HOUSE OF COMMONS

Science and Technology Committee

Oral evidence: Government Office for Science Annual Report 2015-16, HC 949

Wednesday 25 January 2017

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Watch the meeting

Members present: Stephen Metcalfe (Chair); Jim Dowd; Chris Green; Dr Tania Mathias; Carol Monaghan; Graham Stringer; Derek Thomas; Matt Warman.

Questions 1 - 107

Witnesses

I: Professor Sir Mark Walport, Government Chief Scientific Adviser, Government Office for Science, and Dr Rupert Lewis, Government Office for Science.

Examination of witnesses

Witnesses: Professor Sir Mark Walport and Dr Rupert Lewis.

Q1 **Chair:** Good morning. Welcome and thank you for joining us today. For the record, could you state who you are and in what capacity you are before us today?

Professor Sir Mark Walport: My name is Mark Walport. I am the chief scientific adviser to HM Government and that is the capacity in which I am here today.

Dr Lewis: My name is Rupert Lewis. I am the director of the Government Office for Science, which supports the Government chief scientific adviser.

Q2 **Chair:** Thank you both for your time this morning. Sir Mark, thank you for publishing your report. One of your predecessors described GO-Science as "located in BIS but semi-autonomous." Is that how you would describe where it sits?

Professor Sir Mark Walport: Yes. The Government Office for Science is an office of the Government. Essentially, we sit for pay and rations within BEIS. We have close relationships with them, but my reporting line is directly through the civil service to the Cabinet Secretary and through the Government to the Prime Minister.

Q3 **Chair:** You would not say that in BEIS they have undue influence on your work.

Professor Sir Mark Walport: No, but we are close colleagues, because of course BEIS works on many different science issues. We work with them closely, but we work with many Government Departments closely as well. To be absolutely clear, our role is to provide advice across Government.

Q4 **Chair:** Does that mean that you entirely set your own work programme or do you reference the Government when you are trying to decide what to do?

Professor Sir Mark Walport: The answer is that it is a mixture of both. We want to be sure that when we do a piece of work there is a customer for it in the Government. That is the way our work is most likely to have an impact. We are always seeking for Government to ask us to do significant pieces of work.

Q5 **Chair:** As the Government's chief scientific adviser you have responsibility to advise the Prime Minster directly in a one-to-one capacity, but you are also co-chairman of the Council for Science and Technology.

Professor Sir Mark Walport: Yes.

Q6 **Chair:** Why do we have two conduits that advise the Prime Minister, and how does your work directly to the Prime Minster differ from that of co-chairing the CST?

Professor Sir Mark Walport: The short answer, Chair, is that we have many conduits for science advice to Government. There is not a singular route and that is one of the strengths of the scientific advice system; for example, each Government Department has its own chief scientist—the vast majority, at any rate. There are many scientific advisory councils throughout Government. There are specialist committees—for example, on fitness to be able to drive—that advise Government and there is, essentially, a parallel route with the direct role of the Government chief scientific adviser. As I think I have said here before, my job is to act as a transmission mechanism between the outside world of science, engineering, technology and social science and the inside world of Government. The Council for Science and Technology is another direct route. It is a committee that, as you know, is jointly chaired by me and Dame Nancy Rothwell, who is the president of Manchester University. It is a committee that sits neatly, and ambiguously, inside and outside Government, reflected by the fact that it has a chair from inside Government—me as a civil servant—and Dame Nancy, who is a distinguished president of Manchester University, and we provide parallel routes.

By a process of parallel evolution rather than anything else, the situation has been the same in the United States, where there is the presidential science adviser, who in the last Administration was John Holdren, and there is PCAST—the President's Council of Advisors on Science and Technology—which, interestingly, also has dual chairmanship in the States, with John Holdren being the co-chair with, until recently, Eric Lander. It is a model that is used elsewhere.

Q7 **Chair:** Is the work that you and the CST undertake complementary?

Professor Sir Mark Walport: Yes.

Q8 **Chair:** How do you decide which track to choose—the particular subject to work on?

Professor Sir Mark Walport: Our work is complementary and tends, to some extent, to relate to the nature of the output. The Council for Science and Technology tends to write fairly short, pithy pieces of advice in the form of letters. Sometimes the work of GO-Science involves letter-writing, but as often as not—for example, in our distributed ledger report—we write slightly chunkier reports, and we tend to do those through the offices of GO-Science. Both routes have equal impact and sometimes we tackle topics in collaboration. We have just started a piece of work jointly between CST and GO-Science on modelling.

Q9 **Chair:** In terms of allocating resources, the scale of the work that is undertaken would determine who would do that.

Professor Sir Mark Walport: Typically.

Q10 **Chair:** Would GO-Science have a greater amount of resource to allocate?

Professor Sir Mark Walport: Yes, although GO-Science is responsible for providing the secretariat to the Council for Science and Technology. One of the reasons that the Council for Science and Technology is able to be effective is that we provide strong secretariat support for it.

Q11 **Chair:** Dr Lewis, what distinguishes your role from that of Sir Mark's?

Dr Lewis: I am a civil servant. Mark is as well of course, but the chief scientists are externally appointed. I have a managerial role in GO-Science. My role is analogous to that of a chief operating officer. My role is to make sure that GO-Science is operating well, that we have the right staff and are managing them in the right way, that we are allocating our resources across teams in the right way and that we are supporting the Government chief scientist to fulfil his functions.

Q12 **Chair:** The report that has just been published covers the period before the EU referendum, so presumably the content is not influenced by Brexit. How much is Brexit currently influencing your work programme?

Professor Sir Mark Walport: In a number of different ways. One of the major consequences of Brexit has been a Government machinery change with the formation of BEIS rather than BIS and DECC. With the release of the industrial strategy Green Paper recently, we have been working in partnership with BEIS on the role of science as part of the industrial strategy. That has been quite important. I sit on the committee that Jo Johnson, the Science Minister, has set up to inquire from the community into the consequences for science, engineering and technology of exit from the European Union, and I have been involved in meetings with both the Department for International Trade and DExEU advising them on the implications for science, engineering, technology and social science of exit from the European Union. Of course, the change of Governments has meant us building a set of new relationships with new Ministers.

Q13 **Chair:** Absolutely, and presumably that means you have been very busy since—

Professor Sir Mark Walport: We have been intensely busy.

Q14 **Chair:** Is that the reason why your relatively short and pithy report took nine months to publish—the change of Government, lots going on and putting that into the context of the industrial strategy?

Professor Sir Mark Walport: Yes. I do not think anything deep should be read into the timing of the publication.

Q15 **Chair:** With the change of Government, did your report have to get cleared?

Professor Sir Mark Walport: No.

Q16 **Chair:** It is completely independent.

Professor Sir Mark Walport: Yes.

Q17 **Chair:** Finally, before I hand over to Carol, your report gives details of how much has been spent.

Professor Sir Mark Walport: Yes.

Q18 **Chair:** I think it has fallen from £2.6 million to £1.1 million over a three-year period. What is the reason behind that fall? Is it less work?

Professor Sir Mark Walport: I was asked that question last year as well, and the answer is the same: we are getting more for less.

Q19 **Chair:** More for less? Do remind me.

Professor Sir Mark Walport: If you look at our productivity, we have produced an enormous amount, but we have done that on the basis of being able to leverage a lot of advice from the external community pro bono. For example, for the distributed ledger report we had approximately a dozen external people who helped with the drafting and they did it pro bono.

