



SCIENCE AND TECHNOLOGY SELECT COMMITTEE

The Role and Function of Chief Scientific Advisers

Oral and written evidence

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Academy of Social Sciences–Written evidence

WHO WE ARE

The Academy of Social Sciences exists to be the voice of the social sciences in the UK for the public benefit. It comprises 750 individual Academicians, drawn from across the social sciences in the academic, policy and practice communities, together with 42 member learned societies, giving a total reach of 87,000 social scientists. Member learned societies include the British Psychological Association, the British Sociological Association, the British Academy of Management, the Royal Geographical Society, the Royal Statistical Society, the Royal Town Planning Institute and both the Government Economic Service and the Government Social Research service.

In January this year, the Academy sponsored the launch of the Campaign for Social Science, to raise the public profile of social science. The Campaign Board includes Professor Paul Wiles (a former Chief Social Scientist), and Barbara Doig and Diana Wilkinson (both former Chief Researchers at the Scottish Government) among its members.

INTRODUCTION

Social science is critical to the well being of the United Kingdom. It enables us to understand social issues, social structures and social change and, importantly, how people understand and respond to the world around them behaviourally. These insights are crucial to ensuring that policy makers understand the nature of social problems, both current and emerging, and can design policies which are well-targeted, appropriate and work as intended.

Complex cross cutting policy issues and themes such as children, ageing society, behaviour change, the recent riots and the “Big Society” require inputs from social science (and indeed multi disciplinary generally) at policy development and review stages. There are many examples of social science enquiry techniques such as surveys, qualitative research, policy pilots and evidence reviews, proving their value in understanding policy problems and solutions. If social scientific advice is not available there is a risk that opportunities will be missed to draw fully on the insights which social science can offer.

In the current financial climate it is particularly important that scarce resources are spent wisely; without the understanding that social science can bring, there is a particular risk that government funding will not be allocated appropriately and to best effect.

ACADEMY POSITION

We argue that the Government Chief Scientific Adviser and departmental Chief Scientific Advisers are not adequately equipped to advise on the social scientific aspects of the scientific advice given to ministers. Hence there are risks that policy is not informed by the best evidence. Despite their best endeavours, it is unrealistic to expect DCSAs to have a grasp of the evidence base for policy across both physical science and social science.

Also there are weaknesses within government in the processes for making effective use of social science in decision making.

We recognise and value the efforts of current post holders, particularly the Government Chief Scientific Adviser, to secure the understanding of the issues surrounding the contributions of both physical science and social sciences to policy, but we consider it is a challenging task.

The situation is compounded by an absence of (non economic) social science advice at senior levels within government, which means that relevant social science contributions are not identified and given sufficient consideration. Government social scientists are not formally represented on the CSA Group. There has been a downgrading of the internal social scientific capacity in central departments over the last few years and there has been a similar downward trend in senior level representation of social scientists within Departments and Devolved Administrations. The result is that social science has a less powerful voice in advising ministers and in departmental decision making generally.

We recognise that Departments will vary in how their CSAs are supported and the details of individual department's capacity will reflect the nature of their business, but each department needs an effective mix of physical science and social scientific expertise based on collaborative working between different professional groups. Social science must be an integral part of the scientific contribution and must be represented at the right level.

We note that the Chair of the House of Commons Science and Technology Committee, Mr Andrew Miller MP, commented publicly on 8th June 2011 to welcome the appointment of James Richardson, saying: "It is essential that all departments across Whitehall receive the best natural and social scientific advice..." (highlighting added by us). Also that

Our focus in this submission is therefore at the level of the UK Government Chief Scientific Adviser (GCSA) and the network of departmental Chief Scientific Advisers (DCSAs) upon whose contribution the GCSA is able to draw directly. We focus on this because this is where the influence in respect of policies and practices most lies. It is at this level where access to ministers occurs directly and where formal and informal discussions about policy arise.

We consider that the key to securing independent and effective social scientific advice to ministers and policy makers is that a Chief Social Scientific Adviser (CSSA) should be appointed to be at the heart of policy making.

RESPONSE TO SPECIFIC QUESTIONS

I. The ability of DCSAs to provide independent advice to ministers and policy makers within their departments

We believe that the independent advice provided by DCSAs is potentially flawed because they are rooted in the physical sciences currently. This means that they may well be unaware of or not fully cognisant of particular social science evidence. Moreover, they do not have established or regular links with external communities of social scientists. Though there are some examples of good practice, DCSAs and professional social scientists in government generally work in separate units with

parallel reporting lines. They do not systematically work together to ensure that comprehensive and rounded scientific advice is given. While we welcome the existence of the central Heads of Analysis Group and its attempts to join up all analytical scientific disciplines across government, it is no substitute for coordinated analytical advice at the Departmental level. A further consequence of this lack of co-ordination is that much of the regulatory framework on guidelines and ethics is devised with respect to the physical sciences and does not take into account the context and characteristics of social science research.

2. The extent of their influence over research spend

There are 2 main streams of social science research funding – firstly the research budgets of departments to commission specific research and advice; and secondly the funding awarded to the ESRC via BIS as part of Research Council spend.

We are concerned that there is a paucity of accessible information on the way in which departments' research spends are managed and prioritised, and the consultations on this which take place with DCSAs. Few departments publish annual research plans and budgets, and indeed very few have a budget for social science as opposed to ad hoc spending. Within departments, research budgets are competing, particularly in the short term, with immediate non research pressures on resources. Social science research is highly vulnerable to cuts made on the basis of a narrow view of requirements, for example the cancellation of the UK Citizenship Survey in May 2011. In addition the freezing of departments' research budgets and commissioning has severely affected the viability and strength of the private social scientific research sector and will affect academic capacity in the longer term.

Additionally, we would argue that decisions about departmental spending do not always take account of the big picture. The absence of a senior level social scientist means that there is a lack of strategic oversight of the social science information needs of government as a whole. The lack of a joined up approach to funding particularly affects the cross cutting research required to support emerging policy priorities. The difficult economic climate indeed reinforces the need for strategic research planning by DCSAs in partnership with senior in-house social scientists to meet overarching information needs. In an ideal world there would be a separate central fund, but if this is not practical then the DCSAs must be closely involved in the machinery to prioritise departmental research spend. .

In relation to the ESRC funding stream we note that this currently represents only about 8% of all Research Council Funding, yet the research it funds directly and indirectly relates to the policies of every government department as they affect individuals and society. We are concerned that this disparity reflects the difficulties of DCSAs incorporating social science advice.

