

Science and Technology Committee

Oral evidence: [Leaving the EU: implications and opportunities for science and research](#), HC 502

Tuesday 5 July 2016

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Members present: Nicola Blackwood (Chair); Victoria Borwick; Jim Dowd; Chris Green; Dr Tania Mathias; Carol Monaghan; Graham Stringer; Derek Thomas

Questions 1-83

Witnesses: **Dr Sarah Main**, Director, Campaign for Science and Engineering, **Professor Angus Dalglish**, Scientists for Britain, and **Professor Sir Ian Diamond**, Chair of the Universities UK Research Policy Network, gave evidence.

Q1 Chair: Can I welcome you to our first session on “Leaving the EU: the implications for the science and innovation sector”, and thank the witnesses for coming at such short notice? We are very grateful to you for making yourselves available. We wanted to get this inquiry off the ground as quickly as possible, given the implications of the referendum vote for the science and innovation community. The debate that we have just been through has been very wounding. The job of this Committee now is to analyse the evidence and see what the key priorities for science and innovation will be in the negotiations that go forward.

First, I warn you that we are expecting a vote in about 15 minutes, so we will have to suspend the Committee when that happens, for the process of democracy. In the meantime, I will ask the first question. Is there a shared vision, do you think, emerging now about what science should look like after Brexit or through the process of the negotiation? Do you think that organisations like CaSE, Universities UK and Scientists for Britain will be able to put aside the differences of the debate and work together to develop that, or do you think that those differences still run too deeply? Dr Main.

Dr Main: Thank you very much and for inviting me. Yes, I think CaSE, for its contribution, will be reaching out to the sector and all its members to bring them together in a series of meetings to tackle the overarching questions of how scientists would like our relationship with the rest of the world to be formed and then specifics around things like access to funding and access to collaboration, regulation, migration and so on. Personally, my sense from conversations is that the community is well prepared to come together to look at this positively. I will allow the other organisations to speak for themselves. You

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will know from a range of surveys before the vote that the community was reasonably coherent in its views about the value that EU membership brought to them and the specific benefits. It is those kinds of benefits that they will seek to try to retain as far as possible.

Q2 Chair: Thank you. Professor Diamond.

Professor Diamond: Thank you very much. I am also principal of the University of Aberdeen. I would say very clearly that UK science, and higher education more broadly, has been on a strong upward trajectory for many years and is now widely recognised as the very pinnacle of the world's endeavour in this arena. It is important to say that most scientists—in fact, almost all scientists across the UK—would say that science and higher education are essential for the future economy and social cohesion of this country and the wider world. Therefore, it is absolutely essential that we look forward and work together to maximise the future of science in the UK. If we do not, we will be letting everyone down. In a straight answer to your question, we stand ready to work with all the parties in order to maximise the continued position of UK science.

Q3 Chair: Thank you very much. Professor Dalgleish.

Professor Dalgleish: When these debates were going on, we looked at many of these issues, and all my colleagues and I felt basically that, whatever happened with the vote, we wanted things to remain very much roughly the same and it did not perturbate the links and the networks that have been set up. Personally, I see no reason why that should not be the case. There perhaps will be quite a bit of negotiation but there are plenty of models that can be followed. I do not see the doom and gloom that is being predicted by so many of my colleagues for how leaving will affect science. I do not think it is going to affect, either, the exchange of people within laboratories throughout Europe and the rest of the world any differently from how it is now. There has been a lot of hysteria voiced in that regard. We will want to work together to keep things much as they are, while realising that we are not leaving the European Union health, science, and so on; we are trying to leave the European superstate.

Q4 Chair: Thank you, Professor Dalgleish. Taking Professor Dalgleish's cue, Dr Main, what are the basic principles that CaSE believes should inform the Government's negotiations and exit agreement to best represent the interests of science now? What would be the core principles that you would want them to go forward with?

Dr Main: First and foremost for me would be a setting out by the Government of if and whether they believe that a science-research-intensive innovative future is one that they wish to develop in the UK. If it is, and if the new Government would wish to build on the UK's strength in science already established, there are some things that follow and then you can work through those principles. If the Government are keen to make science a big part of our future, they need to address a few principal areas. The Committee will be familiar with those areas, and we can summarise them as access to funding, access to people, access to collaboration and networks, and the regulatory framework. I do not know

if you want me to say any more on that. Those are the key areas that people will want to focus on.

Q5 Chair: I am sure we will unpick that during this session, but we will start with Professor Diamond.

Professor Diamond: Thank you very much. The absolute bottom line is that we need to look at this in a long-term way. That means that over the next while we need to be able to attract to the United Kingdom the very best talent, be they students, researchers or the very top scientists. When I say “science”, I am including social science and the humanities in everything I say because it is incredibly important to recognise that. We need to be able to continue to attract the very best people to this country.

Secondly, we need to recognise that we are in partnerships right across Europe. Knowledge knows no nation state boundaries. We need to be able to continue to make those partnerships. We lead many of them. Ideally, we need to be able to continue to lead them. Most importantly, we need to be able to have influence on what the future calls and models are going to be. That may be one of the most difficult things to do. As Dr Main has said, the regulatory framework needs to be thought through because there are implications for the regulatory framework of some of those partnerships that we undertake at the moment—for example, clinical trials.

Professor Dalglish: First, I would make it very clear that there is a massive difference between the freedom of movement of people and the freedom of movement of skilled labour. In my time as a scientist, I do not ever remember working in a laboratory where there were not as many people from elsewhere as there were from the UK, and certainly in my own institution over half of the people are from elsewhere and only half of those are from the EU. It points out that outside the European Union we would be able to have a lot more very good scientists from outside the EU, such as Australia and so on. With regard to attracting the top people in the world, Canada and Australia operate very strict point limitations and they do not have any trouble attracting the best scientists in the world to them. We need to be very aware of that.

Q6 Chair: Thank you. I have quite a list here of key priorities: attract the best talent, access to frameworks, access to institutions and working out how regulatory frameworks would need to be mirrored in order to enable various partnerships. So I suppose my question is: if you can’t have it all, what would you be willing to sacrifice? That is a hard question. Dr Main.

Dr Main: If I flip the question round and say, “If you can’t have it all, what would you want?”, the science community would want first and foremost for there to be a voice for science at the negotiation table, on the negotiation committee. If it is represented among all the many other interests that are important to the UK, then the community will trust that it can feed into that voice. A voice at the table and a clear process—a structure—by which the community can feed in what it wishes to say would be what I would ask for.

Professor Diamond: I echo what Dr Main has said. You asked me what the priorities were; you did not ask me exactly what the process was. It is incredibly important that science, broadly defined, has a voice at the table. Having said that, you say it is a long list and we can't have it all. I would say there is a lot of overlap in it, so it is actually not such a long list. Without in any way trying to appear greedy, I would say that there is so much of an overlap that, if you get the first two, then, by definition, you get the rest: there is no point in having a regulatory framework if you do not have the talent; there is no point in having the talent if you do not have access to the grants. Therefore, they all work together; it is not that long a list, but it is all important.

Professor Dalglish: I would say that to continue the collaborations and the frameworks that we have are the most important, because everything else can be negotiated and fitted into it. I do not think we have to be in the European Union to continue to participate in the big science networks. There are three or four models, and one of them people can fit into and have all the same privileges as everybody else without being a member of the European Union. I personally think that Britain and its science is so big that it will probably warrant its own model in that regard. I would like to remind everybody that the European collaboration, which is enormous in some areas, existed long before the Maastricht and the Lisbon treaties. We had CERN, the European Molecular Biology Laboratory and the European Space Agency—I could go on as there are 14 of them—none of which required the existence of the political superstructure of the EU.

Q7 Chair: Dr Main, my final question before I go on to colleagues has to be what will we need to do, through the Brexit negotiations and beyond, to make sure that we not only maintain the status quo but put UK science and innovation on a stronger footing coming out of it, because that must be the aim of the science and innovation community, surely?

Dr Main: Yes, thank you; that would certainly be my aim and the aim of the community, very broadly. I would like to thank the Committee because the Committee has made it very clear that it has been your aim as well and it provides a lot of encouragement to the community.

I refer back to the first thing I said, which is that it would be really important for the Government to set out its priorities: is science a priority for the future of the country, for the Government? It is related to the answer to this question, which is to set out ambition. It is the case, leaving aside all previous arguments, that the EU has set for itself ambitious targets in terms of R and D activity, both monetary and collaborative in terms of addressing grand challenges and so on. The UK Government's ambition in recent years has not matched the level of the EU, so, moving forward, if the Government could set out a really ambitious programme for science—very broadly taken, as I might agree with Ian Diamond, if we can use very broad language to encompass science here—the rest will follow, because there are many people in the community who can support and help the Government to define how those structures can be put in place to help science thrive and to build a strong part of the economy.

Professor Diamond: Very simply, we need a true commitment to excellence in science as the way forward for the UK economy and UK society. If we get that commitment,

everything else largely follows, because we will need to collaborate with Europe; we will want our students to be taught alongside students from across the European Union; we will want to have an environment that attracts the very best talent; and we will want strong higher education and research institutions committed to the future of the UK. If we get all that together, that should be the vision that the Government aim for in the negotiations.

Professor Dalglish: It is most important that we stand by the commitment that the money that we contribute to the European Union for science in the two streams, some of which we get back, must be guaranteed by the Government, because the amount of money the Government put in for science is still less than France and Germany. While we talk about being in the same league, that is unacceptable. I think we should be spending at least the same level as our European comrade countries.

Chair: So you want a long-term plan to increase private and public R and D up to 3% of GDP.

