affected by Brexit overall.

The third area is that of EU public funding, which we have touched on briefly already. Currently, the EU budget earmarks 20% of its overall funding for climate-related activities—this is both mitigation and adaptation measures—and the UK has been a beneficiary of this in a number of different forms: through the Common Agricultural Policy, which has been mentioned; through structural funds; through infrastructure support, such as the Connecting Europe Facility, which has supported the development of some of the interconnection to the UK; and through research funding. In each of these areas there is a significant question about the future of this funding, and in particular whether the climate-related commitments will be maintained at least at the current level. We would certainly like to see assurances from the UK Government on that point.

The other concern that we have as a European organisation is what happens to the EU budget after the UK leaves. The UK is a net contributor, so we expect for the next budget round, 2020 onwards, there to be considerable pressures on the EU budget. We are certainly hoping that the EU exit would not lead to any weakening of existing commitments on climate earmarking and could potentially, given the international context, even lead to a strengthening of it.

Duke of Montrose: Very interesting that your first two points were to do with outgoing funding and the third one is to do with EU funding coming in here, and, of course, the interplay between those elements. If we suddenly find ourselves short of the EU funding that currently goes into research, what effect will that have on the amount of money that we are prepared to put into helping third-world research or any of these other things?

Jonathan Gaventa: I would say that the UK's commitment to international climate finance has been very closely bound up with the development of the current international regime and the Paris Agreement, so any move away from meeting existing commitments could be very damaging in making sure that other countries remain committed partners of that regime.

Professor Michael Grubb: Just a quick addition, linked to the previous discussion as well. In addition to the hard science centres, one should not underestimate the significance of the European research networks on economic and social science dimensions, and the way that they have helped to build a stronger research infrastructure and a bit more common thinking across the EU. In so far as the European level of the research sector suffered, that might suffer along with that. My only added point on the international funding is as a function of where the UK sits in the international negotiations. Clearly, the dominant decisions in future will be driven between the US, China and the EU, so the UK would perhaps be a lot less directly engaged in shaping the international financial decisions.

The Chairman: Thank you. Perhaps we could move on to the Emissions Trading System and Viscount Hanworth.

Q40 **Viscount Hanworth:** I remember that the UK played a leading role in establishing the EU Emissions Trading Scheme, and I also believe that the scheme has not entirely fulfilled its expectations. Perhaps people could comment on that. However, my question is: if the UK were to remain part of the EU ETS, how important would it be to retain influence regarding its own rules, and indeed, would it be possible to retain influence?

Professor Michael Grubb: It is a hard or soft Brexit question, is it not? If we were in a soft Brexit, part of at least the single energy market, one could remain part of the EU ETS and one would have at least observer status on its future evolution but not voting rights—broadly the situation of Norway. I imagine some attention would still be paid under those circumstances to the UK's views. Under the hard exit, it is a little hard to see how the UK would remain part of the full EU ETS infrastructure, although one could try and carve out exceptions. At that point, if the UK is not part of that trading apparatus, I think the UK position would be developing some kind of separate carbon pricing system and linking.

Viscount Hanworth: Did you have something else to say?

Professor Michael Grubb: A slightly different aspect of carbon pricing. Maybe we will come back to that.

Viscount Hanworth: Could you also comment on the efficacy and importance of the scheme?

Professor Michael Grubb: It had aspects that are well-designed and initially a significant impact but, as we know, it has sunk under the weight of surplus allowances to a price which is more or less irrelevant to most decision making. In particular, it has proved itself inadequate for investment purposes; it has very little influence or credibility on investment choices, and that is a fundamental problem of the current structure.

Viscount Hanworth: Would Bob Ward share that opinion or is he more sanguine about its prospects?

Bob Ward: I want to flag up the work of a couple of my colleagues, Luca Taschini and Baran Doda. They have looked at the operation of emissions trading schemes around the world, and it is very clear that, for the UK, leaving the ETS would increase the costs for UK companies of reducing emissions. UK companies are essentially responsible for about 11% of the emissions within the trading system, and the ETS is the world's largest emissions trading system. That means that UK companies can more easily sell and buy permits with other companies, which allows a more cost-effective distribution, so it is possible to buy and sell with countries where emissions savings are cheaper.