3. Their role in providing independent challenge and ensuring that departmental policies are evidence based

Effective independent challenge must be properly informed by both physical science and social science expertise. The absence of a senior level social scientist carries a

risk that social science evidence is used inappropriately or not at all and that insufficient weight is given to the insights it can offer. “Wicked” problems and new issues require expert social science contributions from their earliest articulation. In government there is no equivalent for the social sciences of the independent role of DCSAs, since all social science experts in government are mainstream civil servants. While we respect the professionalism and analytical objectivity of professional groups within the civil service the latter cannot be independent in the same way as the DCSA network.

4. The range of expertise provided by the network of DCSAs

We acknowledge the challenges faced by DCSAs in working across the range of science disciplines and note that there is just as much diversity across social science disciplines, for example anthropology, geography, sociology, psychology, economics and criminology. The DCSA network lacks expertise in these disciplines. At present, of the 22 Departments with DCSAs in post, almost all have a background in the physical sciences and STEM disciplines. The DCSA network therefore does **not** adequately represent the full range of disciplines and this carries a risk of limiting the range of advice it provides. Senior social science representation would, at minimum, ensure that the DCSA group were alerted to the need to seek social science advice when necessary. Further, DCSAs within their departments work with Departmental Scientific Advisory Committees / Councils; here again social science is seriously underrepresented.

5. The extent to which DCSAs have authoritative standing within relevant academic, industrial or business communities including whether they have effective networks within those communities

Inevitably, DCSAs have weak or absent links with social science communities; this restricts their ability to draw on the insights that the wider social science community can offer.

We welcome the thrust of the Council of Science and Technology’s report on Relationships between Government and Academia and the 10 Point Action Plan response from BIS. Though the report did not explicitly cover the social sciences, it chimes with the findings of an ESRC study of social science securing impact on policy. Social science representation in

the network of DCSAs and Committees would greatly assist stakeholders in improving relationships.

The Academy of Social Sciences (and its member learned societies) is trying to strengthen the ability to contribute to the evidence base for government, and the professionalism of its members to deliver this, but the absence of knowledge of social science within the DCSA network hampers its ability to progress. For the Academy to continue to progress across the sectors which employ social scientists, we need to have good networks with DCSAs and their support within government, so that we can continue to serve our members and promote social science.

6. The contribution of the GCSA and DCSAs in promoting public trust in the independence and authority of science advice to government

There is a need for public trust in the independence and authority of the social science component of science advice to government, and ensuring the public credibility of social science carries its own challenges. Social science is also the key to understanding the nature and scale of that trust across all the sciences. Social science methods underpin strategies for public engagement and the promotion of trust, for example through consultation, evaluating the success of initiatives to secure trust, and measuring public attitudes to scientific issues (especially in the medical and environmental arenas). We argue that the GCSA and the DCSAs are not fully equipped to address these challenges. In particular these gaps mean that our role in promoting public trust in the independence and authority of social science advice to government is hindered.

15th September 2011

Better Government Initiative—Written evidence

I am responding, on behalf of the Better Government Initiative, (BGI) to your invitation to contribute to the inquiry by the House of Lords Science and Technology Committee on the role and function of departmental Chief Scientific Advisers.

The BGI has as its aim to improve the processes by which Government initiates and Parliament approves major policy changes and legislation. A key recommendation, which we have published in “Good Government” is that “ Policy should be based on evidence and analysis and draw on relevant experience from the front line”.

Because scientific research moves so rapidly in providing new material, and questioning existing practices, it is particularly important that ministers and those advising them have the best possible advice on relevant scientific matters when reaching and taking decisions. Science in this context should include advice on engineering, technology and medical matters. Good scientific advice should also be incorporated in information given to Parliament and the public in support of policies. Departmental Chief Scientific Advisers (DCSAs) should be aware of the latest international and academic research, and challenges to conventional views. There never can be certainty on scientific issues, and ministers will need to take into account concerns other than science when taking decisions, but they must have authoritative advice on any debates on the issues in the relevant science, and conclusions to be drawn from them. On some matters, the difficulty of drawing conclusions from the various scientific debates is such that the Government Chief Scientific Adviser may need to be involved.

All major departments where policies require vital scientific expertise should have DCSAs of outstanding status, whose views will be respected by their academic and professional peers. Their advice should be based on their professional expertise, and they should not feel constrained either by received opinion in the civil service or the wish of ministers to receive advice that they would prefer. Normally this will mean that appointments are made from outside the official structure.

You have said that the Committee wish to “gain a clearer understanding of the ability of DCSAs to provide independent advice to ministers and policy makers”. Their ability to do this depends on their position and authority within the Department. It is important that they work with, and are members of, the senior management team of the Department, and that they are not regarded as outsiders whose views can be downplayed.

They should guide the development and implementation of scientific work within the Department, and be able to base their advice to senior management and ministers on knowledge of the Department’s own work as well as contacts or membership of other governmental organizations, such as the Research Councils and the Council for Sciences and Technology, and outside academia.

Your inquiry is concerned with the position and work of DCSAs but similar issues can arise in relation to other professional advice.

20th October 2011

BP Plc—Written evidence

Introduction

1. Within BP, there is a team of three Chief Scientists who report to BP's Head of Technology – one a physicist, one a chemist and the other a bio scientist. Their role in providing expert and independent scientific advice to BP's management is valued highly. But it is a relationship which has to be developed, and those advisers who hitherto have had a sole university or academic background require time to understand the business before their scientific expertise can best guide its commercial decisions.

The Ability of Chief Scientific Advisers (CSAs) to provide advice to Government

2. Our experience and assumption is that this also applies to those CSAs who provide independent advice to ministers and Policy Advisers. Good scientists are known for their independence of thought. However, the provision of good advice in practice requires a wide range of skills, including for CSAs the ability to bridge between business, academia and government.

3. Given that CSAs often fulfil their role during sabbaticals from their university posts stretching over a few years, they can at the beginning face a steep learning curve, and our experience in business is that it can take at least a year before a balanced view is formed and pitched wisely into an organisation. University professors often have a deep but narrow perspective and this broadens as they are exposed to new ideas and information.

4. What is true in business probably also applies to government. Politics and academia are uncommon bedfellows, and few academics move into government and remain there. Sometimes it is most difficult for academics to learn the softer skills needed to thrive in a large or political organisation. Our sense is that the US appears to have a greater capacity for rotating talented individuals between government, business and academia and that the whole benefits from the understanding this generates.