Q8 Carol Monaghan: Of course we also have £350 million per week that is going to flow into the NHS. We know there are different models for European countries. We have the Norwegian model and the Swiss model, and they access science communities in different ways. Is there an existing model that will work for the UK or do we need to look at tailoring or designing a model specifically for our needs here, Dr Main?

Dr Main: In a way, you are the politicians and I think the answer to this question is political. You will know probably better than I that all this depends on negotiation. There are models, as you say, of different extents of collaboration with the European Union. It would seem to me that the place at which the UK will arrive, in terms of its relationship with the EU and its access to those things that we have talked about, will be dependent on larger political forces.

From the science community, very broadly—I have to say at this stage that I cannot guarantee this is what everybody thinks as we have not had a chance to ask everybody, frankly—the sense I am getting is that those characteristics that we have talked about so far, the ability to access collaborative programmes, to share in the diverse range of opportunities for working together and accessing funding in the EU in all its forms, will be very important to help the sector thrive.

For the industry part of the sector, not just the academic sector, there are important characteristics of our relationship with the European Union that help facilitate SMEs, for example, to access collaborations with larger industrial partners, which allow trade between UK-based multinational companies with the rest of the EU on medical and life sciences, clinical trials, hard manufacturing and engineering. A number of the models that exist have a lot of positive characteristics to them. I do not think I am in a position—or perhaps any of us is—to pick and choose right at the moment. It will be dependent on the bigger political discourse. It struck us in reflecting on the relationships between the associated countries and the rest of the EU in the last week or so that the amount of money that is received by associated countries at the moment is considerably smaller than it would be if the amount of money that the UK receives currently from the EU was also put

in that pot. So just one small facet to consider, from the rest of the European Union's point of view, is that, if suddenly the UK becomes an associated country, the amount of R and D funding going to associated countries will increase dramatically, and that will create a shift of power. I offer that as one illustration of a number of larger things that need to be considered.

Professor Diamond: Personally, I am of the view that we probably do need an enhanced model to those that exist at the moment, because my reading of those is, yes, there is, if you like, fair access but there is not influence. We are not very good sometimes at just potentially blowing our own trumpets a little bit, so just allow me to do so but not in an arrogant way. I am not completely convinced that European science would have the vision, the drive and the imagination without Britain at the table that it does with Britain at the table. It is incredibly important that we maintain a model that enables us to be able to influence as well as to receive. It is incredibly important to remember the points I made earlier about access to the best talent: we need students, research staff and academic staff to be able to access the UK very easily. For the students that we educate at the University of Aberdeen, that they are sitting alongside European students is unbelievably good for those students from the north and north-east of Scotland in bringing them out into the wider world. We certainly need a model that is similar to those of the associate countries at the moment, but, in addition, I believe very strongly that we need to make sure that we have some influence over the future direction of European science

Q9 Carol Monaghan: Am I right in saying that the University of Aberdeen has guaranteed that EU students currently studying there will continue to get EU rates?

Professor Diamond: It is incredibly important because we have a number of students at the moment. We are expecting 1,031 students to arrive in September, and they were very nervous. I thought it was incredibly important, and I was so pleased, that my court, my board, agreed that we could write to intending students and current students straightaway and reassure them. Recognising that those students who will be coming to the UK in October 2017 are starting to make their decisions, we also need very soon to have reassurance from right across the Governments of the United Kingdom that those students will also receive an EU rate throughout their studies.

Professor Dalgleish: I agree very much that the UK is far too important to fit into an ordinary model. The first model involves freedom of movement, and the vote suggests that that is no longer acceptable. The other is just an associate access, where you can still lead, and these are for 14 countries, including Israel. The third model is Switzerland, which got into trouble—everybody quotes this—because they broke an existing agreement, whereas we are negotiating to get out of an existing agreement. We are much bigger than Norway and Switzerland, and we should basically be able to craft our own model, because, as is rightly said, we are the leaders.

Q10 Carol Monaghan: How willing do you think other members are going to be for Britain to take a leadership role now that it has voted for exit?

Professor Dalglish: I think they will be. I see you laugh, but, for example, they do not obey their own rules and regulations. The European Research Council says you have to be an EU member, but they have two people from Switzerland and Israel who are on that. I think they will be very keen for UK leadership. After all, of the top 10 universities in the EU, Britain has eight of them and Switzerland has one of them. The EU only has one out of 10 top universities in the land mass we are dealing with, and we have far more Nobel prizes than any of the others, so we are a natural scientific powerhouse. One thing that I would like to say is that we will be even freer and better outside the EU because we are limited in the extrapolation and translation of that into wealth. We had no money from the SME fund, by the way. Without the restrictions of all the red tape, I think we would be far better—

Q11 Carol Monaghan: I am going on to ask a question on that. I struggle to agree with your rosy vision and picture of how other people may see us, but we will maybe disagree on that.

Can I move on and ask the panel if there are areas of research that the UK will now be in a better position to pursue outside the EU—for example, GM or stem cell research?

Dr Main: In the past, different parts of the scientific community may have raised some concerns about EU Regulation impacting on research objectives in the UK. In 2013, a number of company chief executives wrote to the President of the European Union to express their concern that the precautionary principle, that is used to develop regulation within the EU, might be inhibiting innovation and so they asked for a new approach to making regulation in the EU called the Innovation Principle. They were concerned about the trade-off between risk and opportunity in terms of derivation of regulation. I think their letter had support. I don't think that there are many people who would argue that that wouldn't be a better thing and perhaps the UK in its new position can follow that through and design a framework in which we establish regulation around R&D that allows flexibility and innovation. That would be a positive thing. But you must bear in mind that, of course, the EU has done all this making of regulation over a number of years, and that responsibility would now lie within the UK and is quite a considerable and burdensome responsibility. There would need to be new processes set up to do it, bearing in mind, depending on the outcome of negotiation with the rest of the EU, the regulations that we derive for the large part might have to be harmonised with the EU in any case in order to allow us to share information, to share results, to allow access to a wider community.

Q12 Carol Monaghan: By “harmonised”, do you mean we would still need to be working in a very similar framework of regulations anyway?

Dr Main: Yes. If the new Government wanted to uphold the science community's ambition still to be able to access different types of EU opportunities, including funding and collaboration, there will be requirements within that to meet regulation that exists within the EU—for example, regulation around animal rights in experimentation, a whole host of regulation. Both for industry and academia, it will be important that the UK has matching or harmonised regulation on that.

Q13 Carol Monaghan: Professor Dalglish, you wanted to come in; you were starting to touch on some of this area. Do you have any comments you would like to add?

Professor Dalglish: No, I think I got them in.

Professor Diamond: I have nothing to add to Dr Main's points.

Q14 Chair: Thank you very much. In answer to the models question that Carol Monaghan has just put to you, it was not quite clear to me whether there are any clear priorities—is it EFTA membership or EEA membership—ensuring that we are an associate country rather than a third country? Obviously you have made your point, Professor Diamond, that it is very important that we retain influence as well as access, but are there any structural priorities, bearing in mind we are intending to make recommendations to the working group?

Dr Main: I feel like a child at Christmas asking for a wish list. The wish list that I have may not be met by the Government and we have to recognise that. From what I hear among the scientific community, this is the wish list I can set out for you, and I think you as the politicians in the room may tell me it is unreasonable. It certainly would be to have influence—I absolutely agree with Ian Diamond's point—and that is the thing that some different models of associated countries have been highlighted as not having; it would be to be able to fully participate in the European Union's research and development activity and have access to the body of the European Union for research activity; it certainly would be to be able to access talent, as I said earlier on, and I think that, politically, and responding to the vote, may be a difficult thing to resolve. But the scientific community values the fact that EU membership up until now has allowed red-tape-free, bureaucracy-free access to short visits or long visits for UK-based researchers to go to other European countries or for them to come here, not just for long-term postings but maybe just for a quick trip over to learn a new technique in another country. So a version of free movement of people that allows access to scientific talent will be very important, and I think that will perhaps be the nub of the challenge.

Chair: I will suspend this sitting until we are quorate, or in 15 minutes' time. Thank you very much.

Sitting suspended for a Division in the House.

On resuming—

Chair: We will now resume the session. Thank you very much for your patience. I am afraid we are dealing with the Wales Bill and we may be in for a few votes today. I will now call on Chris Green.

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Q15 Chris Green: Over 100 UK national research facilities receive support from the EU to provide access to the European researchers. What scope is there for keeping such arrangements in place after we leave the EU? I suppose we need to put it in context that Britain is a huge net contributor to the European Union, and perhaps concern about funding, when responding, is something that needs to be raised. How can we demand that the Government, however it turns out in the coming months, actually hears the voice of science to ensure that funding is protected? Dr Main, how do you think that funding should be protected?

Dr Main: Can I clarify? Do you mean specifically for access to research facilities—European Union facilities?

Q16 Chris Green: Yes. There are 100 UK research facilities that get EU funding, so we want that funding to continue, perhaps in a different form. How can we ensure it is continued after Brexit actually happens?

Dr Main: There are a few different elements to consider on shared research facilities across Europe. First, the scientific community will certainly want to continue to have access to them; they are very important parts of their work. There is the money part, but then there are also the practicalities of being able to use them. Maybe I will start on some of the practicalities first. The visa systems that are in place for short research visits can be quite burdensome, and there are problems that have been raised about those outside the EU, for the non-EU situation at the moment. It will be important, when we get down the line, in terms of process and operating a new migration system, that we recognise that science is a mobile endeavour and that accessing research facilities in the EU will require quite a lot of short visits. Looking at the visa system to allow it to cope with a much larger number of people wanting permission for short-term travel will be important.

Q17 Chris Green: When you say “a visa system”, do you suspect that, on Brexit, to visit European Union countries from Britain we will need a visa to visit?