Q20 **Chair:** The limit on the amount of work undertaken is your capacity, is it, rather than funding?

Professor Sir Mark Walport: Yes, it is our capacity and the capacity of the extremely able staff led by Rupert in the Government Office for Science to manage that large co-ordination; managerial effort is involved in co-ordinating products like the distributed ledger report.

Q21 **Carol Monaghan:** The industrial strategy Green Paper was published on Monday. What input did you have in drafting it?

Professor Sir Mark Walport: The Council for Science and Technology wrote a letter to the Prime Minister on some of the features in relation to all the sciences. Rather than saying science, technology, engineering and social science each time, I am just going to call them sciences. The CST wrote a letter to the Prime Minister on that topic, and a considerable amount of that advice was incorporated in the final product.

Q22 **Carol Monaghan:** Do you have any issues with it, or are there parts of it that possibly you feel do not go far enough?

Professor Sir Mark Walport: No. There was a great deal of consultation around the Green Paper, and of course the Green Paper itself is a consultation document, but the CST is satisfied and I think the Government Office for Science is satisfied with the content. There has been really good engagement. There is one specific task that has been allocated to me in the industrial strategy, which is to work with the community on the possibility of the development of an institution around batteries. I am engaging in that work at the moment.

Q23 **Carol Monaghan:** I was going to ask you about that, so maybe I will ask

you about it now. Why do you think you personally have been asked to look into the case for developing a centre?

Professor Sir Mark Walport: It comes back to the three streams of what GO-Science does. We have three areas of focus. The first of those is that we work on science for national resilience, so we have been working very hard during the last year on the national risk register and assessment. The second area is that we work on science and technology for the economy and for society. I think it is in the context of our work on science for the economy that I have been asked to do that work. Then, for completeness, the third area of our work is providing evidence and analysis for policymakers on all sorts of science and engineering issues. For example, last year, we talked about the national flood resilience review; the Government Office for Science and an external advisory committee provided the science assurance for the national flood resilience review. Coming back to the battery question, it is through our work on technologies—emerging technologies particularly—and the economy.

Q24 **Carol Monaghan:** What are your expectations for it?

Professor Sir Mark Walport: My expectations are high. I hope that we can get our excellent academic base in the sciences around batteries to identify a set of challenges that are important to battery manufacturers, for example, in the automotive sector, so that they can work together and tackle them, because we are moving towards electrification of vehicles on a major scale worldwide. One of the big challenges is the battery technology: batteries are expensive, heavy and they do not last for ever. It is an area where the science in the UK is strong, and I hope that the UK science base will be able to contribute to working with industry to solve some of the problems.

Q25 **Carol Monaghan:** You talked about the contribution to manufacturing and the economy—science in the economy. From that point of view, I would say that batteries are an enabling technology that allows other technologies to develop. Do you think that enough emphasis has been put in the industrial strategy on the key enabling technologies?

Professor Sir Mark Walport: I would say the answer to that is yes. Part of the letter from the Council for Science and Technology, which will be published, talks about the different core technologies, but a lot of the industrial strategy is about providing the infrastructure that enables industry to thrive. A lot of the report is about infrastructure.

Dr Lewis: Could I add something on the industrial strategy? The Council for Science and Technology advised on particular enabling technology areas—not exclusively enabling, but largely. The industrial strategy Green Paper largely took that advice; new energy technology includes battery and grid storage, robotics, artificial intelligence, satellites and space, leading-edge healthcare and medicine, manufacturing processes, materials, bioscience, quantum and digital, including supercomputing and

5G. Most of them are enabling technologies and the fact that we see such prominence—

Q26 **Carol Monaghan:** There is a key one missing: photonics, which is a massive enabling technology.

Dr Lewis: Quantum technologies is one of them.

Carol Monaghan: Okay.

Professor Sir Mark Walport: In our quantum report, we worked extensively with the photonics community.

Q27 **Carol Monaghan:** The Green Paper seeks views on priorities for Government's additional science spending. Will GO-Science be feeding in views on that? This is probably to Dr Lewis. Is that your question?

Dr Lewis: I am sure we will, as we have with respect to industrial strategy already, with the resulting technology advice. The formation of UKRI, for example, is another key player in advising and deciding on technology and science investment priorities.

Carol Monaghan: If you are feeding into that, will it be public, or possibly private conversations?

Professor Sir Mark Walport: What we do all the time is get out to engage with the broad scientific community. That is part of the transmission mechanism, because part of the job is to make sure that there is expertise broadly available over the areas of science that may become important to Government—in an emergency, for example. We are always out there consulting, and that is a fairly public exercise. The job is basically to be catalytic, and the batteries are a very good example of how we can provide added catalytic value.

Q28 **Carol Monaghan:** Will there be a public submission too?

Professor Sir Mark Walport: No, because it is what we do in the background the whole time—getting out there, talking to the community and working out where the opportunities are. It is also worth looking at what Innovate UK, working with the research councils, is doing around the industrial strategy challenge fund, which is one of the things that was announced in the autumn statement. Ruth McKernan, who is CEO of Innovate UK, and different research council CEOs have been having public meetings around the country, talking to the industry and the academic community to identify the topics that might be prioritised for that fund. We are not participating in that particular work, although I have been invited, if I want, to go to any of the sessions.

Q29 **Carol Monaghan:** I have a very quick, final question. You have had all these conversations and you know the industry probably better than anybody. Where do you think the additional spending is particularly needed?

Professor Sir Mark Walport: There are all sorts of sector reviews going on at the moment and it would be invidious for me to try to come up with a shortlist now. There are many areas of industry and it is a question of where the areas are; the Council for Science and Technology letter focused on that a bit. It is where emerging technology meets a very strong scientific base in universities and research institutes, where there is a nascent or an existent industrial sector that is able to provide pull, where there is a substantial market, not only UK but global—those sorts of criteria—and, frankly, where communities are willing to work together.

Q30 **Carol Monaghan:** But you are not going to name particular areas.

Professor Sir Mark Walport: I am not going to give a shortlist, no. Sorry.

Chair: That is a shame as it would probably make the headlines, but thank you.

Q31 **Dr Mathias:** This may be for both of you, gentlemen. The Government Office for Science has guidance for chief scientific advisers. Are they left to their own devices or, if not, do either of you guide them?

Professor Sir Mark Walport: No. We work closely with the chief scientific advisers. First, I am involved in the appointment process for chief scientific advisers, so it would be exceptional for me not to be part of the interview process. Secondly, we have a network of chief scientists, and we meet in my office once a week. Thirdly, I work with individual chief scientists on a one-to-one basis depending on what the issues are. For example, one of the things I was asked to do, in fact by the previous Government, but now the present Government, is to chair the Energy Innovation Board. In that context I work closely with John Loughhead, who is the chief scientific adviser in BEIS.

Q32 **Dr Mathias:** Is it collaborative rather than you telling them?

Professor Sir Mark Walport: Yes. It is absolutely collaborative. In terms of the line management relationships, chief scientists are appointed by individual Departments and their direct line responsibilities are within those Departments. They have a dotted line to me as part of the appraisal process; in other words, their formal line management is done through the Department, but the Department, particularly permanent secretaries, asks my opinion and I feed into annual review cycles.

Dr Lewis: The chief scientists in individual Departments tend to have expertise that is highly relevant to that Department, and we do not have more expertise than that. They are the lead experts in their particular areas.