CSA's Influence Over Research Spend

5. While CSAs can be expected to understand easily the scope and potential of research, the job of resource allocation is altogether a more difficult one. It requires a good understanding of 'strategy' in terms of business, and no doubt 'policy' in respect of government. In all areas, there is increasing focus these days on understanding the impact of research. This takes time, perhaps a couple of years, especially when policies can change.

CSA's role in providing independent challenge and evidence-based policies

6. Our experience in business is that this requirement is one which Chief Scientists are well able and ready to fulfil.

The range of expertise provided by the network of CSAs

7. BP has worked with a range of CSAs in the past, and our experience is that all are excellent scientists. As implied above, however, they have often had to learn over time how to fulfil effectively their roles in government. It is not possible for any candidate to have depth in the full range of scientific areas covered in these roles, and they have therefore been required to learn and apply good scientific methods in their approaches.

Relations with stakeholders and networks

8. CSAs can be expected to have high standing in the community from which they came - they would not have been selected otherwise. Their reputation with other communities, however, is something which will be developed after their appointment. This requires them to listen and learn and achieve a balance which is respectful of the different stakeholders in their roles. Their public positioning needs to be underpinned by the relevant facts. By way of example, BP expressed its concerns in writing that DECC's 2050 calculator ignored the cost of achieving the UK's climate goals, and hence could give a misleading impression to those people using it. A scientific objective may be valid and desirable, but nobody (including scientists) should ignore the realities and costs of achieving it.

Contribution of CSAs in promoting public trust in the independence and authority of science advice to government

9. It is doubtful whether the general public are in a position to differentiate between the scientific advice given to government and the resultant position taken. But both government and CSAs need to become more skilful and courageous in communicating effectively the inevitable element of 'uncertainty' which surrounds so many aspects of government and business advice. In BP's field of energy, climate science, genetically modified organisms, tar sands and shale gas are all good examples. The CSAs can provide the scientific facts to underpin any communication, but they are less likely to be experts in the method of communication. Trust is earned by effective communication followed by consistent action.

1st December 2011

British Academy—Written evidence

Summary

1. The British Academy, the UK's national academy for the humanities and the social sciences, is pleased to contribute to the inquiry commissioned to investigate the role and function of departmental Chief Scientific Advisers (CSAs). The Academy believes that departmental CSAs perform a vital function in ensuring ministers and policy-makers take decisions based on the best available evidence. We would stress the importance of policy being evidence-based and that CSAs working with national academies is vital if we are to enable academics with relevant expertise and experience to contribute to policy debates. CSAs also help to ensure that departments continue their vital research activity, using limited budgets in the most effective way.
2. We believe, however, that the role and contribution of the CSAs can be strengthened to improve the policy making process. We think the government needs to consider how it can:
 - Broaden the range of academic backgrounds of departmental CSAs
 - Increase the level of expertise and advice in social sciences and the humanities offered to ministers
 - Develop greater understanding between CSAs and national academies and academics, drawing on the unique facilities of the national academies to support this

Broadening the range of academic backgrounds

3. Of the CSAs currently in post, the majority come from the natural sciences or engineering and the rest have economics or statistics backgrounds. These are important core disciplines upon which any sound public policy decisions should be based. However, we note that the range of public policy problems with which governments have to deal involve an understanding of cultures, history and language, particularly but not exclusively in respect of the UK's global responsibility. In this context, a clearer understanding of important policy questions might be obtained across government if it broadened the range of backgrounds among the CSAs. For example, psychologists, sociologists and political scientists have all actively contributed to the development of studies on behaviour and attitudes. Humanities and social sciences inculcate important skills - linguistic, archival, statistical – that may be may be needed in order to understand and address important policy issues. We would hope to see future appointments drawn from the humanities and social science communities.
4. Government needs to ensure that the advice it takes is as wide-ranging as possible. It needs to establish and maintain a strong coordinated network between the current and new CSAs so that departments can receive advice and discuss issues with a range of advisers from different backgrounds and with different perspectives. It also needs to ensure that CSA vacancies in departments

are filled as quickly as possible so that the use of expert advice within policy making is maintained.

5. The British Academy, along with other national academies, is willing to play its part in supporting cross-disciplinary expertise to government that will supplement the expertise of the CSAs. Our fellowship is a potential source of expertise and advice upon which it is possible to draw, as is illustrated in our work on electoral systems and redrawing electoral boundaries, and by the policy forums we have organised.

Increasing the level of social science and humanities advice to ministers

6. We support the work of the Government Social Research Unit – jointly led by Jenny Dibden and Richard Bartholomew. However, we think its reach and contribution would be increased if the government returned to its previous policy of employing a Chief Social Scientist to lead the provision of advice to ministers, as the recent report from this Select Committee on behaviour change recommended. Having joint heads of research, rather than a Chief Social Scientist employed at Permanent Secretary level, limits the degree of access to the highest levels of government.
7. The government would also benefit from taking advice about the social, cultural and economic contexts during the policy development process, for example, on the importance of material and cultural heritage, or the need for language, regional or area studies skills, expertise and understanding in diplomacy and foreign policy. Evidence gained from research from a single perspective – whether that of natural or social scientists or of historians and cultural analysts – will inevitably provide only part of the picture.

Developing greater understanding between CSAs and national academies and academics, drawing on the unique facilities of the national academies to support this

8. It is essential that policy-makers and academics have opportunities to come together and discuss policy issues and questions. The national academies are uniquely placed to be able to bring relevant people with specific expertise from a wide range of disciplines together to promote the understanding and use of scientific evidence in policy making.
9. With that in mind, over the last six months, the British Academy has been working closely with the government and the humanities and social sciences (HSS) communities to improve relationships and understanding. In April, we hosted an event called “Looking Forward: Government and the HSS Community”, which brought together a number of advisers, organisational leaders, vice-chancellors and academics to discuss how to achieve high-level strategic exchange between government and academia, with an obvious emphasis on HSS academics. In June, along with the Economic and Social Research Council and the Government Heads of Analysis, we held a seminar to look at how social scientists can be engaged in government policy making.