Dr Main: Shall I put an “if” in front of that? If visa sign-off is required to go to countries where these facilities are held, we need to look at that short-term tier 5 researcher visa, which will be important for accessing these facilities. If we do not need a visa, then don’t worry. I do not know how that will work out. The other point to mention about EU facilities is—

Q18 Chris Green: It is more about the UK facilities in terms of funding for them, because the UK is a huge net contributor to the European Union and we get some of that money back for science and a number of other purposes. It is more about securing that funding. The EU funds our institutes at the moment. It is about ensuring that the UK continues that support and continues that funding. Do you think the UK science, broadly, is in a strong position to make the case—to make the argument—at least to maintain that funding? Are you confident that the voice will be heard in terms of those demands?

Dr Main: Going back to that opening point, if we can ensure that there is a voice for science prominent in Government and at the negotiation table, then we stand a chance. I am quite sure that the science community strongly agrees that it wants to maintain the support that the EU currently gives in various ways to facilities and institutions around the UK. Making sure that that voice is heard is the critical thing to me and also understanding that it is not simply about match-for-match, pound-for-pound, asking the Treasury to make back the money that the UK has up to now received from the European Union, but recognising, first, that that money funds a very diverse range of different programmes. The nature of what it funds is widespread and is not replicated in many instances in UK funding. It is about recreating mechanisms within the UK that can fund those types of things.

For example, European Union funding can take the form of not only competitive grant funding but also structural funds. Those structural funds that go in towards funding R and D are important across the whole UK, but they are dominantly important in certain parts of the UK. I was having a conversation with a member of ours in Wales this morning, who was making the point that European structural funds are extremely important for funding innovation in Wales, providing funding streams that help create jobs and collaboration with companies.

Q19 Chris Green: This is one of the concerns that came out during the EU referendum campaign of the official designated organisation, Vote Leave, for leaving. There were other voices asking whether the £350 million would be guaranteed for the NHS or that the funding would not be secured and economic collapse may happen; there were all kinds of concerns and questions over what will happen post-Brexit. But the difference between a referendum, where it is an instruction to Government on a single issue, as opposed to a new political party coming to power is that it is for this Government. Do you trust that this Government would want to secure funding for science?

Dr Main: I hope that the Government will set out its clear ambition that science is part of its future and, as we said, that it will then follow that through with action. I think those actions will be challenging, because, of course, there will be many parts of the UK economy and society that have received money from the European Union that will be asking to receive it again. Science is one of them. In fact, it is one of the most affected areas of UK society because it did win back so much money from the European Union on the basis of its competitive excellence in science. I certainly want that voice to be heard. We will be trying very hard, and I am sure the Committee will be trying very hard, to make sure that voice is heard, but it is for the Government to tell us how it sees and prioritises science, to make clear, both to the UK and to the wider watching world, that its ambition lies in a scientific future.

Q20 Chris Green: Thank you. Professor Dalglish, it is for the Government to make decisions, but is it your belief that the Government will maintain that funding, or is it a hope that the Government will maintain funding that comes currently from the EU if we leave or when we leave?

Professor Dalglish: I would very much hope so. Jo Johnson said that, should this arise, the current Government would in fact do that, and I would expect that of them at the very least. When I was at the House of Lords Committee, Lord Hennessy thought I was very naive in thinking that the Government would hold to any promises, but I would like to think that, with this current situation, where we have to renegotiate and we have the MRC, the BBSRC and the Wellcome Trust—all the people who are very important in science—that we could get a deal that was at least as good as we are going to lose from the EU, because, at the end of the day, all that money is a bit of our money that we put in. So we should be able to do it without any net loss.

Q21 Chris Green: Should British science be coming together to say, okay, there is a debate about the actual figure—the net contribution that we make—but actually a slice of that should go to science and get closer to that 3% spending?

Professor Dalglish: Without doubt, and, as I mentioned before, on doing researches into this area, I was surprised that France and Germany spend more on research than we do. That is something that should be addressed and equalised. I really do think, for the sake of science in this country, that that should be the case.

Q22 Chris Green: Do you have any concerns about relationships? If we can be confident about the funding streams, if we can be confident of the visa-free movement of scientists around the EU, will we still have the same kind of access, the decisions and the influence in decision-making bodies afterwards?

Professor Dalglish: You are asking me specifically.

Chris Green: Yes.

Professor Dalglish: People will tell you no, and that is part of the fear factor, but when it comes to sitting round the table discussing things, I do not think, at the end of the day, it is going to make much difference, because you are who you are and your input is the input into the area that you are discussing. I have been on the European Commission on cancer for all the grants and things, and that is one of the reasons why I think we are better off out of it, because I did not like what I saw. When you have everybody round a table, nobody says, “We do not listen to him because he is from a country that does not pay its full dues into it.” That is what is great about science: you do have equal input and say, and that is what I would like to see carry on.

With some of these bigger things, going into Horizon, and so on, we pay our way relative to what we contributed to as opposed to the current system.

Q23 Chris Green: If we bring a certain pot of money to the table, then we will have influence proportionate to that money and to the scientists and the quality of the collaboration on offer. What about the intellectual property? Are there any concerns about who would then own the intellectual property if we have a more remote relationship to EU organisations?

Professor Dalglish: I cannot possibly answer that, but we have spent a long time harmonising the patent law throughout Europe and the last thing we would want to do would be to interfere with that. I have always maintained, “That what works, don’t touch it.”

Q24 Chair: Professor Diamond, just to follow up —

Professor Diamond: The point—

Chair: Professor Diamond, I was going to ask a question, I am sorry.

Professor Diamond: Can I answer that one, if I may? I did not have a chance to come in. The point that you made right at the beginning was not so much about the research funding, which is where you got to at the end, but you talked about facilities, and I think it is incredibly important to do three things: one, to recognise that as a result of the negotiations over many years the UK does host a number of facilities that are funded EU-wide. Those facilities are brilliant but will need replacing and updating, and indeed there will be new ones. In addition, I mentioned right at the beginning that we need influence. I would like to feel that there would be support from this Committee in order to be able to take forward some way that we would continue to have influence on the siting of some of the major international facilities, which we have in the past and which are incredibly important. Thirdly, we need to be able to develop our own infrastructure. That is going to cost a serious amount of money. So I then come back to what you were talking about—that we should not underestimate the amount of money that is necessary to maintain a world competitive edge in science for facilities. That is before we start to talk about research project funding, which is where you ended. I am sorry for interrupting you.

Q25 Chair: No, don’t worry. Do you want to come in on that, Dr Main?

Dr Main: No. I would support what Ian Diamond has said.

Q26 Chair: All I wanted to follow up on was the point that Professor Dalglish made about the fact that we will pay in and get the equivalent influence for the money that we pay in. As I understand it, for non-EU members, as it currently stands, for associate countries and third member countries, none of those have influence over funding allocations at the moment. I understand that the proposal is for an enhanced model, which will allow influence as well as access. No country has that at the moment, but I want to confirm that I am right, that, as yet, we are seeking a model that does not exist.

Professor Diamond: That was exactly where I came from for that very simple reason. Let us be honest about this. In any science funding environment that I have ever been involved in “juste retour” is not the way it works, and certainly when the European Research Council was set up that was a major part of the discussions. Excellence is what counts, and you fund excellence wherever you find it. My understanding is as yours. At the moment the associate countries do not have the influence in setting forward the agenda in the

future, and that is why I think it is incredibly important that our preferred model should be an enhanced model to that which exists at the moment.

Q27 Chair: So that is what there is to fight for—a new model.

Professor Diamond: Absolutely.

Q28 Graham Stringer: Can you list the facilities that we would want to continue to host? You said we should make it an objective to continue to host facilities that we already do host. Can you list them for us?

Professor Diamond: I would be very happy to provide in writing a full list, but you will know them as well as I do as we have discussed them over the last many years on this Committee, Graham. Some of the things at Daresbury and at Harwell are incredibly important facilities, and there are many across the UK. Indeed, it is good for the local economies when we are able to host them, so we do need that continued influence. I would be delighted to provide in writing a full list.

Q29 Graham Stringer: Yes. They are not specifically EU facilities, are they? Diamond Light Source, for instance, is not; it is a private-sector collaboration.

Professor Diamond: I take that point completely, but the EU has been part of it at the right time, and that is where I think we need to recognise, as I said, that we will need to continue to make decisions about which facilities to invest in. If we are serious about maintaining ourselves at the cutting edge of world scientific endeavour, that will cost money.

Q30 Graham Stringer: During the referendum debate, facts became, shall we say, slippery at different stages. This Committee was told, and it became part of the debate, that we were net beneficiaries of funding within the science budget. I think that is not controversial, but when one broke that down into per capita funding for research workers, I saw figures that showed we came eighth. The pharmaceutical companies said we were the best funded. Could you shed any light on that? On a per capita basis, how do we fare at the present time from European funding—per capita being per capita research as in academia?

Professor Diamond: I have not seen those data. I am very happy to look at it, but I would say that of course it will depend again on what you put in the denominator. I am very happy, again, after this meeting, to have a discussion about those numbers. It depends on the numbers, whether you take researchers, active researchers or academics. There is a whole set of numbers that will go in the denominator. It is fair to say that the UK is incredibly successful—over £800 million per annum received—and on any of the, if you like, hard indicators of outputs, citations or metrics, we are absolutely at the top of the tree. That has been agreed by Professor Dalglish and Dr Main as well. I would not in any way want to play down the fact that we are very good at what we do.

Chair: We have also had reference to the Lords Committee report, which has given us a breakdown of the funding in a very thorough way. It was a very impressive report and it is worth paying tribute to that.