Q33 **Dr Mathias:** They are pretty much left to their own devices once they are appointed.

Dr Lewis: No, I would not agree.

Professor Sir Mark Walport: No.

Dr Lewis: In the Government Office for Science, one of the areas where we add particular value is working across Departments. When we work across Departments on a particular policy issue, we always involve the chief scientists from those Departments and work collaboratively with them.

Dr Mathias: Okay.

Dr Lewis: When Mark Walport mentioned a dotted line, you could think of that as professional leadership. All the analytical positions in Government have a head of profession of some kind or another.

Q34 **Dr Mathias:** Is there an overall strategy for them, or does that come from their Department?

Professor Sir Mark Walport: No. There is not a singular strategy for the whole chief scientific network. They have their strategy within their Department.

Q35 **Dr Mathias:** We criticise, as a Committee, the Department for Exiting the EU for not having a chief scientific adviser. Do you feel that is of concern?

Professor Sir Mark Walport: There has been no shortage in that Department's seeking scientific advice. I have met Robin Walker on several occasions. He has come to the Council for Science and Technology—

Q36 **Dr Mathias:** Would that be weekly?

Professor Sir Mark Walport: No, certainly not weekly, but he has come to the Council for Science and Technology and met them. There has been quite active engagement, particularly with Robin Walker.

Q37 **Dr Mathias:** If there was a chief scientific adviser in that Department, would the input be on a daily basis for that Department?

Professor Sir Mark Walport: Chief scientists are appointed from the outside world, normally. Their contract in the Department varies from, in some cases, full time to typically three to four days.

Q38 **Dr Mathias:** I am just trying to work it out. It is great that you have input to one of the Ministers there, but it is about seeing what the deficit is in the science one-to-one approach.

Dr Lewis: It is perhaps worth mentioning that part of the way the Brexit Department operates is by drawing on expertise across Government. There is a great deal of expertise in different parts. We have some expertise and we feed that in. As the BEIS Department runs the science budget—the research councils' budget—it has an awful lot of expertise. They are particularly knowledgeable about, for example, EU Horizon 2020. The Brexit Department's style is to draw on expertise from across Government, including ours.

Q39 **Dr Mathias:** Yes. I am trying to work out whether they are suffering without having their own adviser. Obviously, as MPs, we know that our constituents involved in science and technology are extremely concerned about what the Department for Exiting the EU is doing. A lot of work seems to be needed, so it is a concern that they do not have somebody in their Department—if it is three or four days a week.

Professor Sir Mark Walport: It comes back a bit to the point that Dr Lewis has just made, which is that I am aware that BEIS has collected a great deal of evidence around the scientific issues as they affect our leaving the European Union and has fed that into DExEU as part of the work programme. Robin Walker attends the committee that Jo Johnson chairs, so I think they are getting a lot of input on what the scientific issues are.

Q40 **Dr Mathias:** But BEIS has a chief scientific adviser three or four days a week.

Professor Sir Mark Walport: Yes, who focuses particularly on the energy portfolio. They also have Tim Dafforn, who focuses on entrepreneurial issues.

Q41 **Dr Mathias:** It would seem, from my point of view, that, if it is good enough for BEIS, it should be good enough for the other Department as well.

Professor Sir Mark Walport: At the end of the day, individual Departments take their decisions about chief scientists. I believe they are planning to write to you.

Dr Mathias: To write to us?

Professor Sir Mark Walport: Yes.

Q42 **Dr Mathias:** We look forward to that. Is the website for chief scientific advisers up to date? Is it correct that somebody listed as chief scientific adviser to the Treasury is no longer there?

Professor Sir Mark Walport: She has moved on.

Q43 **Dr Mathias:** Is the website, other than that, up to date?

Professor Sir Mark Walport: I cannot give you an absolute assurance on that. We keep it fairly up to date, certainly in the sense that our blogging is up to date, but I cannot tell you for every single page.

Q44 **Dr Mathias:** If it is correct, there are five Department vacancies, and, if that is correct, is it a concern?

Dr Lewis: I think there are six.

Q45 **Dr Mathias:** Six vacancies.

Professor Sir Mark Walport: Yes. We have discussed this before. The vast majority of Departments have chief scientists, but there are always a

small number that do not. Some of them have alternative means of getting scientific advice; for example, DCMS has a science advisory council. DExEU, we have discussed. Two of the Departments are new—the Department for International Trade has a vacancy. At the MOJ, the director of analysis, Osama Rahman, provides that function. We talked about HMT, and Northern Ireland at the moment has cover provided by Dr Alistair Carson.

Q46 **Dr Mathias:** Are they the advisers?

Professor Sir Mark Walport: Effectively, yes.

Dr Mathias: Effectively.

Professor Sir Mark Walport: I have to say that, at the end of the day, that is not something I can be held accountable for. Ultimately, it is up to each Department to make their decision about it.

Q47 **Dr Mathias:** Yes. I am not so much asking about the accountability, but whether, from your point of view, it is a concern from that science background.

Professor Sir Mark Walport: Where there are science issues, I work with Departments. For example, I do work with DCMS over issues particularly around telecommunications and digital. We work closely with HMT, and my main interlocutor there is Charles Roxburgh.

Q48 **Dr Mathias:** Are you helping DCMS with the digital strategy that we are waiting for?

Professor Sir Mark Walport: We are not working with the digital strategy specifically, but we are working on digital issues.

Q49 **Chair:** Although it is not your responsibility, can I ask you to forward an opinion as to why DExEU is resisting appointing a chief scientific adviser so much? It strikes me as a relatively easy win for a Department that is relatively new in an important area. If they had a chief scientific adviser, they would be able to point to them and say, "This is where we're getting or co-ordinating our advice from across Government." It is all very well going into Government and pulling out what you want from individual Departments, but it appears that what we do not have is an overview, unless you are providing that. It strikes me as something they could do relatively simply. Why won't they?

Professor Sir Mark Walport: That is easy to say sitting in a Committee room in this corridor, but I can only imagine the workload in DExEU at the moment, and the number of issues they are trying to tackle. I can confirm very clearly that I have had several discussions and they are well aware of the issues. Ultimately, it must be their decision as to whether to appoint a CSA or not. It is part of your role to hold them accountable for that.

Q50 **Graham Stringer:** As part of the debate on the referendum, probably

the strongest single group of remainers were academic scientists: 90% of scientists wanted to remain. They showed great concern about the future of our academic base and the funding of the academic base if we left. Given those circumstances and other areas of concern about the EU on science that this Committee has discussed, do you not think that it is unreasonable, as the Chair said, for DExEU to resist?

Professor Sir Mark Walport: Can I frame it slightly differently? I am in absolutely no doubt at all about the importance of our scientific relationships with Europe. Our scientists are bilaterally deeply embedded in European science. There are many collaborating centres—places like CERN, the European molecular biology laboratories and ITER, which is the fusion project. There is a great deal of movement. Science is extremely important in our relationship with Europe, and that was emphasised in the Prime Minister's recent speech when one of her 12 points was specifically around science. First, you are right that science is extremely important. You are also right that the scientific community has felt very strongly about it and has expressed those feelings very strongly, but the Government are extremely aware of the scientific issues—that was expressed in the Prime Minister's speech—and DExEU are consulting extensively on the scientific issues. Those are all the important things. On the specifics of the appointment of a scientific adviser, ultimately, you have to ask DExEU. I cannot give you final answers on that.