The cost of leaving the ETS, the UK having to extract itself and set up something domestically would be a one-off hit, and if it only operated as a domestic market, it would not be as effective in distributing the costs. Some 35% of the UK's annual emissions are covered by the traded sector. There are some opportunities if we left the ETS, and one would be to create a carbon-pricing mechanism for the UK economy-wide that was more uniform and with a stronger price. At the moment, the ETS and the patchwork of UK effective pricing instruments mean that you have a very uneven carbon price across the economy which has perversities in it, such as making electricity more expensive due to implicit carbon prices than gas, for instance, so it is providing an incentive not to go to the low-carbon sources. That would be the opportunity but it would essentially be more costly.

People have argued that if we left the ETS we could join China's emerging carbon market, but it would be an immature scheme and there would be a lot of difficulty harmonising ourselves with that market, because there would be a process of harmonising and its ongoing operation would probably be subject to adjustment. Either way, if we can stay in the EU ETS, we should stay, even with its flaws. I agree with Michael that the UK has in general been a voice for strong action within the EU. It has been pushing for stronger measures, including a more effective reform of the ETS in response to the flaw that it had in it that it allowed adjustment if the price went too high but no adjustment at the lower end. The attempt to try to reform that since, with back-loading and holding out of permits, does not seem to be an effective response. Arguably, the UK continuing to influence the operation would benefit not just the UK but all the Member States.

Viscount Hanworth: So permits are too abundant and underpriced, and if you agree on that proposition, do you have any suggestions as to what might be done to amend the situation?

The Chairman: I do not want to get into an inquiry on the efficient mechanism of the European trading system. We have to keep this within Brexit rather than this issue, which I would love to go through myself.

Viscount Hanworth: With respect, the question is: are there any reforms under way in Europe from which we might profit but from which, if we withdrew from the scheme, we would not be able to benefit? Do you have any optimism about the development of the system?

The Chairman: Could you make a brief comment?

Bob Ward: The ETS should be technically self-correcting in the end. The cap will have to come down in line with the objective but the problem, as Michael described, is that at the moment the problems with the ETS have undermined the confidence of participants, and therefore they are not investing as if they are expecting in the price to go up in future, and therefore are not investing ahead in technologies and systems. My colleagues think the reforms that are being implemented will not be sufficient to address that. In the long term, you may see a correction, but whether that is too late to make the difference to behaviour we need remains to be seen.

Viscount Hanworth: That is what I was driving at.

The Chairman: Mr Gaventa, do you want to come in? Then Lord Krebs would like to ask a supplementary.

Jonathan Gaventa: Very briefly, I wanted to flag up that there is no easy way forward, either if the UK seeks either to stay in the EU ETS or to leave it. If we seek to leave, there is an open and rather complicated question about what happens to emissions permits that might have originated in the UK but are no longer held there. If we seek to stay in, the question becomes closely connected to the issue of wider market relationships, and in particular financial relationships with the rest of the EU 27.

In both cases, vigilance will be needed to make sure that the arrangements eventually arrived at do not weaken still further what is essentially an already weak instrument.

The final point to add on the benefits of the EU ETS as compared to the UK carbon price floor is that it is fairly difficult to amend, so it has a longevity that is potentially different from an instrument that can be changed from one Budget to the next on a national basis.

Lord Krebs: Very briefly, looking at another angle on this, if we were to withdraw from the EU ETS, what impact would that have on the meeting of carbon budgets? At the moment, we calculate the carbon budget on a net basis, which is what the Climate Change Act requires.

Professor Michael Grubb: Can I pick that up and make a wider remark on carbon pricing? I think Bob has already partly addressed that point. There are opportunities—threats and opportunities. The opportunities include the fact that it would be easier for people to understand the UK's commitment, because it would not have the complication that it is a traded commodity for the traded sector, and it would mean we had to deliver the targets domestically, without the flexibility that Bob alluded to. You could also potentially have a rationalisation of the price across different sectors and a simplification overall, because the UK mechanism is messy at the moment, with EU ETS and the carbon price floor as a retrospective top-up tax. So there are potential opportunities.