Q31 Graham Stringer: It is. I am not sure it did the figures in quite that way, though, which should become part of the debate. Can I ask the opposite side of the question that Carol Monaghan asked? Are there any particular parts of our science that are at risk because we are leaving the EU?

Dr Main: Over the last week or 10 days there has been a building of anecdotal evidence about risks that might be becoming realities. I hesitate to go into very many specifics because it is something that the community will be trying to gather hard evidence on, but, starting with anecdotal evidence, there was a suggestion that perhaps there were immediate impacts in terms of joint applications, multinational applications to EU grant programmes or decisions about where small companies might choose to locate their headquarters, be they in the UK or outside. Over the last 10 days or so, we have begun picking up slightly more concrete examples of that, and I am sure people will gather them together. It feels to me as if the risks that we are looking at, rather than perhaps what you are getting at, which is a discipline-specific risk, are a broader risk to scientific activity in a country, which stems from the impact of uncertainty and what is the impact of uncertainty on choices that people make in terms of whether they wish to come here to study or to work or whether companies wish to base themselves here for their activity.

Q32 Graham Stringer: So it is more generic rather than specific to any particular area of science.

Professor Diamond: May I echo everything that Dr Main has said but add that, certainly in the University of Aberdeen, some researchers involved in European partnerships have already received word from their partners that they think it is better that the University of Aberdeen does not lead in the future. I do not think it would be possible for us at this stage to say, “Look, this particular area of science is at enormous risk,” but there is enormous uncertainty at the moment that requires some reassurance. There needs to be some clear guidance from both the Government and from the European Union about the future status of UK researchers and of networks involving UK researchers in the period through to Brexit, and I think it is worth recognising that there are, for example, in social science, a number of areas of research funded in Europe that simply are not funded to the same extent in the UK, and, for example, in migration, that means that UK researchers in those areas can really add value to the overall scientific endeavour. So, no, there are not, I think, specific areas, but there is an enormous uncertainty and an enormous—to use your word—generic worry about particularly the next few years as well as the long term.

Q33 Dr Mathias: My apologies for being tardy in coming back. Could I ask members of the panel about particular aspects of EU membership—retaining people, the access to markets, harmonising the regulation and the funding mechanisms? Which of those do you think should

be uppermost for us, if I could start with you, Professor, if you think they can be ranked in priority?

Professor Dalglish: First of all, EU membership, no; we are no longer going to be in the European Union's membership.

Q34 Dr Mathias: I mean the aspects that we had.

Professor Dalglish: The aspects of our European collaboration or co-operation with the European countries, which we have built up in over two or three decades, all those should not be interfered with, and I see no reason why they should be interfered with. Basically, the whole of this vote was about getting out of a political superstate.

Q35 Dr Mathias: Which would you prioritise, though? Is there, for you, a priority of the freedom of movement of people in the science community or markets?

Professor Dalglish: No. I am absolutely clear that the freedom of movement of people is not on; it is freedom of skilled labour that we want to maintain, and then I see very little difference. It is so important. All the way through the debate those two things have been completely mixed up, and I think it is so important, especially in science, that freedom of movement of skilled labour is basically what will still exist and we still want.

Q36 Dr Mathias: Okay. On the harmonisation of regulation or funding mechanisms, would you prioritise one of those?

Professor Dalglish: Not really.

Q37 Dr Tania Mathias: Thank you. Professor Diamond.

Professor Diamond: I am not going to prioritise. I have said very clearly that freedom of movement, enabling us to attract the very best talent to the UK, and in the long term that includes students as well as researchers, is critical, and then within that you need access to the programmes to encourage people to be able to come. The very best principal investigators will not come to the UK if they do not feel they are going to have access to funds to lead their research. That is why I said earlier that the overlap between these things means there is not a prioritisation. If you get one, you get them all, and that is fantastic.

Q38 Dr Tania Mathias: Thank you. Dr Main.

Dr Main: I am going to echo Professor Diamond. I think Paul Nurse talked about his proposals for the UK research system as a three-legged stool, and you can use the same analogy here if you think about the principles, about how science works—science in its very general terms. If you take away any one of these, it will not work: if you had free movement but not funding, if you had funding but not harmonised regulation, the UK R

and D system would not work, both for industry and academia. If I was going to ask for one thing, it would be for evidence. We talked about a seat at the table before. We would like to ask for the evidence to be key in forming the basis of negotiations going forward.

Q39 Dr Mathias: I like your stool analogy. That is clear. Dr Main, during the negotiation period, do you think there is anything the Government should do to keep confidence of the international community in the UK as the place to do science?

Dr Main: Yes. The Government can do a lot on confidence. I refer you to what Professor Diamond has just said about clarifying the situation over the next few years before Brexit happens. I would say that many organisations, but CaSE included, have looked at the perception of the UK from the outside world. We published a report on immigration earlier this year. It is quite clear that the UK has some work to do on its image in terms of showing itself to be welcoming and encouraging for researchers to come to the UK. I would remind the Committee—I know you know this—that it is not really a question of us allowing talented scientists and engineers to come here; it is about us fighting for them to come here. There is an international competitive market for these fantastically talented people, and we have to fight for them.

The UK Government can make a great contribution by stating extremely clearly, one, what its priority is for the place of science in our future, whether it wants the UK to remain a scientific superpower, for it to lead on its scientific strength and heritage, and, two, how it feels about the people that it wants to come here, because all of those wonderful achievements that we can all cite about the UK are done by people from a range of nationalities in this country. UK science is not done by UK nationals. It is done by many people.

Q40 Dr Mathias: I can declare my interest—that I will be fighting for NPL and LGC people wherever they come from; that's for sure.

Professor Diamond: I am very much delighted that you will do it. Can I really stress the urgency of a Government response over the period between now and the time when we leave, because, frankly, during that time, we need to be able to continue to apply? Researchers right across the UK have been working hard perhaps for the last year on an application that maybe they are the lead player for. They need to know that, if that application goes in before the end of the summer, it will be treated in exactly the same way as it would have been last year, and that if it is funded there will be the funding for it to continue. I have already mentioned students all over the EU considering coming to study in the UK in October 2017. They will be making their decisions in the autumn. We need to know what the position is going to be for them, because they will enter presumably before we finally leave the EU but continue studying after, and they need to have some knowledge of the long term. The urgency of that reassurance is incredibly important.

Dr Mathias: Fighting for them, as Dr Main said.

Professor Diamond: Coming back to what Dr Main said, we are fighting day in, day out for the very best talent. When we at the University of Aberdeen interview for new academics, we are interviewing academics from across the world; they know that they are in a seller's market; they can go to a number of places. We need to be able to give them that clarity. That requires not only what I have just said but a long-term vision of UK science really impacting on the scientific knowledge base and the economy and social cohesion of our country.

Q41 Dr Mathias: Professor Dalglish, would you add anything further to those well-made points?

Professor Dalglish: No.

Q42 Jim Dowd: I apologise that I was not here for the first part of the session, and if it has already been covered I apologise doubly, but just on the point of attracting skilled labour, it is a global market in all kinds of disciplines, not just science. Also, as I recall, in the case of the UK it has to be in areas where there are skills shortages. Your answers covered the impact on our relationship with EU nationals who may wish to come in. Do you have any thoughts on the impact of non-EU scientists and technologists finding the UK a less attractive option with a looser link with the European Union?

Professor Diamond: Could I respond, and then maybe Dr Main and Professor Dalglish will come in? Again, reassurance is incredibly important. One of my vice-principals at the University of Aberdeen was in China just before the referendum and he gave a seminar on energy law, which is his expertise. The entirety of the questions was about Brexit, the implications and the way in which the UK would not necessarily be seen as such a great place in the future. We all have the same vision, but we need to overcome any perceptions that things have changed in regard to the welcoming nature of the UK for scientists from across the world. People talk about "open for business", but we need to be open for research and for collaboration in a big way.

Q43 Jim Dowd: Plenty of places are open for business; it is a question of having any customers there.

Dr Main: The EU is in the process of negotiating a deal that allows non-EU citizens with a job in the EU to travel to other EU member states. That might make it more attractive for a non-EU researcher to base themselves in an EU member country and have access to the rest of the EU rather than the UK. That is a possibility as a direct answer to your question. We need to make sure, for that reason, that the UK is attractive for UK researchers as well as non-EU researchers. All researchers want opportunities for their career development, for funding, for collaboration with colleagues. We need to make sure that our environment in the UK is as attractive as it would be for non-EU researchers.

I have one other comment. There is a survey currently open for people to input comments, which is being hosted by scientists for the EU, and one of the comments that I was sent

was from a PhD student from the far east, considering their position and whether they would come here post-Brexit. So, in answer to your question about non-EU, yes, the image of the UK impacts across the whole world.

Q44 Chair: Thank you very much. I have a follow-up on this issue about skilled labour and will drill down into the nature of that. At an event—the Oxfordshire Science Festival—I was doing this weekend, representatives from Diamond raised concerns about not just academics and researchers but also technicians being included in that pool of skilled labour, and obviously there have been issues with that from those coming through the non-EU immigration routes. Professor Dalglish, when you say there must be free movement for skilled labour, what exactly do you mean, and what exactly would be your priorities, Professor Diamond and Dr Main, for making sure that our science and innovation ecosystem is not just functioning but flourishing?

Professor Dalglish: Skilled labour is anything that you cannot provide in the UK that is available outside. That is an obvious thing to do, as far as I am concerned. If there is a skilled position, whether it is a super technician, and certainly with hi-tech now you could have a technical position that is very skilled where you do not have that and you want somebody from abroad for it, that would be the same thing. I do not see particularly any difference between a so-called academic and a hi-tech. Interestingly, Germany does not see any difference between technology universities and their academic universities.