Q51 **Dr Mathias:** I have a quick question, which is for Dr Lewis as well. If the Department for Exiting the EU can manage without a chief scientific adviser while his colleagues say it is a priority for that Department, how do you feel that affects the status of chief scientific advisers in other Departments that have less obvious priority for science?

Professor Sir Mark Walport: The vast majority of Departments have chief scientists who play an extremely active role in providing the scientific advice for the policies of those Departments. I do not believe that, as it were, it damages the position of CSAs in Government as a whole.

Q52 **Dr Mathias:** Would you agree with that, Dr Lewis?

Dr Lewis: Completely. Perhaps another point to make is that the chief scientific advisers in other Departments are experts in their subject fields, and those Government Departments need a great deal of scientific advice. The main kind of advice that DExEU needs is what you could describe as science policy—relationships with different kinds of EU bodies. BEIS has very strong science policy capability. They have been leading on that science policy for a long time, so they are very capable of giving good advice to DExEU. My understanding of the situation of DExEU is that they are considering whether to appoint a chief scientific adviser.

Q53 **Chris Green:** The Government Office for Science's annual report tells us that it is committed to ensuring that "rich strategic conversations about R&D priorities are held across government departments, research

councils and universities." To what extent will the setting up of UKRI make it easier to have such conversations?

Professor Sir Mark Walport: That is a good question. We already have in GO-Science very strong relationships with the individual research councils, with Innovate UK and with the national academies. Of course, the great strength of those organisations is that they aggregate communities. The advent of UKRI will offer a more co-ordinated framework for those engagements.

Q54 **Chris Green:** An aspect of that is to get innovation, products and ideas into industry so that we can develop new products for the future. Will Innovate start having more impact, more influence, on the other parts of the organisation, and will that start drawing through?

Professor Sir Mark Walport: If you go back to Sir Paul Nurse's report, the opportunity is to make the whole greater than the sum of the parts. To some extent, you can already see that happening. You can also see the impact of having a single co-ordinating body to some extent reflected in the confidence of the Government announcing in the autumn statement an additional £4.7 billion of funding for science and innovation. The challenge is to make sure that the community works together to make the most of our extraordinary science base. We are extremely good at basic research, and there are all sorts of metrics that show that. We are very good at innovation. There is an issue, I think, with the scaling up of innovative companies, and Sir Damon Buffini was asked by the Treasury to do a review of patient capital. You can already see the benefits of what UKRI can potentially bring around the industrial strategy challenge fund, where Innovate UK is working with research councils, getting out and talking to industry, talking to academia to identify some of the key challenges where science has an enormous amount to contribute, both to society generally and to the economy.

Q55 **Chris Green:** You are not worried about pressure being on the basic science and perhaps taking resources into the Innovate side.

Professor Sir Mark Walport: No. There is always an issue of balance in how the taxpayer's pound should be invested—the different balance of activities. The whole point about innovation is that you need to build it on a very strong base of knowledge, so you cannot have one without the other.

Dr Lewis: I completely agree. The innovation architecture in the UK, in Innovate UK and the catapults, is fairly young in terms of innovation policy. They are on a journey. The creation of UKRI can only accelerate the synergies that can develop by working together well, and create a better sense of co-ordination among them.

Q56 **Chris Green:** How do you see the Government Office for Science's role changing once UKRI is up and running?

Professor Sir Mark Walport: I do not think the fundamental role will change. The majority of what the Government Office for Science does is to provide scientific advice for Government policy, as opposed to working for policy on science. It will provide a co-ordinating body for GO-Science to liaise with and I anticipate that GO-Science will work closely with UKRI. The CST, I think, will be asked for advice around the different issues that face UKRI, although it does not have a formal role in the governance structure of UKRI.

Q57 **Chris Green:** Have you or your Government Office for Science colleagues had any role in the process of recruiting the CEO for UKRI?

Professor Sir Mark Walport: No. We have had no formal part in that at all.

Q58 **Chris Green:** You have no idea when any announcement or appointment might happen.

Professor Sir Mark Walport: No.

Q59 **Chris Green:** Finally, the Green Paper tells us that UKRI will run a consultation on the priorities for the new industrial strategy fund. Will the Government Office for Science have a role in advising on the priorities for spending by that challenge fund?

Dr Lewis: It is entirely possible. As Sir Mark said, we work very closely with BEIS and if we are asked for advice we will give it.

Q60 **Chair:** Can I go back to an issue raised in the industrial strategy around the balance between basic and applied research? It highlights that, relative to other countries, the UK has a heavier focus on basic research. Do you think there is a need to shift that balance? Do you think that is what will be rehearsed in the industrial strategy, to shift that balance so that it is more like the Japanese or Singaporean model?

Professor Sir Mark Walport: It is clearly an area of active discussion, and of course part of the question is how the new funding is allocated, but there is general recognition that there is opportunity to expand the innovation funding. That must not be done at the expense of the research base, but, when there is new funding available, there is the opportunity to change the balance slightly.

Q61 **Derek Thomas:** Professor Sir Mark Walport, it is good to see you here again. We have referred to your role as the joint chair of the Council for Science and Technology. Looking ahead to the setting up of the UKRI—UK Research and Innovation—the Government's higher education and research White Paper envisaged that the CST terms of reference would be "refreshed." Has that happened? When will the changes take place? How would you like to see the CST remit adjusted, and how much involvement do you think UKRI and its leaders will have in the Council for Science and Technology?

Professor Sir Mark Walport: The council's terms of reference have changed in several ways; indeed, the Council for Science and Technology has been on an evolutionary journey, so it broadened its expertise a couple of years ago by including all the heads of the UK's national academies as ex officio members. The scope of the CST is now fuller and more explicit, and it states that the CST should advise Government in several ways: for instance, on the opportunities and risks that science technology and disruptive innovation present, using horizon scanning to highlight issues about research and science capability, innovation in the economy, health and quality of life within the UK and sustainable development and resilience, and to ask what the Government's high-level priorities for science and technology should be.

Changes to the membership have been made. John Kingman, as the chair of UKRI, has been included as an ex officio member. Gareth Davies, who is the DG in BEIS, has been brought in as an ex officio member, and Charles Roxburgh, who is the second permanent secretary in the Treasury. They all attend as observers, and that has already had an important impact because it has essentially strengthened the links of CST broadly across Government. The change also recognised the importance of CST's relationships across Government, so there has been the introduction of regular meetings with Ministers from HM Treasury, from the Cabinet Office and from DExEU—I have already talked about those—as well as with the Science Minister. The answer is that the CST terms of reference have changed and they are being implemented.

Q62 **Derek Thomas:** When someone is in place to lead UKRI, what kind of involvement will it be? Will it be a similar involvement?

Professor Sir Mark Walport: That is for discussion. The likelihood is that there will continue to be one person from UKRI on the board, and at the moment that person is John Kingman.

Q63 **Derek Thomas:** In our recent report on setting up UKRI, we recommended that the Government publish the CST's deliberations on UKRI's strategy and priorities. At the moment on the website there are meeting summaries, which probably would not be described as minutes. Do you intend for the CST to publish its minutes once it has a UKRI role?

Professor Sir Mark Walport: Yes. There is room for expansion of what CST publishes as a result of its deliberations. It probably is not important to describe the details of every discussion that goes on, but it should probably be something a bit stronger than the summary we already provide. Our outputs, of course, are already published in full. We publish all the CST letters and we publish the responses. The substantive outputs of CST are published. In fact, our practice is rather similar to that of PCAST—the President's Council of Advisors on Science and Technology—in the United States.