10. As part of the event in June, the Government's Chief Scientific Adviser, Sir John Beddington, spoke of the need to address the levels of public trust in scientific evidence and the need to rethink pathways of communication between social science, government and the public. Therefore, in October, the Academy and SAGE are jointly organising an event that will provide an opportunity to explore publicly ways in which the academic community and government can together ensure more effective communication of scientific evidence in the public arena.
11. At a more particular level, our Vice-President for Research and Higher Education Policy, Professor Nigel Vincent, is engaged in conversations with the CSA at the Home Office, Bernard Silverman, about the issue of language skills in relation to crime and security.
12. Timing the request and receipt of advice in order for it to be of value can be problematic. Serious research takes time and, understandably, Government sometimes needs or wants to make policy quickly before evidence is available, whereas full analysis and understanding may require a longer timescale. There therefore need to be clearer expectations and better dialogue between policy-makers and academics and a full awareness of the realities of the policy cycle (hence the aforementioned Academy-organised discussions in April, June and October 2011) if the right balance of immediate needs and longer-term analysis is to be struck.
13. We will continue to organise events, meetings and other networking opportunities. In turn, we urge that the government should continue to encourage a greater understanding and engagement between CSAs, national academies and academics.
14. There is also scope to improve communications between CSAs and national academies to consider where agendas match and differ. For example, national academies may be able to investigate and research areas where a longer-term outlook is useful, whereas government may need to be focus on shorter-term issues. Departmental Chief Scientific Advisers therefore need to be able to draw on quick, confident advice about immediate term issues, dilemmas and questions so academics should be prepared to react and contribute where appropriate. National academies can also provide advice and expertise to government on the most effective way to communicate scientific evidence to the public to increase understanding, awareness and trust.

September 2011

British Academy, The Royal Society and The Royal Academy of Engineering—Oral evidence (QQ85-106)

Evidence Session No. 4.

Heard in Public.

Questions 85 - 106

TUESDAY 25 OCTOBER 2011

Members present

Lord Krebs (Chairman)
Lord Broers
Lord Crickhowell
Baroness Hilton of Eggardon
Lord Patel
Lord Rees of Ludlow
The Earl of Selborne
Lord Wade of Chorlton
Lord Warner
Lord Willis of Knaresborough
Lord Winston

Examination of Witnesses

Witnesses: **Professor Roger Kain CBE**, Fellow, British Academy, **Professor John Pethica**, Physical Secretary and Vice President, The Royal Society, and **Philip Greenish**, Chief Executive, The Royal Academy of Engineering.

Q85 The Chairman: I would like to welcome our second witness panel. I apologise for running a few minutes late. We were a few minutes late starting, but thank you very much for coming to join us and I just remind you that this session is being webcast and, when the broadcasting light is on, sotto voce comments could be picked up by the microphones. I would like in a moment to invite you to introduce yourselves for the record, and if you would like to make any opening comments, please feel free to do so; otherwise I will lead off with the first of the questions. Perhaps we can start from my left.

Philip Greenish: I am Philip Greenish. I am Chief Executive of the Royal Academy of Engineering, a role I have held for around about eight years.

British Academy, The Royal Society and The Royal Academy of Engineering—Oral evidence (QQ85-106)

Professor Pethica: John Pethica, Physical Secretary and Vice President of the Royal Society, and I have been there for about two years. I am also CSA at NPL.

Professor Kain: I am Roger Kain, Dean and Chief Executive of the School of Advanced Study in the University of London, a fellow of the British Academy and giving evidence on behalf of the Academy this morning.

Q86 The Chairman: Thank you very much. Let me kick off then with the first question, which is a rather general one to ask, from your perspective representing the academies that you do represent, whether you see that Chief Scientific Advisers in Departments are effectively fulfilling their role as defined in the Government's Chief Scientific Advisers guidelines, For instance, are they providing appropriate independent challenge to help to ensure that government policy is evidence-based? You might also comment on whether the challenge and the impact of it is sufficiently transparent in your view.

Professor Kain: I am certain that there is independent challenge, but from the perspective of the humanities and social sciences, we see that challenge coming through a very narrow lens, a lens essentially of science, technology, engineering, medicine, economics and statistics. Now, those are all very important areas but the term science and engineering seems at the moment to not exclude but marginalise the humanities and social science in relation to advice and expertise: culture, history, language, psychology, and political science. One can think of a number of the huge global challenges that are being faced, climate change for example, where the measurement and the understanding of that is a matter for physical and natural science, but if there is to be some affecting of it then that involves behaviour and culture and understanding of the human condition if it is to be mitigated. So I think my comment would be: challenge, yes, but from a very narrow perspective at present.

Professor Pethica: Broadly the answer is yes, but I would hedge that a little bit by saying it is important to keep in mind the magnitude of the task a small number of individuals is asked to undertake, given, for example, the thinning out of the government's own capabilities in science over the last 30-odd years or so. So there is a relatively thin line there of advice to do this trawling and analysis process which applies. That is perhaps more of a challenge for the CSAs than it might have been in, say, Rothschild's time, 1971, when the idea of Government becoming an intelligent client was set up. In that context, the burden on them in some sense has increased. I think the other thing that is important to keep in mind of course is that most of the science and technology issues concerned have an international dimension that considerably overweighs or overrules, if you like, the local considerations. So mapping those two together is also quite a challenge for CSAs.

Philip Greenish: My first point is to agree entirely with John Pethica that the resources that the CSAs have available to them are very, very small within their own Departments. Departments generally I think are more challenged than they have been in the past to be that intelligent client or intelligent customer. Within that limitation, our view is that the CSAs generally are doing a very good job. We have seen quite a significant change over the last few years from the point of view of the Engineering Academy. One could put it two ways: a change firstly in the availability of the engineering profession to provide support to CSAs to help them backfill that lack

British Academy, The Royal Society and The Royal Academy of Engineering—Oral evidence (QQ85-106)

of capacity themselves, but also in the willingness of many CSAs to call on the additional advice and experience that is available through the National Academies. It is not universal; some of the CSAs have certainly used the Royal Academy of Engineering extensively, and others have not. Partly that is the nature of the roles they fulfil in different Departments, partly it is some individual CSAs who learn the value that they do have through the National Academies and then make good use of it.

Q87 The Chairman: I am going to turn to Lord Warner in a moment, who wishes to ask a follow-up, but before I do could each of you very briefly indicate whether you can think of especially good examples of where CSAs have positively influenced policy by presenting scientific evidence, and examples where they have been less successful, and also linked to that, whether, as I asked earlier, their influence has been transparent, either in the positive or the failing cases? Would any of you like to offer examples? Professor Pethica, do you have any?