Q45 Chair: No, but our immigration system has not always managed to make that distinction effectively. Professor Diamond.

Professor Diamond: It has not. We do need to recognise on the position of technicians that we need careers for technicians. It is important to recognise that when people start a career as a technician they need to see the way forward. We do not want to be a place where people just come and go. We want to be a place where people see their careers develop. Many of our laboratories have significant numbers of EU nationals as postdoctoral fellows. We would love many of them to stay and hopefully become the next Nobel scientists from those laboratories. We need to think of the career structure. With regard to technicians, it is incredibly important. We cannot do the science without people. Sometimes we do not recognise the careers that there are, and we need to recognise those skills as absolutely critical to enabling science to go forward. Therefore, everything that I have said thus far about the best talent includes technicians.

Chair: Thank you very much.

Dr Main: I support that, but, if I may, I will add a slightly different angle. My appeal would be for the dialogue on migration—the free movement of people—to become more nuanced. I would make an appeal, for the benefit of science and engineering and for the UK, that it needs to become more nuanced so that it does encompass what the attitudes are toward scientists and engineers, or the attitudes toward technicians. A 2013 public attitudes survey showed support for increasing the immigration of scientists and researchers as the highest class of workers that were surveyed, second place to

high-skilled workers in general. It would be a mistake to interpret the leave vote as a blanket mandate to reduce immigration. There is nuance—and it needs to be drawn out in the public dialogue—by occupation and by contributions to the economy.

Having said that, looking at what the science community has said about migration before the Brexit vote came along, they were clear that it was vital that free movement of people was protected for the benefit of science and engineering. They did not distinguish between whether these are high-skilled workers, scientists, engineers or others. They just felt that protecting that was important for UK science and engineering in general.

Q46 Chair: Thank you very much. Can I thank all of you for the time that you have taken to come and give evidence to us today? I am conscious that we have set you a Herculean task, to come in such a short time after the referendum and present coherent comments to us about the direction that we should take going forward. We are not going to be drafting our report immediately, so if you leave this room and immediately think you wish you had made this or that point, or if we come back to you and want to question you further on specific points, I hope you will see this as a continuing engagement, because this is one of the most challenging tasks that we have been set as a Committee and that the science and innovation community also have before them. I hope that we can see this as a continuing process until we get to the point of the report. We are going to have to move on to our second panel. Thank you very much for the time you have taken.

Professor Diamond: The science community sees this Committee as a beacon of advocacy for science in the UK, and can I urge you to take some of the points we have made today when we move forward?

Q47 Chair: We are doing our best, and we take on board your comments about urgency, which is why we asked you here today, but we also recognise the need for rigour.

Professor Diamond: It is a privilege; thank you very much.

Chair: Can I please call the second panel to the table?

Examination of Witnesses

Witnesses: **Professor Ottoline Leyser CBE FRS**, Chair, Royal Society Science Policy Advisory Group, **Stuart Pritchard**, EU Affairs Manager, Wellcome Trust, and **Professor Martin Vetterli**, President, National Research Council of the Swiss National Science Foundation, gave evidence.

Q48 Chair: Can I welcome you to the panel and thank you for being patient with us while we voted and questioned the first panel? It is very kind of you. Can I particularly welcome Professor Vetterli, who has flown in at very short notice from Switzerland to give us evidence today? It is very kind of him and I am aware of the time constraints that he is on for his flight home. Thank you very much for being here.

I am going to start off by asking you the same question that I asked the first panel. Do you think that there are some basic principles that should inform the Government's way forward as they begin to negotiate an exit agreement, and what do you think those basic principles should be if the best interests of science are to be represented? Can I begin with you, Professor Leyser?

Professor Leyser: Absolutely. I am going to take this question very literally and go to the very basic principles. There is a very broad consensus among the scientific community that science is done by humanity, for humanity; it enriches all our lives by increasing our understanding of the world and provides solutions to some of the most serious problems that we are facing as well as driving prosperity and economic growth. It is absolutely a core pillar of society and needs to be recognised as such. Because of this, it is conducted in a truly transnational context. It moves faster, further and more efficiently if it is run through these transnational collaborations and very dynamic, integrated networks, and the movement of people through these networks brings diversity into science, which is essential for driving high-quality science. I think, crucially, the transnational way that science works also mitigates against the dangers of the abuse of science, whether that is by nations or corporations, and so there are huge benefits to the international community of scientists for society, and that is the core principle that we need to hold on to.

The referendum decision was not about science—it was about a whole range of things. To me, we have to keep our eyes on this prize as scientists and to move forward in a way that protects the extraordinary benefits that science has. This is particularly important for the UK because we have such a strong leadership role in science, such a lot to contribute, that remaining fully engaged in the international community is the primary driver for how we should work going forwards.

Stuart Pritchard: Thank you and thank you for the invitation to come along this afternoon. I would agree with Professor Leyser's points. The trust is a global charitable foundation and it invests in excellent science wherever it may be. The UK is a great place to do science. We would hope that it continues to be a great place where science can thrive, so it is important for both the Government to provide clarity in the immediate short and longer term about what their vision is but also for the scientific community to organise itself to

provide a coherent vision, wherever possible, when you have so many disciplines and priorities. For me, a key thing we need to do jointly is to ensure that there is that vision and put a mechanism in place to identify the priorities for the immediate and short term. That is a much more “process” approach than necessarily the vision that Professor Leyser has pointed out.

Q49 Chair: Professor Vetterli, obviously Switzerland has not had an exit negotiation as such, but you have had to deal with the EU response following your recent referendum and your challenges in retaining access to funding frameworks and so on. What would be your advice to a country wanting to maintain the quality and the prominence of its science base during a process like this?

Professor Vetterli: Thank you very much for the invitation. It is an honour to be here. As I understand it, this is a discussion about the divorce, and I can only give the perspective of Switzerland and its relationship to the EU, which is not the story of a divorce but rather an unconsummated union.

Switzerland was associated to the EU for about 10 years in the framework programme as a fully associated member, and then we had a vote on a very similar issue, mass immigration, in February 2014, which excluded us from Horizon 2020 for about six months. We have had a partial association since September 2014. This will run out next year exactly on this issue of mass immigration.

We have currently access to two instruments: the European Research Council and the Marie Curie programme. These are two excellent instruments of the EU programme, and I want to insist on this.

I listened to the first panel and it was about access and influence. The good news about Switzerland is that it is such a small country that it never has any influence, so it is only interested in access. It is also interested in free movement. Because it is so small, we cannot run Swiss science if we do not have free movement. In Switzerland, we had an image problem after the mass immigration vote. Also, in the scientific community, when recruiting people—and just like the UK we recruit all over the world—we had an image problem, and that is a serious problem.

My main point is that you want to have access to the competition, and the competition in the world is about major players—that is, North America, Asia and Europe. The competition, for example, within Switzerland, which we had to run for the six months when we were excluded, was a joke, because you cannot run Swiss championships if you can play in the Euro, and I do not have to explain the soccer image to the folks here in the room. So it is not just about money. It is about the quality of the competition. For example, if you take the champions league or the competition in Europe, which is the European Research Council, the universities across Europe rank each other according to their success in the ERC. Even if you replicate a UK competition with all the money you can put on the table, it is just not going to be the real thing. As an anecdote, this morning, just before coming, I had coffee with a professor from one of the major UK universities, and

he told me that he was thinking of taking a 50% appointment in an EU country so that he could continue participating in the ERC competition.

I also want to say that I totally agree that the UK is a beacon in European science, and so I would be very happy if the UK would of course stay and we could all be a happy family. I want to say that the investment in infrastructures has given rise to great things. You paid into CERN, and it happens to be partly in Switzerland; it produced the Higgs boson, which was a Nobel prize for the UK. It also produced the world wide web, okay, which is probably the best known product of CERN. Research has also produced things like DeepMind, which is a company here in London, but please note: this company was bought by a major US concern, by Google, and that is also a concern. If we are playing in too small a league, we are not going to be able to compete on the world stage. That certainly is the opinion of Switzerland.

Q50 Chair: So we have issues of competition, making sure that we remain global players. In the context of science and research, what do you think is the single most important thing that we need to be protecting or achieving during these exit negotiations? What would be your priorities and how do you think they would relate to models?

Stuart Pritchard: We need to demonstrate that we are open. We had the point about “open for business”, and I think we need to be open-minded and open to mobility. There is more work that needs to be done to explore the point that was discussed with the first panel around freedom of movement for researchers versus the wider population. It is fair to say there is a huge amount of uncertainty in the community at the moment. I do not think it is hysteria. I think it is people who are very worried about their future prospects, and that uncertainty needs to be met with clarity.

Some of that uncertainty cannot be met in the short term because we do not know the terms under which UK organisations and researchers can participate in future EU activity, but we should be starting to map out how we can address that uncertainty—it is a very fair thing to be concerned about if you are a researcher—and have that reassurance, that calmness. The Minister Jo Johnson has already sought to try to do that, and it is a very good reflection on him that he has done that so early after the result to try to provide reassurance to the community that he is aware of that. In fact, he has already been in touch with the research commissioner to seek assurances about continuing UK participation in EU programmes. It is a very key part for me that we try to demonstrate that we remain open and that, for example, we provide reassurance.

The trust obviously is interested in the life sciences in particular; we have a very successful life sciences sector in the UK. The industry relies on certainty. It wants to know where it is going to make its investment, where it is going to support science, providing certainty on some of the key issues around, for example, what happens when the European Medicines Agency leaves the UK: how does that affect the life sciences industry here and those in the wider ecosystem who work with it? What happens then to the MHRA’s responsibilities and the resources needed to fill the gap? There are a lot of reassurances that need to be provided and a timetable of how that can be done. It would be unfair to

place all of that on the Government's shoulders, but a lot of that should be coming as soon as possible.