Q64 **Chair:** I think you said it was the minutes or a summary of the CST's discussions.

Professor Sir Mark Walport: At the moment we provide a summary of the discussion, and we publish all the substantive outputs.

Q65 **Chair:** Where can we find that?

Professor Sir Mark Walport: On the website.

Q66 **Chair:** Obviously, the minutes are a one-page summary of who attended, aren't they?

Professor Sir Mark Walport: Yes, and a summary of what was discussed, but, as I said, the substantive outputs are the letters.

Q67 **Chair:** Fine, thank you; we know where to look. Before we move on to looking at some of the individual workstreams that you have going, I want to talk about the role of public engagement and communication. As I am sure you remember, last year the Cabinet Office floated the idea of an anti-lobbying clause in procurement contracts, which many in the research community were concerned would stop them talking about their work. My predecessor wrote to the then Business Secretary saying that it might create a barrier to evidence-based policy making. That was our input as a Committee. What role did you have in lobbying the Government to stop it?

Professor Sir Mark Walport: I am going to hand over to Rupert, but we do not lobby the Government. We talk to the Government.

Chair: Communicating with the Government then.

Dr Lewis: To be clear, the purpose of the anti-lobbying clause, as it was first perceived, was to try to ensure that public funds through Government grants were spent on the purpose for which they were intended. The science community had a concern that an unintended consequence of that might restrict them in some way. We explored that in great depth. We spoke to all the relevant policy leads, and the outcome was very clear on science. There are several areas that are explicitly eligible for expenditure on Government grants. They include publishing and publicising results of research, hosting science and research communications events and contributing expert scientific and academic advice to inform Government policy and funding. The scientific community has been much reassured. We have some reaction from CaSE—the Campaign for Science and Engineering—who said, "the Government have listened to the concerns of the research community and developed a new position that fully supports researchers in all that they do to inform and influence policy-making." Our role is to explore that potential unintended consequence and advise the policymakers on how to avoid it.

Q68 **Chair:** Do you welcome the revised plans? You are saying that basically the science community was right to have concerns and the Government have reacted to them.

Dr Lewis: The science community is always right to have concerns about things and to be active in ensuring that its voice can be heard. The Government have listened to that advice and reacted in a way that has been reassuring.

Professor Sir Mark Walport: Broadly, both we and the Science Minister listened to the scientific community and fed the concerns through to the Cabinet Office; they were listened to and we got a good outcome.

Q69 **Chair:** Thank you very much. There is the idea, in this post-truth world in which we are allegedly now living, that the role of the expert is now somewhat diminished. There is concern that evidence-based policy making is potentially undermined by that. Would you agree with that statement, and what do you do to ensure that the Departments are making policy based upon the evidence—proper scientific evidence—presented to them?

Professor Sir Mark Walport: The first thing is that we must strive strenuously to ensure that we are not living in a post-truth world and that the importance of evidence is recognised. I think that is the position of Her Majesty's Government. There is no doubt that everyone in the science community has a responsibility to ensure that evidence is fed through. There is something important about the nature of being an expert; one of the challenges for the public is that all sorts of people appear on the media and are identified as an expert, and just because someone is labelled an expert it does not necessarily make that so. There are standards and responsibilities, and the national academies have an important role in that respect. The learned societies have an important role. It is important that when experts appear they behave as experts commenting rigorously on the evidence and what the uncertainties are. It is difficult for the public if they are presented with apparently equal and opposite positions by people who call themselves experts. That is a challenge for all of us. The climate debate is an example of where people have claimed to be experts who are not.

In terms of the Government Office for Science, we communicate very extensively in and around science, and we have been doing reasonably well in communications through digital channels. In relation to one piece of work that we did on demystifying distributed ledger technology, on blockchain and similar technologies, a YouTube video we put up to explain it went to just under 80,000 people. We are blogging reasonably extensively; the Government Science and Engineering profession blog was ranked No. 1 and the Foresight blog No. 10 of 104 hosted on gov.uk channels. We are quite proud of that. We are communicating and we are using digital channels.

I and other colleagues fairly extensively. I gave a talk at the Alan Turing Institute on artificial intelligence last week, and I gave a talk—the Eldon lecture—at the University of Northumbria last year on forensic science. We get out and about.

Q70 **Chair:** Good. I am sure all who attended those events found them informative. Is there also a role in trying to get that message across to the hard-to-reach sector, which may not be looking digitally and registering the digital channels?

Professor Sir Mark Walport: We use all the channels we can, but, almost by definition, the hard to reach are hard to reach using conventional channels. As I said, I engage extensively; I go around the country. We use all the means we can.

Q71 **Chair:** Widening that argument, sometimes there is debate between the scientific community and the media about where the actual truth lies in scientific issues, and it can leave the public with a sense of uncertainty. A particular example might be the relationship between MMR and autism, which of course was proved subsequently not to exist and papers were withdrawn, but the sense among the public still persists that there is a link between MMR and autism. Do you have a role in clarifying that—you as the Government chief scientific adviser—and what do you do to encourage other chief scientific advisers across Government to get out, make the case and quell rumours?

Professor Sir Mark Walport: That is very important. In the case of something like vaccination, there is a particular role for the chief medical officer, who is extremely active in that area. On the topic of MMR and the spurious associations that have been suggested with other conditions, I believe it has been, or had been, very effectively put to bed in the United Kingdom. The issue has reared itself very recently in the United States with the new Administration, and of course there is a limit to our global influence on it. If you look at the history of the introduction of vaccines, there have been anti-vaccine movements going back to the time of Jenner, essentially. We need to be absolutely clear on the science. There is clarity on the science in the UK. The rate of MMR vaccination had gone up again. It is extremely important that we keep getting out the message about spurious associations.

Q72 **Chair:** I agree, and Dame Sally does that very well. The wider point is whether you think other CSAs across Government should do a similar sort of job.

Professor Sir Mark Walport: Yes, going with their domain expertise. Of course I am happy to work in support of the CMO, and do, on issues like vaccination. According to the area of science, the CSA with the relevant domain experience and access to the community plays that role. I want to return to your question about the hard to reach, because we have done some things that speak to that. For example, when we were conducting our Foresight project on the future of ageing, we conducted seminars around the country. We went, for example, to Margate and had a meeting there with people from different communities who are ageing. Through our outreach work—on the future of cities, for example, we did a seminar in a school in Birmingham—we are doing our bit to get to the hard to reach. You will appreciate, of course, that the opportunity cost of

getting to the hard to reach is high, so we can do a certain amount but not everything.

Dr Lewis: Could I add something on science dialogue and communication issues? There are a number of other actors who perhaps over the last decade in particular have come to the fore. The national academies have a responsibility, and they take it very seriously and do it very well. The thing that is most noticeable is how the Science Media Centre has worked to bring journalists and scientists together and to help scientists to interact with the media effectively.

Chair: We all appreciate the work of the Science Media Centre. That is a success. Thank you very much for that.

Q73 **Graham Stringer:** It is nearly four years, Sir Mark, since you were appointed. What are your successes and failures?

Professor Sir Mark Walport: Successes and failures—gosh.

Graham Stringer: They are not always the things you put in annual reports, but they are interesting.