Professor Pethica: That is very difficult, of course, because one is being asked to criticise the activities. I would rather answer the last question first, which is the transparency of that process—is it evident what the impact of their work has been? I have to say I think that is not quite as transparent as one might wish. My reason for raising that is related to a later question that you have, which is convincing the wider scientific community that this kind of activity is worth doing—in recruitment and processes like that. So it actually matters a great deal that CSAs are seen to be challenging and publicly visible in that respect, and while many of them are, or some of them are—I can think of one or two examples—it is not universal.

The Chairman: Does anybody else wish to add anything?

Professor Kain: I have to say my comments, again, from the particular perspective that I come from, would be more of the negative order than the positive. Though we are working, for example, with Bernard Silverman at the moment on languages, crime and security, there seem to us to have been a number of developments within, for example, the Department for Culture, Media and Sport, which does not have a Scientific Adviser, to do with the arts and arts funding that would have benefitted from the input of advice from the humanities community and from the arts academic community in particular.

Philip Greenish: I find it difficult to find an instance of direct cause and effect, but to give examples I think that the work Professor MacKay has been doing in DECC to provide a very strong evidence base on energy and climate change has been influential generally in the direction of travel for that Department. Our own direct experience of BIS and the Department for Transport, for example, on how the Department for Transport does its procurement, where the CSA did a substantial amount of work, and in BIS on LEP formation, I think was influential. I cannot say that it had a direct consequence on the policy of the Departments concerned because I do not know the answer to that.

In terms of the other side of the coin, where perhaps it has been less effective, I think when one looks at the challenge function of the CSA, its success very much depends on how that challenge is exercised. We have seen examples where the

challenge function has not succeeded and I think doors have been closed to that particular CSA.

Q88 Lord Warner: I want to pursue the issue of challenge in the social sciences area. Professor Kain was saying that the prism for Chief Scientific Advisers seemed to be too narrow in terms of their scope. But Professor Pethica and Mr Greenish are sort of saying something slightly different—that the CSA is now expected to cover, with thinner access to scientific resources within Government, a very wide range of topics in a lot of depth. Somewhere in all of this the Committee has picked up in other work that one of the casualties might be the social sciences. There is an issue we welcome your views on, which is: is it asking too much of the CSAs to strengthen their remit in relation to the social sciences, or should we be going down another route, which is specialist Government Chief Social Scientists, in order to deal with some of the concerns I think Professor Kain was raising? We would very much welcome your views on that.

Professor Kain: Thank you, Lord Warner. I think the British Academy's position would be aligned very much with that of Your Lordships. In your report on behaviour change in the middle of this year one of your recommendations was that at the earliest opportunity Government should appoint a Chief Social Scientist reporting to the Government Chief Scientific Adviser, an independent expert in social science research. I think in the British Academy we would go further than this, and we would argue that a Chief Social Scientist should be working at the same level as the Chief Scientific Adviser to provide advice to the Prime Minister and the Cabinet. Our view is that one of the key components that can mark out the success or the failure of scientific advice is access to ministers, and access at the highest level at a time when issues that social scientists and humanities scholars have capabilities to advise on and research to provide as evidence to policymakers are, I think, overdue. It was a matter of regret when Paul Wiles was not replaced. So a Chief Social Scientist is a sine qua non for us.

Q89 Lord Broers: I have a slightly different question, and it is to do with the nature of your interactions with CSAs, and it appears to me that they are quite formal. If the Academies produce reports, they are done sort of separately and formally as reports. I want to ask a question about the ongoing communication. For example, in energy, where it is clear that the Government's strategy, inevitably for this country, is that we are going to go on using fossil fuels, CCS becomes extremely important. Now the largest CCS project was stopped the other day because those pursuing it decided it was not viable at all. Did the CSAs contact you? Did David MacKay or his people contact people in the Royal Academy of Engineering or the Royal Society and say, "What do you think about this? What is your view? What is your sophisticated view of the cost and reality of CCS?"

Philip Greenish: To answer your question directly, we were not contacted immediately prior to the decision that ended in the closure of the pilot programme, but there had been much discussion over a long time about the effectiveness of the process that Government was using to run that competition with the CSAs. So I have to say it came as no surprise when it came to an end.

Q90 Lord Broers: So you feel the Academy's position was clearly understood by Government on this issue?

Philip Greenish: It was clearly understood by the Chief Scientific Adviser in that Department, yes.

The Chairman: I think this leads on to Lord Winston's question.

Q91 Lord Winston: My questions are being continually pre-empted today. None the less, it is a question I would have quite liked to ask the Chief Scientific Advisers—what their relationship is with the Academies—but maybe we can ask you that question anyway and get your view about how you interact with them and how you interact with the different CSAs to support them in their role to provide independent challenges to Government policy.

Professor Kain: Shall I begin, Lord Winston? We feel that we have a very positive relationship with the CSAs such as do face our disciplines. I think I probably would include in that category the Government Social Research Unit, which works out of the Treasury. These are all members of the Strategic Forum for the Social Sciences¹, which the British Academy hosts and has membership from the CSA community and from the research funding community. We had a meeting earlier this year that brought together a number of CSAs with the Government Chief Scientific Adviser to discuss the ways in which policymaking and research evidence can benefit each other. In fact, next week jointly sponsored by SAGE and us, we have an event about strengthening public trust in scientific evidence, which is a continuation of that work. So I think my answer is we feel we need to be proactive. We have set up a public policy unit, the object of which is to try to convince Government that there are academics in the community who have evidence that can help in the formulation of good policy. We provide a forum for policymakers and academics to engage in. If there ever is anything in this world that could be described as a neutral space for debate, then we would like to think we offer that to the policymaking community and academics.

Professor Pethica: I would amplify that point you just made about providing a neutral debating environment in which matters can be discussed and so forth; that is, of course, a key role of the society. To answer your question precisely, the arrangements and connections with the CSAs can be put in three broad categories. One is informal and fairly regular consultations—that is to say one discusses in a semi-formal manner with CSAs. There are also specific projects of the sort that Philip has referred to—individual projects set up to analyse particular problems. Then of course there are occasional formal meetings, not many, where CSAs meet at the societies, for example the GCSA and so forth, and a variety of issues are discussed: how can we help? What are the hot issues of the time? How can we also improve, as I mentioned earlier on, the question of recruitment? To put the question

¹ The British Academy later clarified that the joint heads of the Government Social Research Unit are members of the UK Strategic Forum for the Social Sciences, hosted by the British Academy. The Government Chief Scientific Adviser and the departmental Chief Scientific Advisers have been involved in specific discussions but are not members of the Forum.

