

Science and Technology Committee

Oral evidence: [Work of the Science Minister and Government Chief Scientific Adviser](#), HC 1826

Tuesday 11 December 2018

Ordered by the House of Commons to be published on 11 December 2018.

[Watch the meeting](#)

Members present: Norman Lamb (Chair); Stephen Metcalfe; Carol Monaghan; Damien Moore; Graham Stringer; Martin Whitfield.

Questions 1 - 113

Witnesses

[I](#): Dr Patrick Vallance, Government Chief Scientific Adviser; and Dr Rupert Lewis, Director, Government Office for Science.

Examination of witnesses

Witnesses: Dr Patrick Vallance and Dr Rupert Lewis.

Q1 **Chair:** Welcome, both of you. It is very good to see you. Do you want to do very quick introductions?

Dr Vallance: I am Patrick Vallance. I am the Government Chief Scientific Adviser. I have been in post since April. Prior to that, I was head of R&D at GlaxoSmithKline. Prior to that, I was a clinical academic and head of medicine at UCL.

Dr Lewis: My name is Rupert Lewis. I am the director of the Government Office for Science. In the last 15 years, I have done a variety of policy and science jobs in Government.

Q2 **Chair:** My first question is for you, Patrick. As you said, you have been in post for about eight months. Are you clear now on what your vision is for what you want to achieve during your time as chief adviser?

Dr Vallance: Yes. There are three areas. I will give a bit of the backdrop to why they are the three areas. It is undoubtedly the case that we all live in a rapidly changing scientific world. Science is important for virtually everything that we all do and for most decisions that are made. There are huge changes: demographics, climate, threats to the country and changes that affect the world. Nick Stern, for example, has talked about the three doublings, with global infrastructure doubling in 15 years' time, the global economy doubling in 20 years' time, and the number of people in urban environments doubling in 40 years' time. There will be huge changes and big science advances. We will both be affected by those and have a chance to do an enormous number of things to benefit society.

The overarching thing I am very clear about is that my role is to ensure that, in that rapidly changing world, the Government and the Prime Minister get the best scientific advice that they can, both for now and for the long term, and that that scientific advice is challenging sometimes. In other words, it is there not just to support positions, but to challenge them.

Therefore, the first of my three priorities is to get the advice mechanisms as good as we can get them.

Q3 **Chair:** Do you think that there is work to do on that?

Dr Vallance: I think that there is work to do. We have to keep working on getting the CSAs to be as good as they can be and to be more diverse. I think that it has been a very male group. We need to get both more diversity of subject area and more demographic diversity among the CSAs. The Government science and engineering profession is an underutilised resource, as part of that. There is some work that needs to be done there.



HOUSE OF COMMONS

There is the issue of connectivity. Of course, we need to be extremely well connected in the UK, but there is a need for us to be very internationally connected, both among the CSAs and elsewhere.

The fourth bit of this is that the advice can be as good as you like, but if you do not do some work on the recipients of the advice—the policy profession and others—we will have an uphill struggle. Chris Wormald, who heads the policy profession, now has in the policy profession a mandate that people should have some scientific knowledge. That is an important part of what we need to do.

Therefore, priority No. 1 is about the advice mechanism. I have said to GO-Science that there are three things that we need to do on that: to make it relevant, to make sure that it is always based on scientific excellence and to make sure that it is delivered on time. Those three—the RED programme—are what we are pushing.

I would characterise the second priority as infrastructure for what is required in the country to meet the science needs of policy, the economy and resilience. That involves really making sure that we have a clear view on infrastructure—things like the Faraday Institution and so on—and that we know what we need. It also speaks to the issue of training in research. I want to make sure that we have a very clear plan in place around the training needs in an increasingly digital world, and that we concentrate on the gap that the UK has not filled for quite a long time, which is to do with the application of our research. That speaks to the industrial science base, where I think that there is some work to be done in order to make sure that we utilise our research. Therefore, priority No. 2 is around what I have broadly called infrastructure, but covers those areas.

Priority No. 3 is science and citizens. I have not done much on that yet, but in 2019 I want to spend time fleshing out what it really means in practice. It goes back to my opening point that we all live in an increasingly scientific world. I think that there is a danger that science gets seen as something that is done over there, by other people who are not like me. The reality is that science impacts on all of us. Therefore, there is some work to be done on how we think about that aspect of citizens, as users of science, as demanders of science to solve problems, and increasingly as participants in science.

Q4 Chair: I suppose that that imposes an obligation on science and scientists to communicate effectively and to demonstrate the value that they can offer to society.

Dr Vallance: Yes, indeed—and what society can bring to science.

Q5 Chair: May I ask both or either of you what the strengths and weaknesses of GO-Science are at the moment?

Dr Vallance: I shall have a go at that first. Rupert may then want to comment.



HOUSE OF COMMONS

I have been deeply impressed by the quality of the people at GO-Science. I think that it is a centre of excellence for applying scientific evidence to policy. It is extremely good at pulling together foresight reports and looking at evidence synthesis. Historically, there has perhaps been an overemphasis on report production as the output. We may need to do a bit of work to make sure that report impact and follow-up is part of that. I do not think that reports are always the way in which we need to exert our influence. There are some other, quicker levers that we might pull from time to time. While GO-Science has been extremely well connected in some areas, generally it has been a bit less connected, perhaps, on the industrial science base, to which we have to pay some attention.

Dr Lewis: I agree with Patrick. We have very enthusiastic and skilled staff, but let me focus on a couple of weaknesses. The paradigm of Government decision making is economics, and we have a lot of scientists. We have a senior economist and we try to train our staff in how to think in those terms.

It also links to Patrick's point on report writing. The real skill that we need is influencing policy makers. While we need scientific expertise, if we had too much scientific expertise and not enough policy skill, we might not be good enough at that. Therefore, we try to recruit carefully to balance the science experts and the policy skills that we have, in order that we are effective at influencing policy. It is a bit like being an athlete. We always have to push in that direction, in a continuous improvement fashion.

Q6 **Chair:** At the moment, is there any mechanism to revisit the reports that you write to see what has happened to them and whether there has been any implementation?

Dr Vallance: Yes. We are revisiting the obesity report at the moment. We are also going to keep a very close eye on what happens with the "Future of the Sea" report, for example, and so on. We are putting in place that process, to ask what has happened as a result of it and how that compares with what we thought should happen. We are not in a position to be the implementation body, nor should we be, but we should at least look and ask what has happened as a result of the reports that we have written.

Dr Lewis: I agree completely. The obesity report is a case in point. It was written 11 years ago. The science has changed somewhat. It is still an extremely important policy issue, so we are doing some re-analysis of the original findings.

Q7 **Chair:** Beyond the priorities that you defined in your first answer, Patrick, does GO-Science have any other strategic priorities for the next 12 months, or will it simply seek to implement the priorities that you have described?



Dr Vallance: We have some specific projects coming out. We have the future of mobility project, which is due to publish its report in January. We have a series of what we are calling foresight sprints. We have changed things slightly, to look at more areas over a shorter period and then to move, potentially, into full foresight projects on those areas. We have three or four that are in the works.

Q8 **Chair:** Are you able to say what they are?

Dr Vallance: There are two I am prepared to talk about at the moment. One is genomics beyond health, where we think that there is quite an important area to explore. The second is global data trends and ownership, which is a subject we need to look at.

The areas we are inevitably focused on—and should be—are the industrial strategy, where we are involved in both the challenges and missions and the process with UK Research and Innovation, and the question of the 2.4% road map for R&D spend, which I have been very involved in. The Council for Science and Technology is also doing work on that. It will be a very important area to get right, especially as, to get to 2.4%, we have to leverage private sector investment. That is a really big area. I think that there is something that we can do there that is important. I am very loth to say this so early in the day, but another area is Brexit and our international position.

Q9 **Chair:** Amazingly, you have pre-empted what I was just about to ask you about. I would be really grateful if you could give us some clarity. At the Liaison Committee, I asked the Prime Minister about where we stand at the moment on participation in the Horizon programmes. To be blunt, there was really no clarity at all in the answers. Can you say where we are at? Is there a discussion ongoing about the conditions that would be applied to membership of the Horizon programmes? Are you able to say that it is the Government's intention that we are part of Horizon Europe, if the deal goes through? There is then the question of organisations such as the European Medicines Agency, where, again, there appears to be no clarity.