I am not really expecting official abandonment of climate policy targets or the legal framework, et cetera, but, coming back to my opening remark, a lot hinges on the politics. There is an obvious risk of climate policy being eclipsed by Brexit. The initial reactions and omens were not too bad; the first carbon budget, et cetera, was passed, but I have become increasingly aware of a narrative that basically says Britain is desperate for foreign investment and will do anything to try to make itself industry-friendly, as perceived by No. 10. I have also said that the UK position has been predominantly in favour of market mechanisms—carbon pricing is the most efficient—but there are clearly lobbying pressures, and clearly in some quarters of government there is consideration of abandoning the carbon price floor. That would be an extraordinary decision, which could be impossible to reconcile with the legal frameworks, but it is still being talked about on the grounds that it might make things more friendly to industry. The real risk we face is if Brexit becomes a catch-all excuse for pushing aside anything else in the desperation to attract foreign investment and big business. That is obviously a problem, and sets us up for a direct conflict between the policy and the legal targets.

Finally, as for the opportunities that lie in that area, I think there is a fairly straightforward solution in the carbon pricing arena, where a lot of the concern is driven by fears about carbon leakage, and that is to put the carbon price on materials, so in the electricity sector you have it as is, and in the energy-intensive sectors you put the carbon price on materials consumption, and thereby, wherever it is produced, whether at home or abroad, it is paying the same carbon price; you do not have a carbon leakage problem, but you still have incentive for more efficient materials use, et cetera, potentially funding the CCS, et cetera. It is quite an interesting opportunity, and it is precisely the kind of thing that, although probably it could be considered within the EU—it should be considered, to pick up Viscount Hanworth's question, as a major structural reform of the EU ETS—in practice, it is hard to see the EU ETS getting its head around such a fundamental revision, whereas the UK would be in an easier position to do so perhaps outside of the EU ETS, as part of an overall restructuring. I think that is the key to putting a serious carbon price in place, if we are serious about these kinds of targets.

Q41 **Lord Trees:** Good morning. A couple of short questions, and I am sure they will only require short answers. What will be the status of the UK's current climate targets post Brexit? If the Government are so minded, is it straightforward to retain our obligations to the UN?

Jonathan Gaventa: On of the status of existing targets, I suppose there are two aspects: one is the domestic legislation in the form of the Climate Change Act, which should continue relatively unscathed, although the issue of accounting regime has already been raised. As for our international climate obligations, we make commitments to the UNFCCC as part of the EU bubble, and that is shared out by two instruments: one is an effort-sharing regulation which covers the non-traded sector, and then the EU ETS. There are a number of different pathways the UK could pursue in continuing its international commitments. It is likely that at some point the UK would need to develop its own NDC, or nationally determined contribution, towards it, which is essentially merely a restatement of its existing commitments to greenhouse gas reduction.

Bob Ward: On the specific point about accounting, we were persuaded by the Committee on Climate Change's argument that if we are outside the ETS, the fifth carbon budget target should become 61% instead of 57% because that added ambition needs to be there. There is the additional factor that if, as most economists expect, there is a hit to the UK economy from Brexit, either a reduction in growth or even a recession, that will probably reduce our annual emissions, and will then alter what would be a cost-effective path for emissions, arguing for maybe a tightening of the targets.

Q42 **Lord Selkirk of Douglas:** What has been the impact of the introduction of legally binding targets under the EU framework? Are these legal targets necessary for the UK to deliver on its international obligations?

Professor Michael Grubb: There are obviously three targets under the 2020 framework, as it was known, not specified in the same way under the EU 2030. The dominant target is the one under the UK Climate Change Act. That shapes our path out to 2032 as well as the goal for 2050. In that sense, clearly, the EU renewables target, subject to separate discussions, has had an impact on UK policy, and one can debate whether or how that is useful or counterproductive and whether it should continue in soft or hard form.

One point to note is that presumably one would want some kind of trade agreement with the EU after Brexit under any scenario, and the EU has started introducing renewable energy obligations under some of its trade agreements; it has done so with Singapore and Vietnam, for example, so one does not necessarily escape any international pressure to clarify what you are going to do on renewable energy. At the end of the day, we have a Climate Change Act, we have targets out to 2032, and it would be very natural to embed those under the UN framework as our nationally determined contribution. I do not see any major problems arising in that.

The Chairman: Any other comments on that?

Bob Ward: With the EU, I think it is worth pointing out that, because the UK has been cutting its emissions more quickly than other Member States, the EU's target of 40% reduction relative to 1990 by 2050, set for 2030, will be more difficult for the other Member States to collectively achieve. Essentially, in 2014 in the 28 Member States, if you include the UK, it is 24.4% lower than in 1990; if you exclude the UK it is 22.8%, so they have further to go to reach that 40%. That is worth saying: that the EU will find that 40% target more challenging to reach without the UK.