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in a slightly different way, what strategic oversight is enabled by the Academy? That is a slightly more difficult question to answer.

Philip Greenish: I would start by referring to the relationship between our Academy and the Government Chief Scientific Adviser, Sir John Beddington. When he took up his post he made it very clear from the very outset that he wanted to build a much stronger relationship with the engineering community as a whole, and he wanted us to play our part as well. That has filtered down into the departmental CSAs as well who got the message quite clearly from him as well as from the bottom up—from us in the way we were building relationships. So we interact and interface in a number of different ways.

As far as the profession as a whole is concerned, we have formed an alliance, which we call Engineering the Future. It is a balanced grouping across all the engineering institutions, of which there are 36, plus the Royal Academy of Engineering, plus Engineering UK, which exists to promote engineering. Since we established this alliance a couple of years ago, we have done a number of formal studies and supportive work as requested by John Beddington or members of his CSA community. That includes a piece of work directly for John Beddington on water security; it includes a piece of work on nuclear lessons learnt; and currently we are doing a piece of work on producing a road map for Infrastructure UK. All of that has been enabled because of our relationship with John Beddington and our relationship with certain of the CSAs.

We have put on roundtable meetings at the request of CSAs to enable them to get deep into particular issues. We have held a number of those. We put on three, I think, in total for Professor Brian Collins when he was a CSA at Transport and BIS. We also quite routinely provide people with deep expertise in particular areas to advise CSAs at their request, and we have informal meetings, as Professor Pethica has referred to, as well as occasional set piece meetings with John Beddington and a group of CSAs, the last of which was about 18 months ago.

Q92 Lord Rees of Ludlow: I would like to follow up this question of detailed policy studies rather than immediate responses to crises, etc. Mr Greenish has mentioned there has been an increase in the number of studies done at the request of CSAs. I would like to ask more generally if one thinks there is scope for a wider range of types of studies, because what we tend to have in this country is the foresight exercises and studies done by bodies like the Royal Society, which are normally independent but sometimes at the request of Government. We do not have anything analogous to the American NRC system, where there can be a fairly large staff of people doing studies at the request of Government but drawing in expertise. Do you think one needs to go a bit further in the direction of the Royal Academy of Engineering and have some system whereby the Government can commission work from a body which is overseen by the Academies but at arm's length from them?

Philip Greenish: I would like to see a more formal relationship between Government, Government Departments and the National Academies. It is important clearly that the academies' independence is preserved through this. We would have to avoid at all costs being seen as an arm of Government, which I think would be a huge mistake and would compromise our ability to critique independently. That said,

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I think there is a huge resource available that is being underutilised. I say a huge resource; it is a limited resource but, if you look at the engineering profession, 36 institutions, of which 10 or so are of reasonable size and willing and keen to put their resource into supporting really important areas of Government policymaking. So there is more that could be done. I would like to see it established on a more formal basis. At the moment it does depend too much on individuals making the case for doing a particular piece of work and individuals responding depending on available resources.

Q93 Lord Wade of Chorlton: We have discussed some of this, but, just to clarify some of the issues, is there sufficient range of expertise among CSAs, in your belief, to represent the wide range of science and engineering disciplines relevant to the formation of government policy? If not, how can this be improved? In asking the question could I just add a further point? Professor, you made the comment that you felt there was not sufficient understanding among the Academies of what advice the scientific advisers were giving, and that you would like to see a more open approach. Maybe in your answer you can give me some indication of how you think that might be done, to take that idea a little bit further.

Professor Pethica: Okay, to answer your question very specifically first of whether there is a sufficient range, of course for an individual to cover the range is essentially impossible if we are realistic about this. We have heard problems ranging from social science issues through to highly practical industrial problems and everything in between. What matters is that the CSA has the capability to access, master and understand input from various sources, which is why the transparency of what he or she does is so very important, so everybody sees what is involved, what the issues are and how to access that wider expertise.

To answer the second part of your question, essentially it is related to the previous question. Do we have formal mechanism for making input of this sort? My own view, for example, is that processes like NRC in the US are very advantageous, but the question is: how are those studies stimulated? Where is the process where one decides what the hot issue is that needs to be dealt with? I think Academies on the whole would welcome being involved on that level of process as well, were it possible. So more formal engagement with CSAs would certainly help there, bearing in mind the breadth of the range of problems involved that we represent here.

Q94 The Chairman: This is just picking up on your points, which I very much agree with. While one does not expect a Chief Scientific Adviser at the departmental or cross-Governmental level to be an expert in all the areas that he/she encounters—that is impossible—what is important is for that individual, or those individuals, to exercise sufficient judgment; a) to know what they do not know, and b) to know who to ask what they do not know. If I follow that line of thought and come back to Professor Kain and the notion of having a Chief Social Scientist alongside the Government Chief Scientific Adviser, why would it therefore not be equally valid to say there ought to be a Chief Chemical Adviser, or a Chief Physical Science Adviser, or a Chief Mathematical Science Adviser, or a Chief Engineering Adviser? I mean you just have to trust that people like Sir John Beddington have

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sufficient skill, intelligence and a network of contacts to be able to assimilate information from all branches of the sciences, including social sciences. So what is wrong with that proposition?

Professor Kain: I would not want to comment negatively at all on Sir John's academic abilities, but I do think it is a big ask to carry across into areas where methodologies and conceptual arrangements are so different. The humanities and social sciences constitute a good third of the academic map. In terms of the quality of work that is done it is on par with the sciences and engineering and medicine from the RAE. It is a bit like when there were issues around the non-sciences and the sciences. There is a perception among the academic community of the UK that the word science is being used in a very narrow sense. I know, and the Academy knows, that is not the case, and the Chief Scientific Adviser is an adviser across the whole spectrum, but for the sake of one post that would broaden and deepen the understanding of the humanities and social sciences, I think it is a loss not to have that post.

Q95 The Chairman: It does sound a bit like special treatment though. If we had people from the particle physics community they would say the trouble is that the Chief Scientific Adviser is a biologist by background, and he cannot deal with particle physics.

Professor Kain: I would take that argument if I were arguing for a history adviser, but I would be arguing for a Social Scientist, by which I mean someone who covers the spectrum of humanities and social sciences. If I may just say one other point, I think that Departments should not be holding vacancies but should be endeavouring to fill their vacant post of Scientific Adviser expeditiously.