Dr Vallance: I think that the Prime Minister has been clear that she wants to fully associate with the European programmes. That is the position that has been talked about so far. That is the position that would be very welcome—

Q10 **Chair:** What does “fully associate” mean?

Dr Vallance: It means being a full member of the European programmes going forward. We cannot be a member as we are now, but we would be an associate member of those programmes, which would mean that we had the same access, but obviously, slightly different rights with regard to decision making. However, most of the decision making in those programmes does not come to a vote anyway. The desire is to be fully associated with the European programmes going forward. Obviously, that is dependent on a deal.



HOUSE OF COMMONS

Q11 **Chair:** We have not got to an end point with regard to how much we would pay to play, as it were.

Dr Vallance: It is very likely—inevitable, I think—that, in any new system, the amount that you put in and the amount that you get out would be linked. There would not be a system where you could get out far more than you put in, for sure. The question going forward will be, how is value for money judged on that basis?

However, there is definitely a strong desire to be fully associated. There is a very strong desire from the academic community to be fully associated. That is true across all of the sciences, including social science—I use the term in its broadest sense. The humanities also get a lot of money out of this, particularly from the European Research Council, where there is a real excellence-based programme. There is a very strong desire to be fully associated with that, going forward. Businesses, too, want to be associated with it.

Q12 **Chair:** What about the EMA?

Dr Vallance: We will not be a member of the EMA in the way in which we are now. Again, there is a voting system for approvals, but it relies a lot on the opinions voiced. The UK has always been an extremely strong voice in the areas—

Q13 **Chair:** The MHRA has played quite a significant part in it, hasn't it?

Dr Vallance: If you look at the number of times that the UK has been the rapporteur or co-rapporteur or has been influential in decision making in the EMA, it is very high. It is well up the spectrum.

Q14 **Chair:** Is the plan to find a way of allowing that to continue?

Dr Vallance: Yes.

Q15 **Carol Monaghan:** Can I press a bit further on the Chair's questions? We have already had the previous Science Minister in, talking about future participation in Horizon, or whatever its successor programme is. He kept using the phrase "but not at any cost." The Chair has asked you about that. Are figures being bandied about just now? Do we have a clear idea of how much the UK would be willing to pay in order to participate? We are really close to deadlines now, and these are questions that really need to be answered.

Dr Vallance: Going forward, the plan is to carry on as we are now, in terms of the amount going in. I suspect that the value-for-money question comes in due course. It is about how you stack up that versus some other international use of the money. As I understand it, there is no suggestion of anything other than carrying on as we are at the moment with the funding. That is the commitment that has been given, certainly for the current programme, and that is the intention for the future programme. Ultimately, I am sure that the Treasury will ask for some value-for-money calculation.



HOUSE OF COMMONS

Q16 **Carol Monaghan:** It is hard to know how much of the money that is currently paid into the EU is specifically for Horizon 2020 and, therefore, how much of the current UK budget will be dedicated to its successor programme.

Dr Vallance: For the remainder of 2020, it is clear that that is all covered. When you go beyond that, it is a different question as to exactly how much goes in and how much comes back. That has not been negotiated.

Q17 **Chair:** No agreement has been reached in that discussion.

Dr Vallance: No.

Q18 **Carol Monaghan:** Moving on from that slightly, can I ask you about one more thing? Euratom has been raised repeatedly in the House. We have not had any clarity at all on that. Do you have any indication of how we are going to participate in Euratom, as an associate, or how we are going to source medical radioisotopes?

Dr Vallance: No, I cannot give you any information on that at the moment. It is really a question that BEIS will be in charge of negotiating, so I cannot give you details on that. I am sorry.

Q19 **Chair:** Are you able to update us on planning for a no-deal scenario? If we leave at the end of March with no deal, what contingency plans are in place to make sure that funding for science continues without potentially very damaging interruption?

Dr Vallance: There is no-deal planning going on for that, of course. The immediate priority would be to ensure that those grants that are currently funded through the European process continue to be paid. I know that UKRI is doing a lot of work around that.

Chair: Good.

Q20 **Damien Moore:** How would you explain the purpose of GO-Science to the general public? Why does the UK need a Government Office for Science?

Dr Vallance: I will have a go first. Rupert, who has been there longer than I have, can then give you his view on it.

Why do we need a Government Office for Science? I hope that I outlined in my first answer why I think that science is absolutely essential for almost every decision that is made. It is worth noting that many countries around the world are looking at this model and asking whether they should do the same. Canada is doing the same, and New Zealand has a mechanism that is quite similar. It is similar in Australia. Many countries are looking at the model and saying, "Should we do something a bit more like this?"

What GO-Science does is provide the infrastructure to allow science for policy, science for resilience—whether it is for natural disasters or for



threats from others—and science for the economy. I would add in my fourth point science for citizens. Of course, GO-Science cannot do all of those things on its own, but it acts as the nerve centre for this and as the way of bringing together those things that cross departmental boundaries and those things that have very long horizons, which might otherwise get lost in the immediacy of actions required in Departments. I think that it is a centre of excellence for this that allows the Government to get ready access to the things that they need. That is most obvious when it swings into action at times of emergency.

Dr Lewis: I can answer your question. When it comes to explaining the role to the public, the description of GO-Science that has been used in the past, as a transmission mechanism, is a good one. There is an incredible amount of scientific information published—something like 2 million publications a year all around the world. It is very hard for individual policy makers to access that in any useful way, so we help. We help through our networks. We have really good networks with institutions, the national academies, the research councils and so on. They particularly come to bear when we give science advice to Government in an emergency function. When we do emergency response, we have hundreds of people we can pick up the phone to instantly. GO-Science is that transmission mechanism.

Your second question was about why it is needed. Each Department has its own science advisory mechanisms, but there are many areas where the issues are complex. Earlier I raised the example of obesity. That is about health, diet, environment and infrastructure. It is a complex issue. These days, mobility is about the economy, health and technology. We add value particularly when areas are complicated and cover more than a single Department.

Q21 **Damien Moore:** Given the broad scope of the things you are dealing with, do you think that a 13-page annual report does justice to the work that you are doing? Do you expect to get out a more substantial report this year?

Dr Lewis: Of itself, it does not do justice to our work, but we do many more things than that. The report covers a summary of everything that we do. For example, it has summaries of our foresight reports. However, if you go to the foresight reports themselves, you will find huge amounts of information underneath each one.

Q22 **Damien Moore:** So it will be more substantial next year.

Dr Vallance: What Rupert is saying, which I agree with, is that our efforts should go into the reports that we write, not, in a sense, the report of the reports. Keeping the annual report as a relatively short summary that points to the reports themselves is probably a more useful way of using the inevitably constrained resources that we have.

Q23 **Chair:** Is that the approach that you have always taken? Have they



always been quite brief summary reports of that sort?

Dr Lewis: To the best of my knowledge, yes. That is the case for the ones I have been involved with over the last two or three years. They signpost to work that we have done, rather than fully describe it.

Q24 **Damien Moore:** How will you evaluate the impact that GO-Science is having on Government policy across Whitehall?

Dr Vallance: The formal measures of impact are not worked up as they might be, perhaps, but there are lots of ways in which we can look for evidence of impact. Take the "Future of the Sea" report, which has led not only to a big public impact, but to a direct strategy development from the Foreign Office. Look at the work that we are doing around the industrial strategy, which has led to very specific requests not only from within BEIS, but from No. 10, that have led to direct changes to the ways in which people are thinking about what goes into the missions that are being developed.

We have impacts in the sense of what happens to the report—what is taken up. As I have said, that is an area we want to be more rigorous about following up on. We know that we have impact on policies and that we get pull from the right places, in terms of their wanting us to be involved. A very obvious example recently was an output related to the Government Office for Science. It was from the Council for Science and Technology and was on regulation. That led directly to the Secretary of State accepting all of the recommendations and to a ministerial group, which I was asked to be part of, being set up to look at this, to see how we could implement some of the changes.

Dr Lewis: It is quite difficult to measure impact. That is not to say that it should not be done. GO-Science has tried different things in the past. There used to be a team that tried to follow up on all of the reports and to hold people to account for the actions they had agreed to. That takes a certain amount of resources.

In the last couple of years, we have switched to being more rigorous about why we do things in the first place, in order that the impact is built in. We ask people we work with, "What is the policy process or the business process that our report will influence? What decision are you going to make to which we will make a difference?" We do that as a way of trying to guarantee the impact up front and to avoid work that will not have an impact or that is just for interest.