The Chairman: That is an interesting point. Thank you.

Jonathan Gaventa: Perhaps one supplementary point on the renewables target: I think it is important to draw a distinction between the 2020 renewables target, which includes legally binding targets at national level, from the proposed 2030 renewables target, which is meant to be binding at EU level but does not include binding national commitments. Once you consider the time frames that we are looking at for the UK's exit from the EU, looking forward to 2030 is a more open question than 2020, which is much more proximate.

I think there is a value case for the UK clarifying its relationship to the 2030 package for greenhouse gas, renewables and energy efficiency targets. Even if the UK does not pick up a nationally binding renewables target, investors and our European partners will be looking for a signal of a continued commitment along the path that we have been travelling.

The Chairman: Thank you. We now move on to our continued international roles and influence. Lord Cunningham.

Q43 **Lord Cunningham of Felling:** Gentlemen, do you regard the UK as currently being influential in the development of climate change policies, and if you do, how will leaving the European Union affect our role and effectiveness in the future?

Professor Michael Grubb: I think the UK has been punching above its weight in the international climate process, predominantly through its role within the EU. Obviously, the negotiations have a focal triangle of China, US, EU. The UK was chairing a number of the key negotiating streams at the Paris Agreement. The UK has also wielded a lot of influence through its diplomatic network. It has had the best of both worlds: it has been able to project EU power and shape EU power in the global negotiations, and it has had its substantial diplomatic network globally doing the soft-power work of persuading countries to be more engaged—obviously, David King's role at the Foreign Office as special representative has been a significant part of that. The UK has been very effective.

If we have Brexit, the UK would no longer be part of the EU formal negotiating team. In the UN, one would need to think where else the UK might sit, because it is all organised around groups. I guess perhaps the most likely, or least unlikely, might be what is called the Environmental Integrity Group, along with South Korea, Mexico, Norway, Switzerland and Lichtenstein. That would seem to me the natural group with which to try and affiliate, but I think that would put into sharper relief what happens with the FCO's diplomatic network in this area.

Jonathan Gaventa: I would emphasise that in principle we see no reason for the UK's influence to be significantly diminished. However, we are very concerned about the UK's diplomatic capacity going forward, in particular given the extensive pressures for diplomatic capacity in the EU negotiation and international trade negotiations. Any diminishment of the FCO and other diplomatic efforts on climate change would be concerning.

Bob Ward: Can I make a point? It is not just about directing the negotiations. The UK is a leader worldwide because of the Climate Change Act and because of the work of the Committee on Climate Change, et cetera, but the real test for this new Government is the extent to which the low-carbon transition is seen to be embedded in its new industrial strategy and is reflected, for instance, in the actions of DFID and the Department for International Trade. The UK has a comparative advantage in many areas of climate change business, from the finance sector to the development of marine renewable technologies. It ought to be, for its own benefit, seeking to extend those, and if there needs to be more emphasis on activity outside of the European Union, if there is a loss of trade with the European Union, the low-carbon economy offers many opportunities to do that, and by being seen to be a leader in implementation, by developing the technologies, products and services we need, we will gain in influence. The UK has been a leader—Pete Betts has led the EU negotiations in the international negotiations—and it is undoubtedly the case that it will be a big loss to the EU when we leave that the UK will not be there playing that same leading role; I do not think we can hide that fact.

Q44 **Lord Rooker:** What relationships that the UK does not have now, or is weak on now, should it seek to cultivate; or what relationships that it has now should it seek to preserve, to build on this leadership, taking it as a given from Lord Cunningham's question and your answers? We are going to be out. We still have a lead, whichever way we look at it, and we have the ambition to lead—we hope that this Government still have the ambition that came out of the Climate Change Act and other legislation, and we hope that they are tuned into the obvious leadership we have. If we are going to be out, what should we do now that we are not doing to cultivate and maintain relationships to help continue that lead once we are out?