Professor Sir Mark Walport: No. I think the successes have been around the work we have done on national resilience. We have increased the depth of science input into the national risk assessment. We have worked hard on providing advice in emergencies, be it flooding, Ebola and, recently, Zika. Those have been successes. When it comes to science and the economy, our outputs have been influential, be it the letter from the Council for Science and Technology on algorithms, which led to the creation of the Alan Turing Institute; the work we have done on distributed ledgers, which has undoubtedly had an impact in the service sector, the industry throughout the UK and internationally—it has been translated into many languages; our work on the internet of things; or our advice on science for Government policy, whether on flooding, which is a resilience issue, or providing the assurance for the resilience review. They have all been examples of successes. Has the policy impact always been as much as I might hope? Not always, but I am not sure I would pick out individual failures.

Q74 **Graham Stringer:** You have also seen, separately, as it happens, a change of Government and a change of Prime Minister over that period. What is your current access to the Prime Minister? Is it as good as it was to David Cameron?

Professor Sir Mark Walport: Yes. I have had a good one-to-one meeting with the Prime Minister since she took office. I have very strong links in No. 10 with policy advisers, with the policy unit, and I would say that I have ever stronger links with Ministers across Government, so yes. If you look at the profile of science in the last few months, following the decision to leave the European Union, the role of science has, if anything, gone up.

Q75 **Graham Stringer:** Yes. You said you gave a talk on forensics. This Committee and its predecessor Committee have been very concerned about forensic science. Gillian Tully made a number of comments that she is not satisfied that we are getting as good a scientific service as we could from forensics and she is worried about the accreditation process. What are you doing to try to improve that situation?

Professor Sir Mark Walport: The forensic landscape in the UK is changing. One of the things that has happened, which is outside Government if anything, is much stronger engagement between the judicial and legal professions and science. I pay specific tribute to Dr Julie Maxton and the Royal Society because she has created a programme that brings together science and the judiciary at regular events. The interest of GO-Science in forensic science has been through an annual report, and in one of our recommendations we suggested that a forum should be created to provide the opportunity for discussions between the different participants in the justice system. We had a meeting in May with the Lord Chief Justice, senior members of the judiciary and the Home Office, and it was agreed to establish a forensics forum. The Home Office has taken ownership, and Dr Julie Maxton has been appointed as the chairman of that forum. We have been very effective in helping and working with, in this case, the Royal Society, the judiciary and the forensics professions to bring closer connection between them. I cannot comment on the specifics of the forensic regulator's comments.

Q76 **Graham Stringer:** Will you be involved in the appointment of the new chief scientific adviser to the Home Office?

Professor Sir Mark Walport: Yes.

Q77 **Graham Stringer:** In the new appointment, are there any lessons that you will be taking to the criteria for choosing the successor to Professor Silverman? This Committee criticised Professor Silverman for not looking at the scientific impact of closing down the Forensic Science Service five or six years ago. Will that form part of the background to your appointment of a successor to Professor Silverman?

Professor Sir Mark Walport: With respect, not specifically. The issue in terms of the appointment of a chief scientific adviser is that there are many scientific issues around the Home Office for which science advice is needed in terms of the statistical expertise that Professor Silverman had; he was world class as a statistician. We will be looking for an excellent scientist who has domain expertise relevant to the Home Office portfolio, but that portfolio is quite broad, so the opportunities in terms of the scientific domains are quite broad.

We are looking at someone who can understand the difference between providing scientific advice and being a policymaker, because that is really important. The job of the adviser is to advise, not to make policy—that is a job for Government Ministers, ultimately. We are looking for someone who is expert, who has breadth of approach as well as deep expertise in

a particular area, who understands that they are working as part of a network, and who is willing to apply their domain skills across Government, because the deal with a chief scientist is that they provide expertise to their home Department but are also prepared to use their domain skills across Government. Those are the criteria we will be looking at for the successor to Bernard Silverman.

Q78 **Graham Stringer:** In your report "Forensic science and beyond" you say that "the power of forensic analysis has the ability to deliver benefits to society that go far beyond the Criminal Justice System."

Professor Sir Mark Walport: Indeed.

Graham Stringer: Can you expand on that? It is very interesting.

Professor Sir Mark Walport: Yes. The first thing, of course, is the use of forensics to prevent crime happening in the first place. We tend to think of forensics in terms of solving crimes, but actually forensic techniques can be used to prevent crimes happening in the first place. The history of British coinage is a good example of how there has been a constant battle between the Mint and the forger to make coins that cannot be easily forged. There are many walks of life where forensic techniques can be used to discourage and dissuade people from criminal activities, but in a world where we have globalised marketplaces, we increasingly want assurance of the provenance and authenticity of the things we buy. For example, forensic techniques—bringing that report together with another report—and distributed ledger technology give the opportunity to trace the provenance of everything from a diamond to honey. You want to know that the diamond you buy is not a blood diamond, and if honey claims to come from some esoteric pollen in some esoteric part of the world, you want to know that that is where it comes from. Those are all areas where forensic technology is important.

I will give an example that is of life and death importance. Fake medicines—counterfeit medicines—are a huge problem, particularly in the developing world, but also for the developed world. Unfortunately, it is all too easy to counterfeit medicines. The industry is working on that, and it needs to use all the forensic anti-counterfeiting techniques to make sure that when you buy or are given a prescription for X or Y in a pharmacy you are getting what it says on the label. Frankly, forensic science has an enormous amount to offer right across our lives. In a way, forensic science is a branch of the analytical sciences, and the analytical sciences are getting ever more powerful; for example, in detecting food contamination, which I talked about. We have to use all that technology in ways that will benefit society and will be good for our economy.

Q79 **Dr Mathias:** You mentioned success on the flood resilience review, Sir Mark. I want to ask your opinion on the Environment Committee's criticism of the Government's response to their report. Would you agree with their concerns that flood-risk management structures are still inefficient and fragmented?

Professor Sir Mark Walport: That is not a scientific issue. That is an operational matter. Our focus was on the science assurance to identify what is or is not at risk, and not to worry about the structures. *[Interruption.]* There is an extremely interesting piece of ornithology above us.

Q80 **Dr Mathias:** It's a phone. Who are the flood-engineering experts in our country?

Professor Sir Mark Walport: The UK is very strong in hydrology. We have CEH—the Centre for Ecology and Hydrology—and there are strong hydrologists in our university sector. The other area that is strong on it is the insurance industry and the reinsurance industry, and some of the work that we have been doing is bringing together the insurance industry with the hydrology community to see if some of the data that the insurance industry holds can be used for national resilience purposes. We are good at hydrology. Indeed, during the flooding several years ago, we seconded a hydrologist—Hannah Cloke from Reading University, now a professor—who came to work in the Government Office for Science for a period during the flooding. That is a good example where we acted as a transmission mechanism.

Q81 **Matt Warman:** Your annual report mentions robotics and AI. In this Committee's report on the same subject, we recommended a standing commission on AI. Do you have a view on the need for such a body, or a similar body?

Professor Sir Mark Walport: We produced a brief report on machine learning and artificial intelligence recently. There clearly are important ethical questions that arise from it. We have been working with DCMS and have jointly commissioned the Royal Society and the British Academy to produce a brief report for Government on issues around the governance of AI. We are expecting something from them in the next few months. I think it is likely that something needs to be done. I would not want to be specific on the exact geometry.

Q82 **Matt Warman:** Is your expectation that it will recommend a form of governance?