Q25 **Damien Moore:** Are Government decisions always informed by the best scientific evidence available? How do you ensure that that is the best available?

Dr Vallance: Are Government decisions always made like that? I am not going to say that that is the case. However, we have a mechanism that is probably the most comprehensive in the world to do this. The fact that we have chief scientific advisers across Government is an important part



HOUSE OF COMMONS

of that. The more those individuals can be embedded in departmental process, so that they see the policy requirements, the better that works.

I think that GO-Science itself has a very significant direct influence on policies. We pick up on things and then actively go out and say, "Actually, we think that there is some science here that needs to come into it." Is it perfect? I am sure that it is not, but it is pretty comprehensive. If we can do the things that I laid out as my first priority, which are to leverage the Government science and engineering profession and to make sure that the policy profession really gets its science bit right, we will get much closer to where we need to be.

Q26 Damien Moore: Are there any significant examples of where you think that this has worked particularly well?

Dr Vallance: I think that the "Future of the Sea" report had a very significant and direct impact. There is also the work that the Office has done around the industrial strategy. I think that it was instrumental in trying to lay out some of the parameters for the industrial strategy and that it had some very direct consequences, such as the setting up of the Alan Turing Institute, which will be incredibly important for data, informatics and artificial intelligence in the UK. There are several very concrete examples of things one can point to as outputs from GO-Science and the related activities.

Q27 Chair: Is it absolutely routine that, whenever a proposal is being drawn up, perhaps to form a Green Paper, GO-Science is involved in that process? Is that what always happens, whichever Government Department is involved, to make sure that scientific advice is always taken?

Dr Lewis: With any Green Paper, there will be a policy evaluation process, which is about evidence, including science evidence and economic evidence. It is not automatic that GO-Science is involved in all of those processes. It is not necessary that GO-Science is involved in all of them. However, the policy evaluation process itself, as driven by the Treasury Green Book, is a rigorous way of dealing with evidence of all kinds.

Q28 Chair: Across Government Departments, there will always be a question of whether evidence is being properly applied in the formulation of a policy. Ought it not to be routine that you get asked, as a proposal is being developed for a Green Paper?

Dr Vallance: It would be very difficult for GO-Science to be involved in every single Green Paper. A lot of them are departmental. Therefore, there is a role for the CSAs to get directly involved in that process. Where we can add most value is where something crosses multiple Departments or multiple different approaches. That is where we tend to get drawn in.

Q29 Carol Monaghan: First, it is good to hear you mention diversity. Across the scientific sector, we know that we have a propensity for men with



HOUSE OF COMMONS

grey hair and nae hair, so it is good that that is being looked at.

Can I ask about the recent staff survey that was done by GO-Science? It seemed to suggest that there was a certain level of discontent with the leadership and management. The questions were framed in such a way that they were specifically about the leadership and management of BEIS, rather than that of GO-Science itself. Are the results indicative of a problem that GO-Science is not embedded within BEIS?

Dr Vallance: This is before my time, but I want to come back to the point that you have just raised. I think that it is very interesting and important.

Dr Lewis: The numbers you refer to are probably the low score of 45% on leadership and management change in our staff survey. It is always a bit of an issue for GO-Science staff to answer staff survey questions about what they think of the senior leadership of BEIS. Frankly, except for our policy projects, we do not have a lot of contact with it, and we do not really need to. Therefore, I think that there is confusion on that question.

Having said that, I think that the leadership and management change results reflect real issues. We cannot discount them as being BEIS confusion. Those real issues include the fact that we did a restructure a couple of years ago. While it was necessary, it is never pleasant for staff to be restructured.

We have been through a time of a lot of transitions. There was a six-month period when we had Mark Walport as the UKRI chief executive designate, working alongside Chris Whitty—two people, each spending half of their time being the chief scientist. Then we had a period of six months, preceding Patrick's appointment, when Chris Whitty was kind enough to be our interim chief scientist. In the course of a year, we have had three changes of senior leadership. Therefore, there are reasons why I would expect the figure to be quite low. My guess is that, in the staff survey, the BEIS issue is a fairly small contributor to that.

Q30 **Carol Monaghan:** You have probably answered part of my second question. Are you confident that you will see an increase in satisfaction levels over the next 12 months?

Dr Lewis: We have just received our staff survey to update this one, and the leadership and management change score has gone up by 10 percentage points.

Q31 **Chair:** Is that for the whole of BEIS again?

Dr Lewis: No. This is just for GO-Science. These numbers are just for GO-Science. The 45% figure is now 55. The engagement score is exactly the same.

Q32 **Carol Monaghan:** Can I take you back to something you have just said—that there is not really a need to have the interaction with BEIS? I



am slightly concerned about that, given that Patrick started off by saying that we are going to increase the innovation and we are going to start looking more at applications of science rather than the pure science. How can that take place if there is a disconnect between GO-Science and BEIS?

Dr Lewis: If you will forgive me, what I tried to say was that, except for our policy projects and our substantive work interaction, we do not have to have a particular administrative relationship. Our staff do not need to go to BEIS staff meetings and things like that. At a human resource level, we do not have to have much interaction with BEIS. When BEIS senior staff run their staff meetings, we do not have to turn up to those. On our policy work in things such as industrial strategy, energy work and innovation work, which I will call policy work, we have more interaction with BEIS than with any other Government Department.

Q33 **Carol Monaghan:** Is there a place for a representative from GO-Science to attend these staff meetings at BEIS?

Dr Lewis: I attend most of the weekly meetings of DGs and directors to keep in touch with what is going on in BEIS. We have a quarterly GO-Science formal meeting with BEIS HR and finance professionals. We get our pay and rations with BEIS, if you like, so we need to show them that we are responsible users of our resources and that we are running our own HR systems responsibly as well. We have that quarterly interaction with them.

Dr Vallance: Seeing as I have just been blamed for not turning up when I was first appointed and taking nearly 10 months to get here, I do think that the link to BEIS is important and very strong. I have had very close links with both the Secretary of State and the Minister in BEIS. That is important. We do have our closest relationships with BEIS.

The second point is that I found the question difficult to answer because all the questions are about BEIS and so it is slightly difficult to answer some of them. That is a slightly technical issue.

Q34 **Carol Monaghan:** You mean on the staff survey.

Dr Vallance: That is what I found on the staff survey, yes, when I did it. The key thing to say is that it is very important, I think, that GO-Science is not part of BEIS only, because what we do is across all the Departments. I talked about the application of science. Of course, a lot of the application of science is related to the industrial strategy; a lot of it is also related to social issues that need to be looked at; a lot of them are health; and a lot are to do with the Department for International Trade, the MOD and other places as well. It is important that this is not a BEIS body. This is a central Government body. We sit in BEIS and we need to link with BEIS closely for all the reasons that have been said, but we are not a BEIS unit.

Q35 **Martin Whitfield:** Just to pursue that, it is right that the funding stream



HOUSE OF COMMONS

comes through the BEIS supply estimates and you are not paid directly by the Treasury, and yet was it not the NAO that described you as the Cabinet Office unit embedded within BEIS? If we examine that budget, it is right that your budget has basically decreased over five years or so. It was 2% in 2016-17 and 2% in 2017-18.

Are you anticipating further budget cuts? Looking into the crystal ball of the future, what are you planning for? You describe huge amounts of work that cover lots of areas influencing policy at a greater level. How is the funding supporting that?

Dr Vallance: Currently, the funding is adequate for what we do. By that, I mean we have a very good set of people in GO-Science. We access expertise, as I described earlier, from which many will come and give us their advice without us paying people for it, which I think is the right model. Many of those people are publicly funded scientists anyway. We are absolutely okay that we have a budget that allows us to do the work we are currently doing. However, as the importance of science ramps up, there is a question as to whether that budget needs to be looked at again. I cannot tell you any more than that at the moment because I have not yet modeled what may happen.

I think across Government there is a broader question about science funding in Departments that we are also looking at, at the moment, to ask the question whether science funding inside Departments is what it needs to be to meet the needs of departmental science.

Q36 **Martin Whitfield:** You said that the funding at present was “adequate.” Can you point to any of the effects of the budget reductions that you have already suffered? Can you definitely say that you were disappointed that you had to take that route because of budget reductions?

Dr Vallance: In my time, I have not seen something where we have said we cannot do it because we are budget-limited. Rupert may be able to say more.