Q51 Chair: Do you have anything to add, Professor Leyser?

Professor Leyser: I would agree that, essentially to me, there are two priority tiers, the first of which is absolutely illustrated very strongly by Jo Johnson's very public announcement of the importance of science in the forthcoming negotiations and that the UK is open for visitors. Your piece in *The Guardian* today was very much a welcome contribution in that space. There are specific things that could be done. I realise that they may not be politically possible, but it would be possible, at least in theory, to guarantee that all currently open EU-funded grants would be financially secure regardless of the terms of exit. That could be done straightaway. I do not think it would be very expensive. I realise there are going to be serious financial constraints going forward, but none the less that could happen and it would send a very strong message.

Similarly, there has been a lot of discussion about non-UK EU nationals currently working in the UK and what guarantees can be provided to them. Certainly in a science context, it would be great if we were able to guarantee the security of those people in their roles in the UK. Specific things could be done, but a continuation of these more general statements about the importance of science is very important, and that feeds through into the establishment of clear mechanisms for negotiation. The previous panel emphasised this a lot, where it was really clear that science was a voice at the table. We have talked a lot about the importance of having that science voice at the table in the context of the policy for science, but that voice can also play a very important role in the science policy that will also be a necessary part of the negotiations as we go forward, particularly in the areas of some of these regulations.

Q52 Carol Monaghan: Could I touch on that a bit more? Jo Johnson said last week that we were going to be pushing ahead with the Higher Education and Research Bill. Since this involves the UK's research funding and governance—well, governance of English universities—is this the right time, do you think, to push on with this Bill, given that it is going to lead to further uncertainty in the HE sector, Professor Leyser?

Professor Leyser: This is a very controversial issue. I have heard arguments on both sides. There is a feeling that further instability would be a problem, but there is also a strong argument that stalling things sends entirely the wrong message about the way that the Government are now working. The Bill is complex because there is the teaching part, and there is really a major revolution in the way teaching is organised in the higher education sector. That part, in my experience, is much more controversial than the research part. In the context of what we are talking about today, if it is properly done, the institution of UKRI could provide exactly the kind of mechanism we need to gather the voice of science together from across the country and feed that into the policy arena and back out into the scientific community. So, in principle, that body could be crucial in the discussions going forward if it is implemented properly in the spirit of the Nurse review.

Q53 Carol Monaghan: I heard it called “You-Cry”, but maybe that is what we are all doing at the moment; I do not know. If I could push you a bit more on this, this is an organisation that has been set up and I suppose is carrying the hopes of the scientific community just now as we enter potential negotiations. Do you think it will be able to influence a debate on our relationship with the EU?

Professor Leyser: UK Research and Innovation has not been set up fully; it is very much in the process of being set up. As I say, if we get the right calibre of people on to that committee—the recommendations from the Nurse review were precisely to provide a forum for exactly the kind of integrated voice that we need for UK science in this kind of crucial negotiation going forward—it has the potential to be absolutely spot on what we need right now.

Q54 Carol Monaghan: Stuart Pritchard, do you have any further comments?

Stuart Pritchard: I would agree with that. The devil will inevitably be in the detail, but if there is strong leadership it has the potential to reinforce the scientific community’s voice in future negotiations. Again, it is beholden on us as a scientific community to support that negotiation by co-ordinating and having a clear set of priorities. We are a member of the Association of Medical Research Charities; the patient voice is also important in this debate. There are large aspects of European Union research that support the needs of patients, so there will be an opportunity as well to have that patient voice in the discussion.

Q55 Carol Monaghan: As has already been said in the previous panel, speed is of the essence here, getting this institute or organisation, whatever we are going to call it, set up very quickly so that it can play a full role. Do you feel that we have a handle on that?

Professor Leyser: It is an interesting question in the context of the White Paper. As I say, there is a feeling that that research side of the White Paper is better developed and it would be easier to implement that effectively. There is a concern if the entire White Paper gets rushed through without proper scrutiny and really detailed debate, both within the community and within Parliament, that it could wind up suboptimal across the piece, particularly in the teaching context. Some careful thought needs to go on in terms of how to take that Bill forward in a way that maximises the benefits for the immediate opportunities and concerns of the research community in the European context without dragging with it perhaps less well thought-through aspects associated with the teaching side.

Q56 Carol Monaghan: Thank you. I am presuming, Professor Vetterli, that you do not have comments on this, but possibly you do; it is a UK-specific question.

Professor Vetterli: It sounds like an interesting debate, but no.

Q57 Carol Monaghan: Stuart Pritchard, do you have any final comments or are you happy to leave it at that?

Stuart Pritchard: A good summary is not to rush it and to find the right balance.

Q58 Graham Stringer: What are the prospects of continuing in the Horizon 2020 programme? How important is it? You heard the previous panel say that what we should be aiming for is an enhanced associate country status. Do you think that is realistic? There are three questions there.

Professor Leyser: My understanding is that we are in Horizon 2020, and so with Horizon 2020 there is not specifically an issue. It is Horizon 2030, or whatever, where things really become a concern, although I suppose it is possible, depending on how the exit negotiations go, that that current agreement could be broken. That is one thing that needs to be discussed at the negotiating table.

The essence of your question is how important it is that we have access to those European funding mechanisms, and I think this point has been covered quite extensively by the previous panel. I would say certainly the zeros on the cheques are important, but more important is the complementary nature of those funding mechanisms that are not mirrored in a lot of the UK-based funding mechanisms, particularly in terms of funding for collaboration and funding for mobility. For example, there is this excellent Marie Curie scheme that was mentioned earlier, where very junior researchers get their own fellowship to move between countries in the European Union and push forward a project of their own. There is essentially nothing like that in the UK, with the possible exception of the Henry Dale fellowships, which are very specifically focused in the biomedical community.

So it is not just about money. It is about the way in which that money is spent to create these really important networks that are the lifeblood of science. It is all about people. We can write papers and everybody can read them as much as they like. In the end, the way science works is this diversity of people, of ideas, interacting, and you build this network early in your career and that survives for the whole of your career. You know that person; they know that person: it is that informal flow of information that really drives science.

Q59 Graham Stringer: The third question—whether it is 2020 or 2030—is whether it is realistic to get an enhanced associate status.

Professor Leyser: I am an optimist. I do not see why not, but that is down to the negotiation, and, as I said at the beginning, although I think the vision of the scientific community is very much that science should be woven into the very fabric of society and policy, and very much at the table, we appreciate that there are other priorities and there will be compromises.

Q60 Graham Stringer: Do you see any particular areas of science that are at risk because of the decision to leave the European Union?

Professor Leyser: Again, it would be difficult to point to very specific areas of science. I would say that, in general, across science in the UK, because of the really excellent work of the biomedical research charities, the biomedical funding stream is in a very different place from virtually the whole of the rest of science. Some of these European mechanisms—for example, the European Research Council funding—have had a massive impact on the rest of science in comparison to the biomedical area. I am not suggesting that the biomedics will be fine so we should not worry about them, but, none the less, it is a huge issue that some of these key mechanisms will disappear, potentially.

Q61 Chair: Professor Vetterli, do you want to answer on any of those questions?

Graham Stringer: Before you do, can I ask one specifically to you about the Swiss experience of associate states? When you were in the Horizon 2020 programme, did you lose the rights to intellectual property or did you keep them while you were in those programmes?

Professor Vetterli: I think these are almost orthogonal issues because intellectual property is handled differently in single-investigator grants, where the investigator keeps the IP versus where, in networked research, it is always a very complicated issue, which I do not think is clearly settled, not just in the EU programmes but also in other programmes.

If I had to pick choices, when we had the partial association, we decided in Switzerland to keep the European Research Council, because that is the champion's league of research, and it is extremely important in Switzerland to attract the top-notch researchers to Swiss universities. As you probably know, in the ERC, if you look at the top 10 ranked universities, they are either from England, Switzerland or Israel, and I think there is one maybe from Europe. Clearly, we are very competitive and that is why we want to have access to this.

The other one I totally agree with is the promotion of young talent, because in some sense the science of tomorrow is done by the people who choose now to pursue a postdoc and an academic career, and they need funding to be independent very early. If we do not have schemes for this, we are going to lose a generation. The other thing is that the UK is one of the countries in Europe that has an open academic system, unlike many of the continental European countries. Switzerland also has an open academic system where we do not look at the passport of people that we recruit, and this, I think, is what makes the excellence here in the UK and also in Switzerland.

Q62 Chair: Just to follow up on a couple of those points, Professor Vetterli, you have described the Swiss model as an “unconsummated union”, you are coming to an end date of the current negotiation arising from the referendum, and you are going to have to make a decision about where you go from here. From our perspective, it would be quite interesting for us to understand what you, as a science community in Switzerland, are saying about how well your current situation has been working and what you are asking for in what is going forward. What are your key priorities and why?

Professor Vetterli: We want the cake and to eat it too, of course, which means—

Chair: Join the club.

Professor Vetterli: —we would like free movement of talent without free movement of persons. We have heard this before, but this sounds like something that is the quadrature of the circle. What we do in Switzerland from the science and innovation and business community is to explain that high-quality science is what drives innovation and therefore the economic machine. For this, we need to have access to talent, and that means free movement of persons or association with the EU under terms to be negotiated, especially for Switzerland, which is completely subcritical from the size. If we did not have access to international talent, the quality would gradually disappear.