Professor Sir Mark Walport: Yes, I believe so. The question, of course, is what form that should take. Of course, if you look at the world of medicine, the Nuffield bioethics committee has done a very good independent study of the role of Government in that, but I am waiting with interest to see what they say.

Q83 **Matt Warman:** I am pushing you slightly, but it sounds as if you would favour something that was independent.

Professor Sir Mark Walport: It is an important area. There are profound questions about how we get the most out of machine learning and artificial intelligence, and indeed it is an area where the UK is extremely strong; there is no doubt about it. The issue with any

technology—I have made this comment many times before—is that we tend to debate it as a good or a bad thing, which is ridiculous because it is always about the specific application; it is the application of artificial intelligence for a particular purpose in a particular context that needs to be looked at. There need to be independent groups that can think about it for us.

Q84 **Matt Warman:** For now, what is the role of GO-Science in monitoring the development of AI?

Professor Sir Mark Walport: We have been very closely involved. We have reported on different aspects of it. I have spoken of it at the Alan Turing Institute. We were very involved in the setting up of the Alan Turing Institute, which brings together broad academic expertise to look at the issues around artificial intelligence. We are engaged in the public debate about it. We hosted a meeting at the British Academy, which I co-chaired with Mark Sedwill, the permanent secretary at the Home Office, and the Royal Society had a meeting to talk about it. We are actively engaged.

Q85 **Matt Warman:** How would you react if a suggestion was made that GO-Science take on the role of the ethics commission?

Professor Sir Mark Walport: I think that would be wrong. Our role is to provide scientific advice. Being the host for a standing ethics committee does not feel like a role for GO-Science. You have sprung it on me and I would need to think about it, but my instinctive response is that I do not think that would be the right answer. Indeed, I think that some level of independence from Government is needed.

Q86 **Matt Warman:** The sci-fi aspect of AI gets people terribly excited. Are there other areas of science where GO-Science is already, or should be, thinking about the ethical implications?

Professor Sir Mark Walport: We think about the ethical issues as a normal part of our work, to be honest, but there are other areas of emerging technology that obviously have profound ethical issues. It is really the interface between science and human values—science technology and engineering—which was the subject of my first annual report.

Q87 **Matt Warman:** You mentioned blockchain earlier, for instance.

Professor Sir Mark Walport: Yes. It is the emerging areas of bioscience that immediately pose challenges—gene editing and topics like that—where, of course, we are well served by existing structures, first because ethics is deeply embedded in all the processes of biomedical research and, secondly, because we have a body, the Nuffield Council on Bioethics, that has played quite an important independent role in this space for a long time.

Q88 **Matt Warman:** This Committee also recommended a robotics and

autonomous systems leadership council, which is obviously related but different. The Government said that they will work out the best model of leadership in this area as part of the industrial strategy. Do you regard the fact that it has not yet been set up as a problem?

Professor Sir Mark Walport: No. I think it is an important opportunity. It is part of the sort of sectoral approach that will emerge as part of the industrial strategy. The important point is that robotics, which is one of the outputs—one of the interfaces between humans and machine learning and artificial intelligence—is an important topic area. The UK is good at some aspects of it, and the challenge is how you make those communities greater than the sum of their individual parts.

Q89 **Matt Warman:** Specifically, back in March 2015, there was a commitment to set up the council. Would we be doing better if we had set it up already?

Professor Sir Mark Walport: It is very difficult to know the counterfactual, so I do not know the answer to that, I am afraid.

Q90 **Matt Warman:** What I am getting at is whether there is something missing at the moment that that sort of body would be able to fulfil.

Professor Sir Mark Walport: My impression is that it is a community that works together fairly effectively, but there is clearly opportunity in almost every community for them to work together better.

Q91 **Derek Thomas:** In our Ebola report last year we were critical that you, as the Government's chief scientific adviser, could not trigger a Scientific Advisory Group for Emergencies—a SAGE—to be convened, and the request had to come from Cobra. It is obviously good to see, in response to that, that a new Pre-SAGE mechanism has been set up for the Zika virus. Who decides when a Pre-SAGE should be stood down or even elevated to a full SAGE?

Professor Sir Mark Walport: The first answer is that we listened and learned lessons from previous emergencies, so we set up a mechanism whereby we do not need to wait for Cobra to become fully activated. I believe it worked very well in the case of Zika. The answer is that we decide it ourselves. We are constantly horizon-scanning for emerging issues. Clearly we work with other Departments, typically the Department of Health for infectious diseases, and we make the judgment ourselves as to when something is becoming a sufficient threat that we need to take action, even though it falls short of requiring a full-blown Cobra. Ultimately, the civil contingencies secretariat working with the Cabinet Office and No. 10 decide whether to convene a Cobra, so that one is well above my pay grade, but we want to be ready when there are scientific issues, and we want to be ready in a position where we can suggest to the CCS that the time has come when the Government might want to take it to the top level of interaction.

Q92 **Derek Thomas:** You can decide.

Professor Sir Mark Walport: We can both decide and stop.

Q93 **Derek Thomas:** If you want to go to a full SAGE, you go through what would have been the traditional route.

Professor Sir Mark Walport: Yes, absolutely. Let's be realistic about it. Operationally, SAGE—Scientific Advisory Group for Emergencies—is about identifying a group of scientific experts from within Government or from outside Government, be it in industry or academia, so the likelihood is that the membership of a Pre-SAGE and a SAGE would be, effectively, identical.

Q94 **Derek Thomas:** Effectively, you have been able to find a way of speeding it up.

Professor Sir Mark Walport: Yes.

Q95 **Derek Thomas:** That is good to know, because we spent a long time discussing that. Again on Ebola, we had concerns about how clinicians working on the ground in west Africa could feed into the work of SAGE, and we felt there needed to be a two-way flow of information. What mechanisms, following from our previous question, are now in place to capture insights from the frontline in a Pre-SAGE phase?

Professor Sir Mark Walport: To be honest, there was input from the frontline during Ebola, and we had input from the frontline in the UK, in that Professor Jacobs—now Sir Michael Jacobs—was a member of the SAGE group. Our job is always to find the right experts, and they may well be on the frontline. We have to be careful that we are not interfering in the operational details of a response that has a gold command, as it were. Our job is to provide the scientific advice and not to get too directly involved in the minute-to-minute operational issues.

Dr Lewis: In the Pre-SAGE that we convened for Zika, we had front-line scientists on the phone from Brazil who were giving us live intelligence about what was going on in the country.

Q96 **Derek Thomas:** Would that have been a positive development from what we learned from Ebola, or would that have happened anyway, do you think?

Dr Lewis: Ebola was before my time. I can only say what happened with Zika.

Q97 **Derek Thomas:** That sounds good. The UK was not research ready when Ebola hit west Africa. What steps have been taken since then to embed research into emergency responses, so that the research positively contributes to the response? Is that clear?

Professor Sir Mark Walport: I think there are two slightly different questions. The short answer is that you cannot absolutely guarantee that you will have the world expert on every future emergency. Where the UK is extremely fortunate is that we have strong infectious disease

researchers in the UK and they have very broad expertise. You cannot always have a guarantee that someone will be working on the next virus that materialises. The answer is that the breadth of UK science means that we almost invariably can phone someone who has world-class knowledge for almost every area of science. For example, when there was the earthquake in Nepal, we were able to find a world-class UK seismologist—indeed, in Cambridge—who had written a pamphlet on providing advice in the Kathmandu valley. There is then a second issue, which is the science of emergency responsiveness, where there is increasing global activity, recognising that there is a science in and of its own right on how you respond in emergencies. The UK is an active and leading participant in those forums.