Dr Lewis: Over the period since 2010, where there have been reductions across the whole of Government, we have taken rather similar reductions, and that is entirely reasonable. In fact, this year we asked for extra staff to support our work on Brexit, and BEIS agreed to that. It is always a negotiation and in future will also be a negotiation.

There are two areas that have been affected by our budget cuts in the last few years. One is that we run only one foresight budget at a time now, and we used to run at least two in parallel. The other is that we have fewer administrative staff than we had maybe three years ago, but at the same time the administration systems have become much more automated. Finance and HR processes have become automated—HR almost entirely. That has not affected our ability to do our day-to-day work.

Q37 **Chair:** You also said you had a team that was focused on follow-up and



impact, and you mentioned that it costs quite a lot of money. Has it gone, and has it gone because of financial constraints?

Dr Lewis: I cannot answer that because the team went before my time. It no longer exists; that is certainly the case. My personal view, as I mentioned earlier, is that we are putting our energy up front in ensuring that we build an impact, which is probably the most useful thing we can do.

Q38 Martin Whitfield: You mentioned before this move to what I think you were calling foresight sprints—the idea of looking at things. In that magic world, if your budget was not contracting, would you still pursue that as a way of identifying foresights? Would you consider doing more? What would you do differently?

Dr Vallance: The foresight sprint was a decision not based on budget but on how we thought we ought to look at things, which is to get a rapid look at areas that in themselves we think will be at a stage where they could be published as a rapid look. Some of those will then require a much bigger, deeper look. The foresight projects, I think, conventionally take between 18 months and two years. You really have to be sure that you are on to something that needs that amount of work, increasingly in a world where lots of people are producing reports. I think we would do foresight, as I have just described, come what may. There is a question, of course, that if all four are areas that we decide we want to do, then we have a budget squeeze that we would need to deal with at that point if that is what comes out of that.

Another area that we are building up on, which I think is attractive in relation to that, is work on a scan of scans, where lots of people are doing scans, how we aggregate that and get a view. There is a potential for that work to grow and be more influential, and it could be a useful thing across Government. I do not know whether we need more resource for that at the moment.

Rupert has already mentioned that we got a bit more resource for Brexit, and it is possible that we might need more depending on what happens there.

There are areas that we will look at. I am certainly not coming to this role saying that the budget is the budget and I am not going to fight where it is necessary to fight to do what we think is right.

Q39 Martin Whitfield: In your position as the Cabinet unit within BEIS, are you not concerned that, with something like Brexit, there will be additional funding because of a no-deal scenario, because of the publicity that comes with it? If your four sprints turn up and one of them lies outwith BEIS, do you think that you have the facilities to pursue an increased budget to cover all four, or do you think there is a risk that you would only be able to do three, two, or even one foresight as a result of it? You are quite a small Department, are you not, of 80 people?



HOUSE OF COMMONS

Dr Vallance: It is a small Department; it is about 72 at the moment. It is a small Department, with, as I say, a big network of CSAs and an even bigger network of the Government science and engineering profession. That is why I am so keen to make sure we get those things working as well as possible. We have over 10,500 scientists across Government—probably far more than that, as we do not know the true number—who could be a massive resource for us in some of these areas. Those are things we can pull on.

I am not sure I can really answer the question any more—what would happen if? All I can say is that I tend not to be a shrinking violet in those situations.

Q40 **Martin Whitfield:** I will phrase it in a different way. Are you satisfied with the present structural set-up of where, as a unit of the Cabinet Office, you effectively sit in BEIS? You are funded through its financial supply. Are you satisfied with that to go into the future?

Dr Vallance: It works well.

Q41 **Martin Whitfield:** To pursue that, do you do any benchmarking against other Government offices or units? We have been given the example of the Government Equalities Office, which has a budget of just under £10 million and in excess of 100 staff, whereas your budget is just over £1 million and you say your staff is 72. Is any benchmarking done across Departments?

Dr Vallance: I have not done that, and Rupert can comment on whether it has been done. I am not sure how easy it is to benchmark against those other activities. Quite an interesting question underlying this is what the right model for this is. Do I think that the Government science and engineering profession needs much more visibility and more ability to do the things it needs to do? Yes, I absolutely do, so there is a lot of work to be done there. That is an area where we do need more resource, because we cannot run the whole Government science and engineering profession out of the very small resource we have.

That is an area to look at. I have already been given some more resource to look at that, and I am going to ask for some from the 10,500 people to try to get that working properly.

Q42 **Martin Whitfield:** Do you have a timescale for that?

Dr Vallance: That is 2019—to get that absolutely right. There are four things we are focusing on in 2019 on that. One is diversity and inclusion, as I have already mentioned; the second is to raise the profile of the GSE profession, both inside and outside Government; the third is talent, management and leadership, and we are looking at that as a key work stream; the fourth is reward and recognition across the profession.

There is a very comprehensive strategy laid out for the GSE profession, which I think is almost too complete, and we have focused on those four



areas to try to get those right. That will require resource and effort, and if we can get that right, then we start leveraging the rest of what we need in GO-Science. I think the idea that, let us say, we have 300 people in GO-Science doing it is probably counterproductive. It is quite nice to have quite a small, high-quality team really driving this from the centre.

Q43 Martin Whitfield: This is the very last question from me. You have confirmed that you have the additional funding to undertake that work next year.

Dr Vallance: I have some of the additional funding that I have been given from the Cabinet Office on the HR side, and I am looking to get from the other parts of the GSE profession how we can pull some of that, about which I am not going to give away too much at the moment. Fundamentally, what interests me, looking at this, is that we are in a world where science is going to be so dominant in so much of what we do. I go back to the Fulton report, which is 50 years old, which talks about a scientific civil service. That is really what we need to move on, both in increasing the number of scientists in the civil service generally and making sure that we can leverage the people who are day-to-day scientists to help much more with some of the decisions and advice that needs to be given.

Q44 Stephen Metcalfe: This is a good place to carry on, because I am going to look at the CSA network—this scientific civil service. I think it was one of your predecessor's great achievements to get a comprehensive network of chief scientific advisers across Government and you said that science is essential for every decision made. But with regard to that network, while the aspiration is very good, the reality is not perhaps as robust as we would all like it to be. In November 2017, we were told that the Ministry of Housing, Communities and Local Government needed a proper chief scientific adviser. I do not think that role has yet been filled.

Dr Vallance: No. You are right, and I can update you on that. First, the DCMS CSA was announced last night, so that role is filled. That is an outstanding appointment of Professor Tom Rodden, who was a professor of computer science from Nottingham. He has done a lot of interesting work on the interface between computing and society. He is deputy chair of the Engineering and Physical Sciences Research Council—EPSRC—so we have a great appointment there. We have obviously had a great appointment in the Foreign Office as well, with Carole Mundell.

Q45 Stephen Metcalfe: As you have mentioned DCMS, it was going to be a six-month trial originally; is this now permanent?

Dr Vallance: This is permanent.

Q46 Stephen Metcalfe: Why has it taken so long to get someone into post?

Dr Vallance: I do not know. I started this recruitment the moment I came, or the second week, I think, and we have someone in post; that is about the normal length of time to do it. At the Foreign Office we



HOUSE OF COMMONS

appointed in a good amount of time as well, so I think those appointments were fine.

The Ministry of Housing, Communities and Local Government has taken longer than it should have. It is a difficult post to fill—for a number of reasons. I am very happy now that we have the job description right, and I have written—

Q47 **Chair:** Is that a problem?

Dr Vallance: I found that we did not have a terribly systematic way of making these appointments. We have now set a series of things that we think should happen for all the appointments, including a need for me to meet the permanent secretary to discuss the role, we need to have a job description into which we have input and we have some standard things that go into the job description. There is some standardisation of process, including working with some of the civil service commissioners to make sure we get this right.

I am happy that the MHCLG role now is one that absolutely sounds as though it has the right levers to pull, is in the right position in the Department and has the right reporting lines and so on, which are all important things. It is out at advert now. It is a difficult one to fill because it is quite a broad role, and there is a tendency to think of it only in terms of the major catastrophe of Grenfell, but it is much broader than that. I think we need to make sure that the breadth of the role is properly articulated in order to get the right people in place.

Q48 **Stephen Metcalfe:** That is under way now.

Dr Vallance: It is under way.