Professor Michael Grubb: I think our answers will be slightly speculative but they at least need to be informed by some realism. Let me underline what I mean. Around the time of the G20 summit, I was in China, and it was very interesting to see the perspective from Beijing of Brexit. A region which is half our size has lost one of its Member States that is about 1/20th of our size, and they want us to prioritise trade and other relations. It is not quite going to work that way. The reality—and I am sorry if this may be pouring cold water or be unpopular—is that international relations, including climate change, will be driven to an important degree by the China-US-EU relationship, and the EU, probably without the UK, will be the third in that triad. I do not see how the UK can realistically have a major engagement in that triad. If I were to advise on how the UK could wield influence in a constructive way—I am not—I would probably say that we have very good relations with Mexico, FOSAD, their Climate Change Act and so forth; with Korea potentially, so the Environmental Integrity Group; and work with countries such as Brazil and South Africa, which are seriously concerned about climate change, have a reputation for a degree of independent thought and engagement in the international negotiations, and collectively can wield quite a lot of clout. That is where I would put the effort.

Bob Ward: There are a number of fora that the UK participates in where it can still influence international climate policy. The Clean Energy Ministerial, for instance, is an effective group. The UK is a member of the commitment to double R&D spend, Mission Innovation; it is a member of the Intergovernmental Panel on Climate Change. At the UNFCCC level, there was the emergence of a new grouping, the high ambition coalition, ahead of Paris, which was very much responsible for driving in the stronger target, and I think the UK can continue to play a leading role in that group. It may become even more important if next Tuesday we end up with a climate change-denier in the White House and the potential for the United States to become a hindrance to international climate policy. A lot might depend on what happens next Tuesday.

The Chairman: That is a big question, which I do not think we will go into. We will keep our fingers crossed, whichever side we are supporting.

Jonathan Gaventa: I wanted to highlight three specific examples of how the UK can maintain influence. First of all, as part of the Paris Agreement, countries will need to develop mid-century decarbonisation plans. The UK will also under its domestic legislation need to publish an emissions reduction plan relatively shortly. There is an opportunity to make that plan not just a box-ticking exercise but something that can become a template and a diplomatic asset with other countries globally about how such exercises are performed.

The other two opportunities are more about co-operation on clean energy. The EU has developed an idea of an energy union, but there are already conversations about how that energy union might go beyond EU borders, for example, looking at south-east Europe, Turkey, North Africa, et cetera. As and when the UK is beyond the EU borders, it makes sense to have a framework that could pick up multiple countries and is not just a question of UK and EU.

The third example is closer to home: the North Seas' Countries Offshore Grid Initiative. It is an existing collaboration seeking to bring down the cost of deploying offshore wind resources in the North Sea. The Netherlands developed a new political declaration on this back in June, which nine countries of the region signed up to. The UK so far has not, not because anyone sees it as against our interests but because the timing was immediately before the referendum. However, it is now November, a number of months later, and it does not seem to have resurfaced on the Minister's in-tray, so this could be an early example of how the UK could demonstrate that it is still a co-operative player in energy.

Lord Rooker: This is a supplementary to something you said an hour ago. How seriously do you view this issue you have raised regarding diplomatic capacity?

Jonathan Gaventa: It is still an open question but I think it is a very serious one. There is a basic question of people and skills and a question of budgets. We are facing negotiations on a whole range of very technical aspects, and it is a concern that is shared, I think, by some other European countries and ourselves that both diplomatic expertise and subject expertise will be devoted to addressing the deep complexities of the disentanglement around Brexit rather than the pressing issues that we were already facing in needing to strengthen action on climate change.

Professor Michael Grubb: We would also want to link that with the industrial strategy and trade agenda. The UK is, for example, an important force in the Environmental Goods Agreement under the WTO, and that presumably requires the diplomatic networks to support effective action.

Q45 **Baroness Wilcox:** This is the last question. I have listened carefully, and I think you have pretty well answered it in the past few moments, but you may want to add something. If any potential negative impacts are identified, are there mitigating steps that could be taken? I think you have identified some.

The Chairman: That is really in relation to the global dynamics of climate change.

Jonathan Gaventa: As a general answer, I would say it is not beyond the gift of the UK Government and the EU institutions to maintain both the UK and the EU as leading lights on climate change internationally, but it is also far from automatic. This is something we will be following closely.

The Chairman: Thank you very much indeed, Professor Grubb, Mr Ward and Mr Gaventa. Thank you very much for your evidence and I bring this public session to a close. Thank you.