Dr Lewis: On responsiveness in research, very quickly after the Pre-SAGE on Zika, the Medical Research Council, the Wellcome Trust and the Newton Fund jointly funded a £4 million programme for rapid-turnaround projects relating to Zika. They ran 23 projects on various things like disease surveillance, epidemiology and so on. There was a rapid research reaction.

Q98 **Derek Thomas:** Going back to your Pre-SAGE phase, does that enable you to look at what research is available and to speed it up rapidly before you have to get someone in the Government to go for a SAGE?

Professor Sir Mark Walport: Yes. One of the things we did as part of that was to speak to the research funders. We spoke to the Wellcome Trust and to the MRC and actually, through their good offices, got advice on what the state of knowledge was and, as Dr Lewis has just said, they acted as well—they would have acted regardless of Pre-SAGE—to recognise that it was an area where the UK had something to offer.

Derek Thomas: That sounds really encouraging; thank you.

Professor Sir Mark Walport: One of the people in Brazil had a very strong association with the London School of Hygiene and Tropical Medicine; I think she may have been an employee. Again, we are extraordinarily fortunate in the UK in having the Liverpool school and the London school; we have two schools that have tremendous depth and breadth in terms of international health.

Q99 **Jim Dowd:** I apologise; I was detained elsewhere. I will read in the *Hansard* report the earlier parts of Committee that I missed. Can I look at the Foresight report on the "Future of an ageing population," which was published last July? You mention it on page 10. Are you aware of any action that any Government Department has taken in response to that report?

Professor Sir Mark Walport: Absolutely. This is one of the most important challenges that not just the UK but nations around the world face: the demographic changes that mean that, for example, in 2014 there were 310 people over the state pension age per 1,000 people of

working age and by 2040, even with the changes in pension age, that is expected to rise to 372, so part of the challenge is to—

Jim Dowd: That is 372 per what?

Professor Sir Mark Walport: Per 1,000. We are all living longer, but of course one of the challenges is that, as we age, morbidity is not being compressed, so the health service faces a larger population of elderly people who are ill for longer. The Government are very actively looking at the issues. There is work going on in social care, and we have provided briefing papers for No. 10 on the care sector. There has been support to the Cridland review of state pension age and the DWP full employment report. There is a lot going on. My sense is that the evidence reviews that we provided as part of the ageing and Foresight work are contributing extensively, and certainly we worked on the whole issue of pension ages with the last Government.

Q100 **Jim Dowd:** Has there, to your knowledge—I know it is not your direct area—been any change in the approach of the medical schools with regard to their output, doctors mainly, towards a higher concentration on older people?

Professor Sir Mark Walport: I am too far from the day-to-day curriculums of medical schools to be able to answer that with any authority, I am afraid.

Q101 **Jim Dowd:** It would appear that nearly everybody wants to be a paediatrician or a GP and very few people want to be a geriatrician.

Professor Sir Mark Walport: Yes. It is difficult for me to comment on that. I am afraid it is 14 years since I actually saw a patient.

Q102 **Jim Dowd:** You told our predecessor Committee that you were liaising with the What Works network and its Centre for Ageing Better on the Future of Ageing project. That does not appear to be mentioned in the report. Could you describe what collaboration you have had?

Professor Sir Mark Walport: We worked closely with Lord Filkin and with the Centre for Ageing Better. As we were doing the Foresight work, it was in the process of being set up, so it was very new, but we had a number of meetings with them. Subsequently, we have worked fairly closely with Anna Dixon, so there are quite strong connections. The centre itself is part of the Cabinet Office What Works network, and I understand that it is making good progress.

Q103 **Jim Dowd:** Have you formalised the links with GO-Science and the What Works network, given its focus on improving the evidence in Government decision making?

Professor Sir Mark Walport: Yes. The answer is that we work closely with David Halpern; we have a place on his advisory board. I meet David informally quite regularly at different meetings, because the What Works network is important. It goes back to the whole question of evidence and

expertise. The What Works centres, which in a sense are modelled on NICE, provide the really important rigorous meta-analysis of evidence that is needed for policymakers. I am for ever making the point that there needs to be a bit more focus on evidence summaries and reviews rather than focusing all the time on the latest paper on X or Y, because actually science advances as the corpus of knowledge advances. Although it is important that you are up to date, if you are collecting evidence and working out how to use it for policy purposes, you want to know what the summary of the evidence shows—doing rigorous analysis of which scientific papers are the most robust and most rigorous. That is the sort of work that NICE has done for many years. It is the work that the What Works centres are doing much more generically. It is something about how academic outputs are valued. A rigorous meta-analysis is a difficult piece of work to do well and an extremely important one. That is why the What Works centres matter.

Q104 **Chair:** Thank you very much indeed. There are two points I want to raise before we close. Personally, whenever I meet delegations from other parts of the world, I am very proud of the fact that we have a chief scientific adviser network across the whole of Government. We have heard today that there are six vacancies. Does that effectively put the network at risk? Is it dead? Are we ever going to have a complete network of scientific advisers across Government?

Professor Sir Mark Walport: It is as high as it has ever been. I do not think we will ever get 100% because, at the end of the day, one size does not fit all; there are a number of different ways. I think you can continue to be proud of our scientific network, which is among the strongest in the world, if not the strongest in the world. While the US brings a lot of scientists into the Administrations, it is just a different form of government. Part of my job, and that of the CSAs in individual Departments, is an international role. Science is important in diplomacy. For example, the Canadian Government have consulted us quite widely as they think about the appointment of a chief scientific adviser. There is a great deal of international interest in the UK model. Perhaps there are sometimes too many meetings about the process of providing scientific advice, when I would prefer to get on with it, but it is widely admired.

The role of science in international relations is very important. Robin Grimes, the Foreign Office's CSA, plays a very important role for them, as do, of course, the opportunities with the Newton Fund for additional scientific partnerships, and now the grand challenges fund that the research councils have. Frankly, with our exit from the European Union, our global scientific partnerships are extremely important, and I believe that my job and the job of the network of CSAs is to engage with the scientific community globally.

Q105 **Chair:** Finally, going back to the area of communication and public engagement, you mentioned that you had been out and done discussions and talks as chief scientific adviser. We cannot find a video—there may

not be one—of your Turing lecture. Are they available publicly?

Professor Sir Mark Walport: The answer is that I only gave the Turing lecture a couple of weeks ago. It was livestreamed at the time and I am aware that previous Turing lectures have all been available, so it is just in the limbo between being livestreamed and put up permanently, but it will be.

Q106 **Chair:** Just as a thought, perhaps when you do public engagement events, you could make it easier to find the videos, not specifically that one—I accept fully that it may not yet be up—but just to make sure that there is a link on the website.

Professor Sir Mark Walport: Yes, we can try. In that case, it was the Turing Institute that livestreamed it. I cannot guarantee that all of my talks are videoed and livestreamed.

Q107 **Chair:** The public are missing out, Sir Mark.

Professor Sir Mark Walport: It might be a bit painful for everyone if they were all livestreamed.

Chair: I doubt that.

Professor Sir Mark Walport: I take your point, Chair; we should provide links to them.

Chair: Fantastic. Sir Mark and Dr Lewis, thank you very much indeed for your time this morning and for your candid responses.