Q49 **Stephen Metcalfe:** That is good news. The Department for Digital, Culture, Media and Sport has now appointed and that is permanent—fantastic.

Dr Vallance: When I say “permanent,” just to be clear, these are three-year appointments—renewable.

Q50 **Stephen Metcalfe:** All right, but it is not interim.

Dr Vallance: It is not interim.

Q51 **Stephen Metcalfe:** Some of the ways these roles are referred to on the gov.uk website is also quite confusing about who is interim and who is permanent. I think Osama Rahman was the interim CSA at the Department for Education. That is what we were told in May this year by, I think, you.

Dr Vallance: No; I think he is the full CSA there at the moment.

Q52 **Stephen Metcalfe:** I was going to come on to that. He is the full CSA—appointed in April—but in May you told us he was interim, or so I am told.



HOUSE OF COMMONS

Dr Vallance: No; that was my mistake then.

Q53 **Stephen Metcalfe:** Fine. He is now the permanent CSA at the Department for Education. Lisa Barrett is listed as the interim CSA for the Ministry of Justice.

Dr Vallance: She is.

Q54 **Stephen Metcalfe:** Is that going to become a longer-term post?

Dr Vallance: Yes. I hope that will become a full CSA role. That is not yet in train in terms of any process or advert or anything like that, but that is a discussion that I intend to have.

Q55 **Stephen Metcalfe:** Okay; fine. Rounding that up, there is also a vacancy at Northern Ireland.

Dr Vallance: That is not one of my accountabilities. That is for the Northern Ireland Government.

Q56 **Stephen Metcalfe:** So the Department would not appoint its own CSA.

Dr Vallance: No.

Q57 **Stephen Metcalfe:** Right; okay. Putting all those together, there are some issues around the way people are described, appointments and so on, and I understand the difficulties that you have highlighted. Do you think it needs more attention to keep that network up to date, accurate and positions filled?

Dr Vallance: It needs more attention and it has had more attention. It is one thing I have spent a lot of time doing. As I have said, we have clear rules about how we go about appointing, what we want to see in every job description and how we go about making appointments.

We are also having a very big push on diversity in those roles. The CSAs, as a group, get together every week or so for a meeting, but I pulled us together for two days for a retreat in September, which I am sure will become an annual thing.

We need to be much more cohesive about how, as a group, we can push science across Government. That requires a smaller group of CSAs to meet with a much more directed management and leadership agenda, as it were, and that process is starting in January. We have a smaller group of CSAs who will meet every six weeks. We will have a real implementation process as well. We are beginning to come together as a team rather than as a series of individuals.

Although I completely agree with what you said—and I think it was John Beddington who first put this in place, which was absolutely the right thing to do—now is the time to concentrate not on whether we have ticked every box to say we have one somewhere, but have we got it right? Is this a team? Are we operating in a way that we need to operate



HOUSE OF COMMONS

as a group, and how do we get proper performance appraisal and so on into the system?

- Q58 **Stephen Metcalfe:** That sounds sensible. When you meet with your network of CSAs, do you suggest how often they might meet Ministers and/or Secretaries of State? Should that be a formal process, or should their meetings only be as required when demands are placed upon them?

Dr Vallance: It is very difficult to make it an absolutely set interval. It is a topic I discussed with every one of them. I have one-on-ones with every CSA monthly. It is not always exactly monthly, but the schedule I have in my diary is to meet with them monthly. One topic I discuss when I meet them is whether they are getting the influence they need, the traction they require and the access they require.

- Q59 **Chair:** Do the answers vary?

Dr Vallance: As you would expect, it is variable. Some do and some don't.

- Q60 **Stephen Metcalfe:** They vary quite a lot. I have a list that we maintain of responses that we have received about the number of meetings held. One that concerns me the most is Defence, who do not appear to have had any meetings with Ministers or the Secretary of State.

Dr Vallance: That is because we are between CSAs. The situation at Defence was that we had a very good CSA, who returned to Australia for personal reasons. We have an interim CSA in place at the moment. We are at the shortlisting stage of appointing a new CSA in the MOD over the next week or so, and I would absolutely expect that the new CSA would get access.

- Q61 **Stephen Metcalfe:** The interim CSA is Simon—

Dr Vallance: It is Simon Cholerton.

- Q62 **Stephen Metcalfe:** In fairness, would you not have expected the interim CSA to have met Ministers or Secretaries of States?

Dr Vallance: Putting the question slightly differently—"Do I think it is a good idea for the CSA to meet the Secretary of State?"—the answer is yes.

- Q63 **Stephen Metcalfe:** Why would you imagine that he has not?

Dr Vallance: I do not know; I cannot answer that.

- Q64 **Stephen Metcalfe:** I would have thought that scientific advice in the Department would be quite important.

Dr Vallance: I have been very close to the MOD, as you might imagine, because of the CSA lead, and there is no doubt in my mind, both at the level of the permanent secretary and the Vice-Chief of the Defence Staff, that science has a very big traction. It is also the case that, before he



HOUSE OF COMMONS

left, Hugh Durrant-Whyte, who was the CSA, put together a very strong plan around science. I do not think there is a gap there at all, actually.

- Q65 **Stephen Metcalfe:** You said you wanted to improve the way that the network works and get the right people in place. As part of the assessment of the performance of CSAs, will you be asking them these questions about how often they have met, why and what reasons they may not have met, and so on, to make sure that, although we are not ticking boxes, this network, which I am sure we are all very proud of, is actually embedded in doing the role it is supposed to be doing?

Dr Vallance: Yes. I am going to formally get into the process of performance appraisals, as I mentioned earlier on, and feed back my comments directly to the permanent secretary in the Department as to what I think is working, what is not working and so on. If we can get that as a routine, it starts to provide some mechanism to do exactly what you are asking.

- Q66 **Chair:** The progress you have made on that sounds really impressive. You said when you came the first time that you were very committed to ensuring that every Department had a CSA. Does that remain your commitment?

Dr Vallance: Yes. I think every Department should have one. We just need to be a bit careful about exactly what that means. At the Department for Exiting the European Union we have somebody who is a career civil servant.

- Q67 **Chair:** He has a co-ordinating role.

Dr Vallance: He is absolutely the right person, and I think to have an external scientist in there would not be what we need at the moment.

Chair: Understood.

Dr Vallance: I would not like to say there has to be a rule where it always has to be an external person, although for many of the Departments that is the case.

- Q68 **Carol Monaghan:** As Chief Scientific Adviser, do you have an understanding, or a feeling, of how Departments are using their R&D budgets and how these budgets are changing over time?

Dr Vallance: Yes. We are just pulling together a piece of work that has been running over the last few months looking at exactly this question of what has happened to the budgets, how the budgets are being used, where we think there may be gaps and how the public sector research establishments may fit into the overall picture. We hope to be able to say more about that in due course.

- Q69 **Carol Monaghan:** Can you give us any indication of any trends you are seeing at this point?



HOUSE OF COMMONS

Dr Vallance: We know that the budgets of some Departments have gone right down—that is very clear—and I have shown slides about that publicly, showing that there has been a fall-off in science funding in certain Departments; that is an area of concern. As I said, overall the science funding has not gone down, so it is just in certain Departments.

I have had discussions with several permanent secretaries around this and one question is, if we are going to tackle this where we need to, how we do something to ensure that the science budget is not the obvious place to raid when times get tough. That is really the question that we are trying to address.

Q70 **Chair:** Do you think that has been the case in some places in the past?

Dr Vallance: I would be surprised if it was not. It is true in all sorts of places. Because most of what is going on is not immediate—it is something for the future—it seems like an obvious place to go to get money, and of course it is not. Therefore, we need to try to protect that in some way.

Q71 **Carol Monaghan:** One Department that was quite concerning was DEFRA. If you adjust for inflation, there has been a 77% drop, which is really quite concerning. Do you see your Department doing work in trying to expose these drops and trying to look at this?

Dr Vallance: Yes.

Q72 **Chair:** And being open about it—publishing that detail?

Dr Vallance: Yes.

Q73 **Carol Monaghan:** Does your work provide any co-ordination between Government Departments in terms of their spending on R&D particularly, or do you look at any way of co-ordinating the spend across Government Departments?

Dr Vallance: We are looking at that as well. One of the very first actions that the new smaller group of CSAs that I talked about will look at is a spending review and how we should think about science across Government.