Q63 Chair: Can I also go on to ask about the decisions that Switzerland has made about regulatory frameworks, because, as I understand it, you have a lot of your own regulatory frameworks in a number of areas, including clinical trials, and you still have a very large pharmaceutical industry in Switzerland. Can I try to get a sense of how having independent Swiss regulatory frameworks has influenced your international collaborations, especially between Switzerland and the EU, obviously, because we have been told that it would be necessary for us to mirror EU regulations?

Professor Vetterli: This is a very good question. I would not like to give a wrong answer because it is quite technical. We have a division that does clinical trials. I would rather ask and give you a precise answer in writing.

Q64 Chair: Thank you very much. It would also be helpful, when you are gathering that information, for us to understand about the financial and bureaucratic burden of running two systems alongside, because we assume that industry/Government have to co-operate with the national regulatory system as well as an EU regulatory system if they want to access that market. It would be very helpful for us to understand how that works in practice.

Professor Vetterli: Okay.

Chair: Thank you very much.

Q65 Derek Thomas: Can I come back to a point that was made earlier by Professor Leyser? You said there would be serious financial constraints. Can you unpack that a bit in terms of how you were judging that or why you said that?

Professor Leyser: Serious financial constraints—I meant for the UK, but, okay, I suppose it depends. I am not the Governor of the Bank of England, but he tells us that we might be heading into even more fiscally constrained times than the times we have been in. Obviously, those are choices for you to make, not me—outside the ballot box—but if the country continues to work under an austerity-type regime, there are constraints and you have to prioritise where to put the money. Obviously, I would say we should put more into science and to providing rapidly those guarantees that I spoke about to stabilise the uncertainty in the community, but I appreciate that there are other demands on that money.

Q66 Derek Thomas: I picked that up because, if your community is saying there would or will be, that is talking us down and threatening the very work that you are trying to preserve because we do not know that is true; it may be or it may be not. We just do not know.

Can I take you to any specific research areas that would disproportionately suffer if the freedom of movement across the European Union was curtailed and any areas where you think research might be improved or opened up if we have easier movement across the rest of the world? Can you think of examples where research may—

Professor Leyser: As I say, research is all about people, and despite the fact that there are wonderful ways to collaborate with people—we can meet people by Skype these days—we still are very committed to the scientific conference. It is those face-to-face conversations at a conference, the lab visits and the time you spend working in another country as a young researcher—that networking—that are crucial to the whole fabric of the scientific enterprise. I do not think I would say there are particular disciplines that would suffer. The whole of science would definitely be less effective, work less well, if it were more difficult for people to move around in general.

Of course, at the moment we, for example, manage to collaborate successfully with the US without complete freedom of movement and so on and so forth. So I am not saying that it is impossible to generate a system where we have sufficient freedom of movement to support the scientific enterprise outside the EU, whatever arrangements we have in the long run, but it is undoubtedly the case that the really low administrative burden—the real ease of movement—is helpful. We all of us have way too much work to do, and any extra time we have to spend filling out forms, or whatever, is not good. There is a lot of discussion, I would say, about the extent to which the arrangements we have within European countries disproportionately somehow prioritise or bias the situation into collaboration with those countries in contrast to other countries. I do not think that is the case. I think that scientists will collaborate with the best people for their project wherever they happen to be found, but it is way easier to do that if you happen to have access to a collaborative funding mechanism and complete freedom of movement with other countries; it helps; it makes it easier, and you can spend more time on your science and less time on applying for a visa just to go to a conference. I do not see those things as being in conflict—that we have bureaucracy with some countries but not with other countries.

Stuart Pritchard: Can I add to that? Some very important points have been made there. The value of the UK environment is the diversity of funding that we have and the EU component is part of that, but I do not think we should get too hung up on the funding aspect, important as it is for a lot of research organisations. It is precisely this collaboration and mobility. There is not some doomsday scenario that suddenly scientists are going to stop talking to each other, but when Brexit occurs, exactly as Professor Leyser said, that additional complexity may make the UK less competitive for some potential international collaboration. We should not get too hung up on the funding point, important as it is. There is that much more valuable collaborative consideration as well, and it is just “the death by a thousand cuts” that we need to think about.

Q67 Derek Thomas: Thank you for that. UK scientists and researchers move freely around the European Union. If, for some reason, the European Union countries decide they do not want that any longer and UK researchers and scientists had to remain in the UK or go outside European Union countries, what actual impact would that have on the UK? I am not suggesting I would advocate that, but what impact would that have on the UK?

Stuart Pritchard: It is a very difficult hypothetical to answer, but the point has been made about collaboration in science being so critical, and anything that hinders that mobility or collaboration is going to be detrimental to the UK and its science base. As part of any future negotiation, we need to make sure that we are thinking very carefully about how this mobility issue is handled because it is the lifeblood of science: that is both in terms of the ability of our researchers to go within the EU but also the potential perception that the UK is less open. We will lose out on global collaborations if people feel the UK is in some way constraining itself by either restricting mobility or not allowing a better negotiation for mobility. We have to be very careful about the perception that this might present to the rest of the world.

Q68 Derek Thomas: Professor Vetterli, to what extent have the free movement issues affected Switzerland's science relationship with the EU? Have any aspects of Switzerland's science been handicapped by restrictions on free movement?

Professor Vetterli: Fortunately, thanks to smart negotiation, we were only out in the cold for six months. Six months is a short time, and I think we will survive that hiccup. If we get kicked out in 2017, which is not unlikely, it will be a major blow, potentially, because, as a science hub, we will be less attractive. Also, to answer a related question, "Which scientific fields will be hurt?", I have the opinion that the fast-moving fields are the ones where you are most dependent on free movement of persons. If you took all the fields related to computer science, machine learning and so on—I mentioned it earlier—these are the fields where, for example, in Switzerland we do not have the talent. When Google doubles the size of its research site in Zurich, they import people from all over. That is part of being excellent, and that is part of why Google is in Zurich and not somewhere else. It is not going to be a sort of sundown from one day to the next. It is about exactly this attractiveness factor, the fact that researchers go where the good science is: they like to move; they do not like paperwork.

Q69 Derek Thomas: You may have already answered this, but do you have immigration or visa policies that give higher priority to scientists and researchers in Switzerland, or are you aware of any models like that?

Professor Vetterli: Switzerland being a complicated country, our quotas are handled by cantons, and, again, I do not have the exact answer because there might be differences between cantons.

Q70 Victoria Borwick: I appreciate that we did touch on this in the earlier panel and you were here, but we are again very interested to go back to the elements or aspects of EU membership that help our science and research—the free movement of people, the access to markets, the regulation and the funding mechanisms—and we are particularly interested in research collaboration, because we know that, often, the UK are partners in many different aspects, either of the research or investment at some stage. I would welcome your views on which aspects you think are the most important and how we should maintain it. The point is—and I think the Chair said this herself—we are not going to get an identical model to other countries, but we are seeking to make sure we have a good list of asks here. If you think there are points that should be reinforced, something that we may have missed or an emphasis point, we ask you to give us the benefit of your guidance so that we can put a good list of asks together.

Stuart Pritchard: It is early days, obviously, and the science community is coming to terms with “What next?” Science is a very broad community and, as has been mentioned, we include social sciences and humanities in that. We cannot all speak for the science community, but there is starting to be a coalescing around the need to set out what key activities would need to be prioritised. We have touched on collaboration and funding. Regulation is a very important one. There is an enormous job of work to be done in terms of understanding what the change in regulation might need to be for the UK to retain participation in the single market, however that might look. If you think about something that is relevant to the Wellcome Trust—the data protection regulation—that is not currently on the statute in the UK. It is in the process of being transposed. If we were to have a different set of regulations from those in the EU, it may well prevent us being able to participate in large-scale health data research projects, for example, and that would extremely limit the work that the Wellcome Trust Sanger Institute in Cambridgeshire does as the largest genomics institute in Europe.

There are some very important reflections and analyses that we all need to do in terms of where the priorities are and what things need to be focused on. In terms of EU regulation, it is very much a scalpel rather than a sword that we need to have in terms of unpicking where the UK should retain EU regulation and where there might be the need for change. One key area is what happens to things that are to some extent in legislative limbo. We could add to that, for example, the clinical trials regulation, which is not yet fully transposed.

Q71 Victoria Borwick: Does anyone have anything to add to that?

Professor Leyser: I would point to three reports that the Royal Society put out leading up to the referendum about these three areas that are emerging as the key issues, one of which is collaboration, one of which is funding and one of which is regulation. There are lots of details and specific examples there. Obviously, the Royal Society would be happy to contribute specifics to that going forward. The big picture that I keep zooming back to is none the less where we should keep our eyes: we would like to remain fully engaged members of the international scientific community, and that requires being fully engaged. What can I say?

Q72 Victoria Borwick: No problem. Professor Vetterli, do you have any comments on that one?

Professor Vetterli: My only comment is to say that the Royal Society invented modern western science 350 years ago, so it would be really too bad that you will not be part of European science.

Q73 Victoria Borwick: Professor Vetterli, could you enlighten us as to which factors have been most important for Switzerland in developing their research collaboration? Is that again done on a canton basis or on a country-wide basis?

Professor Vetterli: No. Research funding in Switzerland is done by the federal government. The Swiss National Science Foundation is a broad funding agency that covers several agencies that you have in the UK, and there is an innovation agency that is also a federal agency. Then there is a system of cantonal universities and a system of federal institutes of technology. That is how it is run.

Q74 Victoria Borwick: The Chair and the Committee are very keen to continue to promote science, otherwise we would not be sitting here asking you these questions. We welcome the guidance you are going to give us, and I have no doubt you will send us some more afterwards, but if you have any particular views on what the Government could do—and you may say that is a political point—in the exit negotiation to keep international confidence in the UK, we would welcome your views on that.