Philip Greenish: I draw a distinction between what one might look at as the traditional scientific advice, which is based upon academic evidence, analytical work and based on science and technology in detail, and the project delivery element of a Chief Scientific Adviser's role. One can see many government disasters—such as decisions on NHS IT systems and their delivery—that perhaps needed a different sort of person in that role to provide advice about project delivery at the right sort of time. We see a need for perhaps different sorts of people in different Departments at different times. Ideally, you would have people with that breadth of knowledge, but, with the best will in the world, someone who comes from a deeply academic background may not have the experience to fulfil those other sorts of roles.

Professor Pethica: I would like to add a small point to that. This amplifies the point I made earlier about expertise available. The mention of IT is a classic example; it is an area of great expansion in which in-house expertise, compared with other Governments across the world, is exceedingly weak.

Q96 Lord Wade of Chorlton: Could I just ask a bit of a wider question? Following on the point that Lord Rees was making to you, you seemed to be critical or at least concerned about the fact that Government in many of its policy decisions does not take full advantage of scientific advice, for various reasons. It might be the

scientific adviser; it might be because they have not followed up; they might not have the range of talents. As you are representatives of three major science academies, and taking the criticism that science does not have enough of a role in supporting Government actions and being listened to by Government, if you compare science as a lobby with lobbies from other sectors of society—I am mostly against most of these lobbies; that is a personal view, and there will be some here who support these lobbies—clearly science does not have the same power as many other lobbies that are dealing with matters that are much more short term and are really passing phases rather than long-term decision-making processes. I am much more concerned from my background in long-term decision-making that such decisions are made soundly and firmly and have a long-term view in mind. I wondered if you, as Academies, ever discuss how science can take a much better role, and how it can be seen not just by Government but by the public at large so that it can influence Government more effectively.

Philip Greenish: I think there is lots of evidence that Governments in the past have not taken due cognisance of the right sort of engineering inputs that they should have done, and some of the policies in past Governments on energy have not taken due regard of advice from engineers who know about delivery of energy and energy infrastructure. That says to me that there have been huge gaps in our ability to influence. I would rather not use the word “lobby” because it does not really reflect what we do and want to do, but it does say that we have not been as influential as we could have been in the engineering profession as a whole. Things are moving generally in the right direction. Whether they are moving at the right speed in the right direction, actually I doubt.

Professor Kain: I might say, if we went back three or four years, the British Academy would have been wholly guilty of not really engaging with the issues in relation to evidence and policy. We made the decision two years ago to set up a policy unit, which we fund largely from our own private funds specifically not to lobby but just ensure that there is a forum that is also producing reports on things like languages—I think our *Language Matters* reports have been very well received and have been very influential—to ensure that there is evidence getting through to those who are making policy². But I think it is a fair comment; we certainly have not been as proactive as we might have been. We would not, as an independent Academy, wish to call ourselves lobbyists, but I think that we do need to provide the forum to bring people together.

Professor Pethica: Very briefly, you mentioned public profile; the society has been actually rather active in raising the profile of science in the last few years. There is no question that is a major part of our activity: raising the awareness of science and technology. The question of influence is particularly interesting because there are a number of stakeholders involved in this. Science is not a purely academic exercise and spreads into other directions. One hesitates to use the word “lobbying”, but if you look in, say, other countries again there are a number, for example, industrial stakeholders who link very well and we would like to engage further with that process. I think that is the point Philip has been making.

² The British Academy later explained that their policy centre was set up in 2009 and is funded by the British Academy, the Economic and Social Research Council (ESRC) and the Arts and Humanities Research Council (AHRC). In addition to the funding it receives from the ESRC and the AHRC, the policy centre receives pro bono contributions from the British Academy’s fellowship.

Q97 Lord Willis of Knaresborough: My question is specifically to Mr Greenish. I can remember four years ago producing a report in the other place about engineering, and one of the issues that we did raise, which you have addressed quite excellently, is bringing together the various societies and in fact having a forum through the Royal Academy in order to answer major questions. I think you have been hugely successful in that and should be congratulated on it. We recommended at that time that there should be a Chief Engineer, and we felt that very strongly simply because we regarded engineering at the time as being the execution of policy, and that it was important to have at Board level in Departments, and certainly at Government, somebody who basically asked the question, “Can we deliver this policy?” That was an engineering response rather than a purely scientific one. We did not get our way in that, but what in fact the Government agreed to do was to appoint Chief Technology Officers in all the Departments in order to deliver this policy. What has happened to that? If nothing has happened to it, which you have probably gathered is the right answer, what has the Academy been doing about it? I think you have to be proactive on these issues rather than waiting for the Government to come along and say please.

Philip Greenish: I think you are absolutely right in the point that you make about the execution of policy, and I would add that the advice needs to be at the start of that policymaking process rather than further downstream, when often it is too late. I think my Academy would have been much, much more strident about the need for a Government Chief Engineering Adviser and Chief Engineering Advisers in Departments if it had not been for the fact that we have seen engineering issues taken into proper account much earlier in the process. We ourselves have been invited to support policymaking in certain Government Departments quite early in the process and to provide people with real expertise into that process. We have had a number of Chief Scientific Advisers who have been engineers. At the moment there are two. Until recently there were four if one divides Brian Collins into two, as he was Chief Scientific Adviser to two Departments, and there are other Chief Scientific Advisers who really get the engineering issues and with whom we have a strong relationship. If it had not been for that general movement in the right direction, and quite rapidly in the right direction, we would be making a much stronger case for having a Chief Engineering Adviser in Government, which is actually what we would like to have.

Q98 Lord Crickhowell: My question is also on delivery. I was very interested in Mr Greenish’s comments on delivery. I, for my sins, was at one time Chairman of an IT services company that made the mistake of trying to deliver an IT system to the very heart of Government. Professor Pethica said there was not enough IT knowledge, but there is a lot of knowledge about IT. Are the Academies paying sufficient attention not just to the scientific knowledge but how you deliver it? Engineers, I think, do concentrate rather on how you deliver things. Certainly in the IT field, if you look at what has gone wrong, in my view it has been a total lack of understanding in Government about what is required for successful delivery. Are the Academies taking too academic a view from academia rather than concerning themselves, as I think they need to perhaps more, with how to deliver the expertise?

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Philip Greenish: In our case, definitely not.

Lord Crickhowell: Well I was letting you off the hook and really putting that question to the other two.