Q74 **Carol Monaghan:** Do you see yourself having any scope to influence the budget that is used by Departments for R&D?

Dr Vallance: I do not think it is my role to be telling Departments where to spend their budgets, and I am sure they would not listen if I went to them and said, "Spend it on exactly this or that." The question whether we are at the right capability level and we have the right resources to meet the needs of Government science is something on which I should comment.

Rupert has just reminded me of two things that maybe speak to some extent to what you have just asked. If I take something like the Energy Innovation Board, the role of that group, which I chair, is to look across



HOUSE OF COMMONS

all the Departments to try to say, "Where are we spending the money, and does it match up with what we want?"

The other area that we are currently looking at, which crosses lots of Departments, is in national security, where we are pulling together a strategy, trying to look at where money should be spent. Again, that is at the level of central Government needs across Departments, rather than at the micro level of exactly where money is spent in the Departments.

Q75 Carol Monaghan: I do not think we would suggest that it is about pinpointing actual spending but, more, making statements possibly on what has happened and future spending.

How do you work with UKRI to make the link between research funded through them and research that the chief scientific advisers are in charge of?

Dr Vallance: I am not actually a budget holder for any research, so there is a big difference there. I meet with Mark Walport probably every couple of weeks and I am part of some of the UKRI processes. The two that I am particularly involved with most are the strategic priorities fund and the industrial strategy challenge fund, but I have also been, for example, to a UKRI board dinner to discuss some of the requirements that we see and how we think about Government and UKRI-controlled spend.

Reviewing the Departments about which I have just talked will link in and has an implication for how we think about the UKRI part of that. When that work is complete, we will have a clearer view on that.

The strategic priorities fund, which was set up after the Nurse review to look specifically at how more UKRI funds could be used to meet some Government needs, has been through one round, and a second round is in play now. We have all the CSAs engaged in that process. They have linked with the research council chairs and other people in the research councils to try to look at where priorities link. There may be an idea that has come up through the research council that is relevant to Government and there may be an idea that has come up through the CSAs that the research councils are interested in. That process is working well for wave 2 to try to get alignment on where there may be areas or calls for proposals and work that aligns with Government need, departmental need and cross-departmental need.

Q76 Carol Monaghan: We also know that the charity sector are big researchers and big research funders. Are you linking with charities at all with this research?

Dr Vallance: Yes, but the charity sector is heavily skewed towards biomedicine. Going back to an earlier discussion, one reason why the European funding situation is so crucial is that biomedicine is relatively protected in a funny way because of the charities. If I take another area, such as economics, it is not protected; it has rather fewer other places to



HOUSE OF COMMONS

go to get its research; or some other areas of social science and so on. I speak to Jeremy Farrar at the Wellcome Trust a lot; I am meeting the new chief executive of CRUK next week. So, yes, we do link in on the charity side of it.

Again, as to the Energy Innovation Board, when we look at the funding there, we are trying to say where Government money is going, where UKRI money is going and where private sector money is going—there is less charity money in that space—so that we can get some overview of the total spend and, importantly, what might need to be done in terms of Government spend to try to leverage more private sector spend.

Q77 Carol Monaghan: Finally, is there a role—this might be more suited to you, Rupert—for GO-Science in encouraging the commercialisation of research that has been commissioned by Government Departments?

Dr Lewis: That is a really interesting question.

Q78 Carol Monaghan: Or do you see that entirely being the role of Innovate UK, for example?

Dr Lewis: No. Our access on that question would be in the context of industrial strategy: “How does the UK economy grow?” full stop. Underneath that is both private and public sector funding.

NHS England has its own innovation body, which is about drawing research into commercial application. One of the main missions of the Office for Life Sciences in BEIS is to ensure that research in the UK is commercialised, and that we bring in the foreign investors to invest in that. There are various bodies, such as the Office for Strategic Co-ordination of Health Research, whose mission is to work with the main health research funders for the benefit of health, which implies commercialisation and research. So, I think our access on that would be: what can we do to help innovation policy generally, including the use of Government research in innovation wherever that is possible? I guess Patrick has recently been visiting the Met Office and Hydrographic Office, who have their own ways of commercialising their own research.

Dr Vallance: They do, as do most of those organisations. I think it is important to recognise that many areas of innovation now are taken into a very diffuse network of providers of innovation. Small companies are increasingly important, and big companies are increasingly using mechanisms such as venture funding to try to get innovation started.

Q79 Carol Monaghan: I suppose small and big companies are more aware of how to tap in, whereas Government research maybe not so much.

Dr Vallance: The point I was going to make is that Government need to do the same, and for two reasons. One is that Government are going to need to access small companies more often than we currently do to access science and innovation; secondly, if we also do something with our own IP and the things that come out of Government laboratories, it may



HOUSE OF COMMONS

be that that is something that you would want to monetise on its own, but it is also something that allows you to have a negotiation with some of the other companies because people will want access to it.

So, I do think being aware of the intellectual property generated and the potential value of that is an important part of it, with one major caveat—and I have seen this from big business and from academia. I do not think you ever want the entire science organisation focused on how they can make money from intellectual property, because it drives very perverse behaviours and does not lead to the innovation you want. You need to manage that process very carefully.

Q80 Graham Stringer: Can I briefly take you back to the Brexit questions that Norman was asking? You may be loth to do that—I don't know. With regard to Galileo, the Prime Minister has said that she or the Government will fund an alternative to Galileo. Have you been involved with those discussions?

Dr Vallance: Only peripherally at this stage.

Q81 Graham Stringer: Could you expand on "peripherally"?

Dr Vallance: I am aware of it. I have had a meeting with the UK Space Agency; I have discussed with various people technical possibilities in terms of replacement, but I have not gone into any detail on it and I have not been asked to go into detail on this at the moment.

Q82 Graham Stringer: You have not seen or been involved in any cost-benefit analysis of—

Dr Vallance: No.

Q83 Chair: Is that a concern? It seems strange with such a significant decision, where we have been very heavily involved in the programme to date. One might expect the Government's Chief Scientific Adviser to be centrally involved in that.

Dr Vallance: I have not been to date and I think it has been handled elsewhere. Of course, many of the issues around Galileo are security MOD issues, not actually the science of the programme itself.

Q84 Graham Stringer: As far as I am aware, the Government have not responded to the Dieter Helm report on the mess that our energy funding is in. Have you been involved in the response to the Helm report?

Dr Vallance: I have read it and am due to meet him at some point, but I have not been involved in a response to that. GO-Science may have been before I started; I do not know.

Dr Lewis: No, we haven't.

Q85 Graham Stringer: To use the Chair's question, is that not a concern? It was a major report saying that the way our energy industry was funded, subsidised and organised was a mess. Would you not have been expected



to be consulted about that?

Dr Vallance: That is a BEIS decision on the overall energy policy area. Clearly, what the Energy Innovation Board is looking at—as I say, I am absolutely aware of the report—is looking at how we fund the innovation side of that, which I think is an important area and we are very focused on where the money goes.

By the way, the other thing to say about the Energy Innovation Board is that the key area at which we are trying to look, which is important, is how much money needs to go, if you like, on the R part of R&D, and how much on the D part ready for implementation, because there is a big question about the relative split between future options and what requires development spend in order to be applicable and implemented now.

Q86 Graham Stringer: How are you and the Government Office for Science involved in preparing the areas of research interest documents for each of the Government Departments?

Dr Vallance: That was stimulated from the Government Office for Science. It has been a big effort to get those documents out. One of the first things I did on coming into post was to do an analysis of those. We have done a cross-ARI analysis, which highlighted two key areas, as you may expect. Data science and behavioural science are two key areas that come out in all of them. We are pushing on what we need to do to supplement that across Government.

We have also done work on trying to get a bit more consistency in the ARIs now that they are out. It is great that they are out. I think we will get a little bit more consistency about the areas covered, and we are picking up next year on what needs to be done to make these refreshed on a regular basis. The ARIs are an important step.

It is incredibly encouraging to hear the chairs or CEs of the research now talking about the use of ARIs when they think about some of the work that they are looking at as well, particularly in the strategic priorities fund.

The ARIs have been a success so far, but I think there is work to be done to get them into shape, to be a living document and one that can be used repeatedly. There are some examples, I think, of really good practice. I would highlight the Department for Work and Pensions, who have been on a roadshow with their ARIs around universities and shown people what is in there, and have got a lot of connectivity as a result of that. We are learning ways to use these documents as well.