Stuart Pritchard: We have several points on the clarity and the certainty. One key issue now that people are starting to discuss is evidence in policy. It was touched upon earlier in terms of the referendum campaign and opinion polling showing that trust in experts, whether they are scientists, academics, or whoever, is now diminishing. So, as a community, we need to understand what it is that we can do to try to reinforce the use of evidence in policy making and explain that to the public better, because clearly there has not been the cut-through that the science community might have hoped for. One key area it would be useful for both the community and the Government to touch upon is “Where now?”, for evidence in policy and what we can do to explain how it is generated, how it is used and how it can be reinforced.

Professor Leyser: I would like to add to that. That is right, but one of the most striking things that comes out of the referendum result is how frustrated and disenfranchised people feel. I think that is a wake-up call for us to come out of our ivory towers—or climb down Big Ben, or whatever it is—and get out there and engage with people. It is not just explaining to people; it is engaging with people and understanding what they want and what their priorities are. I can tell you that of course I am going to say that my priority is lots of money for science, please, but I do not think that is the point. The point is the priorities for the country. I am sure science will have a really important role to play in that, but we need to ask a wide range of people what those priorities should be.

Q75 Victoria Borwick: One of the other surveys and investigations we are doing is communication of science, and in a way you have just summed that up. There are a lot of people who feel disenfranchised and do not feel involved, and maybe if we managed to explain to them why it is so important we would have seen a different result. A good, valuable lesson to us is how important the communication of what everyone is doing is to the work that we are doing.

My final question is: how can the Government ensure that the UK remains a credible partner and location for international research collaboration? Do you have any advice or tips for us? Are there any particular things as to which you say, “Yes, if you did that, it might keep people over here”?

Professor Leyser: I would reiterate the points we made previously that there are things that you could do immediately that would be a very public signal that we still very much wanted to be a fully signed-up member of the global scientific community, which would be guaranteeing those EU grants and guaranteeing the rights for scientists to remain in the UK. A lot of it is now in this very uncertain period about people and their feelings of insecurity, and anything you can do to put your policies where your mouth is about the importance of science is going to make a very positive contribution to reassure people that we are still here and we still want to participate.

Victoria Borwick: All my questions have been covered.

Q76 Chris Green: Professor Leyser, over 100 UK national research facilities receive support from the European Union to provide access to European Union researchers. What scope is there for keeping such arrangements in place after we leave the European Union?

Professor Leyser: Like my colleagues, I will probably at this point refer you to the Royal Society reports on the funding. These are very complicated things. There are lots of these different facilities. They all have slightly different arrangements. Some of them are fully related to the European Union; some of them are completely independent of the European Union. It is very difficult to come up with a unified answer to that question because there is not one. Again, the big principle should be that it is more than “business as usual”; it is “welcome to the scientific community” to make the best use of those facilities. Similarly, we would want to continue to make use of the facilities that are outside the UK because that is how science works and that is the most efficient way to do science. We do not want a situation where we are duplicating facilities because we no longer have access to existing facilities.

Q77 Chris Green: So we would want to negotiate continued access across the European Union for EU scientists to come here and for British scientists to go there. We appreciate there is a huge amount of complexity to it, but it would be in the EU’s interests and Britain’s interests to ensure that we have a great working relationship going forward.

Professor Leyser: Absolutely. Precisely because the scientific community is a community, the scientists based in non-UK countries in the European Union would certainly want to help us to maintain the collaborations that we have built up over the years.

Q78 Chris Green: One concern emerging from this is for more clarity. If the Government viewing those two options on the referendum, one of them being to leave the European Union—that is what the British people have now chosen—had had more preparation so that there was a clearer plan upon Brexit, that would give you that reassurance, because so much of what you have been saying today is that reassurance is so important.

Stuart Pritchard: We are in uncharted territory. I know this Committee in its life sciences report called for contingency planning by the Government, and the aftermath of the referendum vote is taking up an enormous amount of the Government's time; so, to some extent, we have to be patient as the dust settles. I do not think we should necessarily panic into having to provide clear answers on everything immediately. We need to provide reassurance that somebody has a plan, that there is some control over the next steps and that people are being grown up about the next stages and having reasonable conversations with the right people. The Minister has been in touch with the Commission already. I would like to think that what can happen in the next stages is that a framework or timetable can be set out that helps people to understand what the Government are trying to do and what they are looking for others to help them to do.

Q79 Chris Green: I suppose, in terms of certainty, on Monday there was an urgent question in the House about the future of EU citizens in the United Kingdom post-Brexit. That was a huge concern for people, as it was articulated in the debate, that perhaps the EU citizens remaining in the UK might be part of a bargaining chip for the strategy post-Brexit for our relationship with the EU. Did you hear about that debate or have you any concerns about EU nationals remaining here and perhaps British nationals remaining in the EU?

Professor Leyser: I absolutely heard about that debate, and I think it is absolutely not the way we should be proceeding—to use people's lives as bargaining chips in a broader political landscape. I do not think that is a constructive way to arrive at a negotiation table either. This is me speaking as a person now, not to do with my Royal Society remit. I think, more generally, a clear plan would certainly be a good thing, and, again, I would stress that part of that has to be, yes, there was a majority in favour of Brexit, but we need to know also, going into the negotiation, why that was. It is possible that you could negotiate a Brexit deal that would not satisfy the wants of the people who voted for Brexit, and that would be an extraordinarily pointless activity. If the idea is to give the majority of people in the referendum what they wanted, you need to know what they want.

Stuart Pritchard: Just commenting—

Chair: Can I bring in Professor Vetterli?

Professor Vetterli: I want to add my little experience—my two cents—from going to Brussels, which is that when you meet with the scientists or the people in funding

agencies, my counterparts, they all love that Switzerland is within the EU; we are just the great brotherhood of science and it all goes very well, but the minute you say, “Okay, now could we do these deals?”, they say, “Well, this is decided on the 13th floor in this building and that is a floor of politics.” I just want to say that the issue that is at hand, and it comes also to Brexit, is probably a political issue, and at least for Switzerland it was not so easy to try to bargain on the science issues where everybody was agreeing around the table, because there was the 13th floor about politics.

Q80 Chris Green: Professor Vetterli, like the UK, Switzerland has research facilities that receive financial support from the EU. Is Switzerland required to provide access to EU researchers to those facilities, and has this issue been treated separately from the issue of access to Horizon 2020?

Professor Vetterli: No, because there we had long-standing agreements for the access to research infrastructure, which were just going on as if nothing had ever happened.

Chris Green: Thank you.

Q81 Chair: I cut you off, I am sorry, Stuart.

Stuart Pritchard: I was just going to make the point that, speaking personally, the uncertainty around many personal friends who are not UK but EU citizens in the UK is quite distressing. From a business continuity point of view—20% of the Wellcome Trust Sanger Institute’s employees are EU nationals who are not UK—there are a large number of organisations who are going to be asked questions about the status of the EU nationals working there, and that is an important issue to be addressed as soon as possible. In the research community, research institutes and universities will be having similar problems.

Professor Leyser: There are 31,000 non-UK EU citizens working in research in academia in the UK, and those people are all feeling very anxious and unwelcome.

Q82 Chair: Thank you very much. Professor Vetterli, I have a final question to you. We have covered quite a lot of issues, including the 13th floor. Do you have any final big lessons for us as we embark upon this process—any pitfalls you would advise the UK science community and negotiators to avoid as we try to negotiate a good deal for science?

Professor Vetterli: This is sort of delicate to say, but at least the Swiss tried to avoid the sin of arrogance. Even though Swiss science is very good, that is not how we went to Brussels.

Chair: That is excellent advice; well taken. I would like to thank all of you. I am sorry—Jim Dowd.

Q83 Jim Dowd: I have one further question, if I may, thank you, although I do not wish to detain everybody. Incidentally, en passant, the issue on EU national status for current EU

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nationals resident in this country will be the subject of a debate on a motion tomorrow in the House. Hopefully, we will see how that turns out. I certainly hope we do not turn into Uganda.

The question I want to put to Mr Pritchard is this. If I understood you correctly—and it is highly likely I did not—you listed a number of things that needed to be taken into consideration in answer to the Chair's opening question. You said at the end of them—I cannot remember the precise number or the nature of them—that these are mostly, though not only, for Government, about assessing the long term. We have all heard various organisations, both in the science field and in other national activities, who are saying they will have to reassess the future, but surely nobody can do that in the long term. You can put a temporary moratorium or hold on future investment and deployment considerations, but nobody can do anything with any certainty until the Government's position and the settlement, whatever it might be projected to be, is actually known.

Stuart Pritchard: That is a fair point. It is more about how you indicate that there is control over setting out how things will be dealt with. There are things that we can anticipate are going to happen in the future. For example, as to the new form of Horizon 2020, whatever that might be, we need to think ahead to how the UK will participate in that and how the UK could influence the way it is formulated. At the moment, Horizon 2020 funding is delivered on the basis of excellence. Will that change? We need to be thinking ahead to what could happen potentially. I know it is an imprecise science, but we need to try to map out, if possible, what that could look like and try to anticipate the things that we know are going to change.

Chair: Can I thank all of you for the evidence you have given us today? You have answered all our questions very fully and been very helpful to us. As I said to the first panel, we have been entirely unreasonable in calling you so quickly after the referendum result, but we feel the sense of urgency and anxiety from many in the community and felt that it was important to take quick action, but we do not want that to undermine our rigour. We do hope that, as evidence comes forward to you, you will send that on to us so that we can include that as much as possible in the report that we produce.

I would like to close by quoting Stuart Pritchard's comments—and it is something that I think all of us on the Committee want to emphasise—that UK science, regardless of the outcome, must remain open-minded, open for business and open to mobility. That is a very good message to end on. Thank you very much.