Q87 Graham Stringer: Should they have costings—finance—attached to them?

Dr Vallance: That is the plan that comes off the ARIs, actually. The ARIs are literally, “These are the areas that we think we need research in.” I



HOUSE OF COMMONS

suspect that is useful as a document on its own from which we can plan to put finance in. If we tried to do the whole ARI with costings, it would slow everything down and would not get those needs out. Of course, the question is where the funding comes from, because some of it is going to come from UKRI-type funding and some from other places.

Q88 Graham Stringer: Are they not in danger of being pie in the sky if they do not have at least some sort of back-of-a-fag-packet funding attached to them?

Dr Vallance: Yes, but I am not sure the Department of Health and Social Care wants that.

Q89 Chair: Is that what you are advocating?

Graham Stringer: Maybe it is better than nothing.

Dr Vallance: I have read them all. I do not think they are pie in the sky. I see the point, and I suppose it is a good warning that they could. I do not think they are at the moment.

The other side to your point, which I agree with, is that turning these into action now is going to be an important part of it, and if it turns out that turning them into action is difficult because they do not have the funding in the first place, we will need to look at it.

Q90 Chair: I suppose the question is: do they just take the atmosphere? Does anything happen with them?

Dr Vallance: It is happening. That is what is so encouraging about them; things are happening as a result of it, and they are happening a bit differently in different Departments. So, I do think that is an opportunity to say, "Where does that work really well and why do things work well in certain Departments?" Things are happening as a result of it. I do not think the lack of financial parameters around that has stopped that. I take the point, and it is worth thinking about.

Dr Lewis: It would be quite hard to deal with costing it. These things create a signal that researchers for the first time can see. Researchers have an incentive to think about the impact of their work. The next stage would be a negotiation, so the question for the researcher would be, "What do I need to do in order to answer your question?" That could be a £50,000 piece of work or a £500,000 piece of work. It is hard to know before you start the negotiation with the policy maker what exactly they need, so I am not sure that costing would be possible from a policy maker's perspective. From the researcher's perspective, it starts a conversation that then leads to costing.

Q91 Graham Stringer: The Department for International Development has not done its report. Is there any particular reason for that? Is it a concern?

Chair: And it is one of the biggest Government research funds.



Graham Stringer: A few years ago this Committee did an exciting—interesting, at least—report on science in the developing world. It is a bit surprising that DFID has not produced a report.

Dr Vallance: I thought I did have a document, and I do—that has been confirmed—but it has just not called it an ARI, so we need to get that done. It has got the research document.

Graham Stringer: It is under another title.

Dr Vallance: Yes, which we need to sort out.

Q92 **Chair:** Thank you very much indeed. Now we turn to research integrity. We were very pleased, Patrick, that you indicated to us that you wanted to get all Government Departments to sign up to a revamped concordat on research integrity. That revamping process is under way at the moment.

Dr Vallance: Yes.

Q93 **Chair:** How closely are you involved or engaged with Universities UK on that work, and are you confident that you are going to get all Government Departments signed up as you wished?

Dr Vallance: We now have assurance from all Departments—I think it is all of them, yes—that the CSAs sign up to the principles of the research concordat. That is agreed.

Q94 **Chair:** Is signing up to the principles of the research concordat any different from signing up to the concordat?

Dr Vallance: There is a difference, and I will explain what it is. Universities UK does not want us to sign up to the actual concordat because the concordat is designed for funders of research in universities. Some of the language in it is not quite right for Government research and we need to define that we are talking about scientific research in Government in order to make it applicable to the concordat. What we have is the agreement that everyone signed up to the principles. We are working with UKRI and we have a member from GO-Science linked to the drafting group of the next version. We are going to try to get wording in there that allows it to be suitable for Government Departments to sign it or do something equivalent, and we need to deal on the other side with issues around the security side of things where we obviously need to think about how we get proper exemptions.

We have made good progress, it is now across all Departments and we are in the process of getting the next version in a form that I hope we will be able to sign.

Q95 **Chair:** Great. You will be aware also of our other recommendation about the need for a national committee that oversees research integrity and that proselytises for it and so on. I think you indicated a positive reaction to that. Can you give us any update on what is happening with that and



whether you are confident it will happen?

Dr Vallance: I do not know whether there is actual progress on putting such a committee in place. I have had discussions with several people, including the Wellcome Trust, around the broader questions that have come up in the last few months that relate to this, which are also about behaviour in science. I think the behaviour and the research integrity things are linked, and we are doing a piece of work with the Wellcome Trust on that at the moment.

Q96 **Chair:** Does that answer indicate that there may be a lack of commitment—

Dr Vallance: No.

Chair: —to establishing a Committee, or are you just saying you do not know?

Dr Vallance: I do not know. Going back, DFID published its research review in 2016.

Q97 **Stephen Metcalfe:** We recently conducted an inquiry into quantum technologies. We heard during that inquiry that there was huge benefit from demonstrator projects in helping to raise awareness and demonstrate capability and so on. What would your view of demonstrator projects be, how do you envisage them working, and are the Government actively supporting those in this area?

Dr Vallance: First, in terms of quantum, I have been very involved in this, as has the Office, in terms of supporting the notion that we need to get right behind the quantum space. We were very pleased that the views that we expressed and the evidence we put in was part of the budgetary announcement recently, so we are absolutely behind that.

I also said right at the beginning that one thing that I wanted to focus on was the application of research, and it is an area that I think the UK needs to build up. I think demonstrators are exactly what is needed, not just in this space but in other spaces: how do we get from the great idea to something that is demonstrated to be of value, which I will call development? It is an area that we have not done as well as we could do, and that is true across the board, including quantum.

By the way, I think there is a slight danger—and I can say this as an erstwhile academic—that you think, “I have had the idea, I have done the initial thing, and all that has to happen now is for this to turn into practice.” I know from my last 12 years that 95% of the sweat and grind is in that bit, and that is why we need those demonstrator projects to do that.

The third bit on quantum is that I have alluded to the fact that we are currently looking at a national security science and technology strategy, which was asked to be produced in a report from a year or two ago. Quantum is obviously a major feature of that. Again, one area you might



HOUSE OF COMMONS

expect that I would be quite focused on is how we do that development and demonstrator part of it, so there will be some recommendations in that and how that should be done.

Q98 Stephen Metcalfe: In practical terms, how do you see this operating and how do you see the Government responding? You mentioned the budget. Is it money that was allocated in the budget that will go to fund establishing demonstrator projects? Is that what you are trying to suggest?

Dr Vallance: From the national security space, most of the money in the budget is just progressing the work we already have. I do not know how much of that goes for demonstrators. In the national security space, we are definitely talking about how we get work that becomes demonstrator and beyond, and I know it is an area that UKRI is looking at as well. I do not have an answer for you as to exactly how this is going to happen, but I absolutely think it is the right thing to push for.

Q99 Stephen Metcalfe: Do you think there is an application in every Department for exploring demonstrator projects using quantum?

Dr Vallance: No. For sure, there is not an appetite in every Department for that. There are some very obvious places where you would want to push this—the security space is one and industrial strategy is a second. This is potentially a big area for the UK. We have lots of great science here. Quantum computing is potentially a very important advance, given where we are in the UK, that we should push very hard on. We should not push on whether we are doing parts of quantum but whether we are aiming to get to the practical end point.

Q100 Stephen Metcalfe: I have one final question, or more of a comment. Quantum has huge potential in lots of different areas; it is about sensing abilities and things. It is linking the technology to practical uses that can show people why this is going to be an important technology in the future. That may be sensing in terms of Communities and Local Government, or sensing in terms of DEFRA. It is really just trying, I suppose, to get on record that Departments should think about how this technology can affect them, which it may not have occurred to them to do before. Is that the role of the chief scientific adviser?

Dr Vallance: It is, and we are pushing very hard on it; but we need to be realistic that there are some Departments where this is here and now and really important around the sensing side, which are mainly in the industrial space in terms of BEIS accountability, and in the security space.

The National Physical Laboratory is all over this, and it is an example of where the public sector research establishments can be really important in this phase of how it gets from early research into development. That is what NPL is doing now. I have spent quite a lot of time visiting places involved in quantum, including companies involved in quantum, to try to push this, but I do not think, for example, there is much point going to



HOUSE OF COMMONS

the Ministry of Justice and telling it that it should start thinking about its quantum demonstrator at the moment.

Q101 Damien Moore: The Energy Innovation Board was set up in place of the Low Carbon Innovation Co-ordination Group. What is the board going to do that the group did not do, and what are its priorities?

Dr Vallance: I cannot tell you what the last body did and why it changed. I can tell you what the Energy Innovation Board is doing and how we are trying to enhance that.

The Energy Innovation Board was set up in relation to the clean growth strategy to look at the £2.5 billion spend and to try to address the question, "Is the spend going in the right place in relation to the strategy?" We have agreed at the board that we have a view of the public sector spend; we need to get greater detail of that; and we also need to know how much is being spent on R versus D—in other words, how much is long-term versus where there is a need for spend on development.

We have started the process of getting a better handle on private sector spend, and from that we will look at the question of where public money could be used to try to stimulate further private sector spend in relation to the clean growth strategy.

The final bit is: where is there disruptive innovation that could be changing all the things we are talking about, and how much goes on there?

So, we are looking at the spend, we are looking at the opportunities and I am bringing external people on to the board. We have just brought one external member on, and an advert has either gone out or is about to go out for two more external members of the board, particularly from the private sector. We have people from research councils, academia and other funders on the board, but I think we need more private sector involvement as well. That is what we are looking for at the moment.

Q102 Damien Moore: Does the role include support for the deployment of new technologies—for example, through identifying routes to marketing or recommending subsidies for new regulations?

Dr Vallance: We have not tackled the last of those, to my knowledge, but the answer to the first, "Do we look at where things are more developed and need to be pushed to get implemented?" is yes, that is very much what we are looking at currently.

Q103 Damien Moore: Do you think we will look at the last of those?

Dr Vallance: It is likely to come up as we think about what those nearer-term things are. I would also argue that the ministerial regulation group might be a place that looks at that, rather than the EIB.

Q104 Damien Moore: How does the board gauge the contribution that innovation can make in ensuring that the Government meet their carbon



reduction targets?

Dr Vallance: At the last two board meetings we have tried to get a handle on where the money is being spent, how that links to the clean growth strategy and how it links to the emissions that exist and the emissions targets. That is exactly what we are focused on at the moment—to try and join those bits up back to the emissions part as well and then ask the question what, if anything, needs to be changed in order to drive the investment to the emissions reduction—the outcome.

Q105 **Damien Moore:** And we can quantify the innovation part of that too?

Dr Vallance: That is what we are trying to get our hands on. It is not an easy thing to do, and obviously there is a temporal dissociation between the investment and the emissions decrease. We got much closer to it at the last board and it is exactly what I want to spend this time doing. It is exactly why I want a few other people on the board to help with that.

Q106 **Chair:** Have you concluded so far that, when you say “What more needs to be done?” something significant more does need to be done to deliver?

Dr Vallance: I am absolutely sure that in terms of the threat facing the planet from climate, there is a lot that everybody needs to do, and we know from the Intergovernmental Panel on Climate Change report that this is not an easy thing to try and go for. BEIS is taking advice from its climate panel on how to do that, so I have no doubt there is more that we need to do in several areas.

Q107 **Graham Stringer:** This Committee in the past has looked at how Government communicate science. One obvious conclusion we drew was that the public trust scientists. They trust men and women in white coats a lot more than they trust politicians, by and large. Yet, in practice, the Science Media Centre says that scientists are often, not stopped by policy, but not encouraged by the communications departments. The communications departments seem to be wary of putting scientists up—that they might say something that will not be helpful to the Department. What is your attitude to scientists communicating directly to the media?

Dr Vallance: A scientist should communicate directly to the media, and they should do it clearly, succinctly and in a way that lays out clearly what is known, what is not known and where evidence gaps are, as well as what the opportunities are. It is a crucial part of the role of Government scientists to be part of that process.

Q108 **Graham Stringer:** What do you do to encourage that?

Dr Vallance: We all interact with the Science Media Centre a lot, and in fact there was a debate there about a month ago, which unfortunately I could not get to, but I know Ian Boyd from DEFRA spoke at it and I think several of the CSAs were there. So I think that notion of getting out and speaking publicly about this is absolutely embedded in the CSA network and it is something that we will continue to push on. It is an important part. I have already said that one of my pushes for 2019 is citizens and



science, and this will be part of that.

- Q109 **Graham Stringer:** So you think the scenario I set out at the beginning is simply wrong—you think that there are not cultural barriers, if not policy barriers, within Departments that stop scientists talking to the media?

Dr Vallance: There may well be cultural barriers, or maybe it is more cultural reflexes, that make people not put the scientists forward and want to put somebody else forward. That may be the case in some Departments. Fiona Fox has asked me exactly this question about my view on science communication, and my view on science communication is that chief scientific advisers should be prepared to stand up and speak about the evidence.

Earlier this year, we published with the Royal Society a paper, of which I was one of the authors, which talked about evidence synthesis and the principles of evidence synthesis. Four principles were laid out, one of which was around accessibility and the need to make sure that the evidence synthesis is properly articulated and made available to people. That is about communication.

- Q110 **Chair:** Do you send clear messages to permanent secretaries that their media centres should lay off putting pressure on scientists? I know, as an ex-Minister, that you are often under pressure to limit what you say to the line. I am quite sure that the concerns raised by the media centre are right—that there is pressure from those media centres to control what the scientists are saying. Are you saying to the permanent secretaries that they should be encouraging them to speak up about their science?

Dr Vallance: I have not written to permanent secretaries to say that. I have not yet had specific examples drawn to my attention where this has happened, but I have expressed my views absolutely clearly on what I think should happen.

- Q111 **Graham Stringer:** There is no ambiguity in your views. Do you think you should, or will you, write to the permanent secretaries, at least pointing out the paper from the Royal Society and encouraging them to get scientists in front of cameras and in front of microphones?

Dr Vallance: Can I answer that by saying that I am not sure a letter from me sending them a paper from *Nature* is going to do anything very much?

Graham Stringer: It might do them a lot of good.

Dr Vallance: I would rather get the strategy around science and citizens in place and do this as part of that. I think a reflex letter probably is not going to help.

Dr Lewis: I can add a little to that. One thing we are doing in GO-Science is looking at the mechanisms between how policy makers and scientists talk to each other, and trying to ramp that up to find ways of doing it. You are probably familiar with CSaP, the Cambridge group. What



HOUSE OF COMMONS

more can we do in that space? Efforts where scientists and policy makers can talk to each other more, and more effectively, demystifies each other's worlds, and that in itself should improve the situation. I am sure there are some cultural issues. I am not sure they are more than cultural, but there definitely are some cultural issues.

Dr Vallance: I will tell you what I will do. I am speaking at a conference on the Haldane principle tomorrow night, summing it up, and I will say it, and there is a permanent secretary there who is one who agrees with me anyway.

Q112 **Graham Stringer:** Excellent. You obviously have an enormous amount of reading to do in the job; it has a huge breadth. Do you read our reports?

Dr Vallance: Do I—?

Graham Stringer: Do you read the reports of the Science and Technology Committee?

Dr Vallance: Yes. I read with great interest your quantum report, and I have asked the team that is putting together the strategy document to which I referred to make sure that they read it too, but if you are going to quiz me on every single one then I am in trouble. *[Laughter]*

Q113 **Chair:** We will do that next time. Finally, from me, going back to the Energy Innovation Board, whose role you described, do you think there is a need, potentially, for equivalent bodies to the Energy Innovation Board in other areas within the industrial strategy or for the industrial strategy itself?

Dr Vallance: This is a slightly unsatisfactory answer, but maybe. There is one that has been set up already. I know the Department for Transport has set up the Transport Research and Innovation Board—TRIB—which does similar sorts of things. It is early days, but it seems to have got off to a good start. So I think it may be a mechanism. As you know, many of these came off the back of OSCHR—the Office for Strategic Coordination of Health Research—which I sat on for eight years when I was not in Government.

There is a fundamental difference, which is that OSCHR has to look at multiple funding sources, which are very large—such as the charities, the NHS, the MRC and the pharmaceutical industry, and the life sciences sector. It is not entirely analogous in other areas, so I think we should not take the OSCHR model and say that that works everywhere. There is a rather specific set of circumstances, but yes, EIB is an attempt to do something a bit like that, and TRIB has started up as well.

Chair: Good. Are there any other questions from anyone? No. Thank you both very much indeed. We appreciate your presence; thank you.