The Chairman: We have heard from Mr Greenish. What about the other two?

Professor Pethica: Taking the word knowledge, as an engineering person running a company myself I have had exactly the experience you described. What I was referring to perhaps was what you were referring to. IT is not just about technology; it is about specifying the project in the first place—that kind of a process. This was not a reference to people doing, I do not know, obscure database theory, but even that has a tendency to produce interesting results in commercial terms. None the less, I think you are absolutely right and certainly the Royal Society takes that very seriously.

Professor Kain: I think it is a very fair comment, Lord Crickhowell. I do not think that we do roll up our sleeves enough perhaps once we have sort of dealt with the academic issues around particular topics. I think that is a fair comment.

Q99 Lord Warner: What resources do CSAs require, both in terms of staffing and budget, to carry out their challenge function? We seem to be hearing of a move to group analytical services under CSAs in some Departments. Is scale of access to resource an important issue in carrying out the challenge function or can people do that effectively with much smaller resource?

Professor Kain: No, they cannot. I think that the resource in that form is needed for two things. There is a need to be able to have the resource to commission research that does not exist to do analysis to synthesise material that academic experts can bring to the table. Then there is also a need for staff resource to enable the interactions to be undertaken with the Academies, for example, to ensure that meetings do get set up and there is an agenda of activity running through. I think the resource that is most important for CSAs is the resource of access, and without access to ministers, senior departmental officials and the relevant academic communities—it is the Academies that can broker that relationship with the academic communities—then it is not going to work properly.

Q100 The Chairman: Do you have a view in relation to the last point as to whether CSAs should be on the departmental Boards? As you will be aware we have heard that some are and some are not. There is a range of views among them whether that matters. Does British Academy have a view about that?

Professor Kain: The British Academy does not have specific view. I could offer a personal view from myself as a fellow of the Academy, which is that it is difficult to understand why some levels of representation occur and others do not, in the same way as I was saying earlier we cannot understand why some Departments hold vacancies—BIS and Transport and DCMS—for scientific advisers.

Professor Pethica: I think it is very important to keep in mind here the tremendous variation across the departmental landscape in that respect. At the one end you have MOD, which of course has a long tradition whereby the CSA actually had direct

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control of a particular budget, on such information as I have on that. This actually allows the CSA considerable freedom to implement issues that follow the scientific engineering and technological requirements. In other Departments it is extremely limited. As to whether this is a cultural or evolutionary process over time, of course the technological pressures in the MOD are rather obvious, so in that case it makes it clear, whereas perhaps in other Departments it is less clear, so it is evolving. As said in our statement, however, it is really important that CSAs have an appropriate level of access and sufficient budget to allow them to commission such studies as might challenge the views and the issues in the Department. Challenge requires a bit of independence, and therefore some budget.

Philip Greenish: I agree that access is the key thing. Owning large-scale resources to do things is not. I rather like the model of fleetness of foot that comes with individual CSAs with a very small supporting cast, but having access to the resources that they need when they need it.

Q101 The Chairman: Do any of you have a view on whether the CSA being an outsider brought in is positive or negative for this challenge function? As again you will be aware some CSAs are brought in from outside and others are career civil servants.

Professor Pethica: One could issue a general principle here. Scientific and technological and other advice is essentially something that allows access to the broadest range of knowledge around. By definition, if one exists within that coterie, of course, there is always a danger of groupthink, just to put it in one respect. So the general scientific principle would be that you should broaden your advice out as far as possible, and having an external appointee is an extremely advantageous way of doing so.

Q102 The Chairman: Do the other two agree?

Professor Kain: An appointee is not necessarily the best person simply because he or she is external. I think there should be a proper trawl for the best expertise, and you find that where it is. It may lie within the career civil service. It is perhaps more likely, given the numbers, to lie outside.

Philip Greenish: I think in general it probably helps to have someone with a different cultural background, so not imbued with the civil service ethos through and through. There may be specific examples where the best person for the job actually does come from within.

Q103 Lord Broers: I am intrigued by what Professor Pethica was suggesting. You were saying that the CSAs had minute resources supporting them; however, some of these Departments have a lot of science researchers there—Defra has 400, I think; DECC has 84. Would you go so far as to say they should not have such large Departments but more money to commission outside?

Professor Pethica: Sorry, my statement was that some Departments have very substantial resources that they can access in that respect.

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Lord Broers: Yes, but my question is: would it not be better for them, from the CSAs point of view, perhaps not to have all those researchers hanging around but to have more money to commission research from the Royal Society or the Royal Academy of Engineering or the British Academy?

Professor Pethica: In many Departments that is probably a fair comment, in the sense that there is an appropriate scale for that; you could consider commissioning more work outside the Department than is currently the case. But in very large Departments like the MOD, it is rather hard to imagine the scale of research that is carried on inside there can be replicated easily outside, unless one is looking at serious changes.

Q104 Lord Winston: How is that research evaluated, do you think, within the Department?

Professor Pethica: This is not my area but I understand there is a range of assessment processes, one of which is run by GCSA. There are a series of reviews, and people participate in those, where a Department is reviewed in terms of the effectiveness of its science. I am not sure whether that is on a time or an ad hoc basis, but they certainly do occur.

Q105 The Earl of Selborne: Professor Kain said that it was a big ask to expect any one person to be well informed on social sciences, humanities, physical sciences and engineering. That is a concept I have a lot of sympathy with. More and more, Government Departments—and this seems to be again something that should be encouraged—are putting forward collaborative programmes that involve several Departments, each with research capacity and research councils and indeed agencies. It is therefore necessary for Chief Scientific Advisers to collaborate with each other, and to that extent, Sir John Beddington, Chief Scientific Adviser, does have a network of Chief Scientific Advisers. I wondered if you could give us an insight as to what extent this cross-departmental collaboration of Chief Scientists is effective in underpinning Government research?

Professor Kain: They certainly play a role within our strategic forum for the social sciences. The scientific advisers are specifically encouraged by the Chief Scientific Adviser to do that. I have not got any specific instances where I could point to the fact that by collaborating something bigger or better comes out, but certainly, if one takes the experience of UK research, it is becoming increasingly collaborative, building ever larger teams and looking across, because many of the big challenges involve perspectives from different areas. I think anything that brings those who are offering challenge to Government, the scientific advisers, together to discuss is to the good. Whether that needs to be formalised or whether it works sufficiently well at the moment, I am agnostic.

Professor Pethica: I was for one year a junior member of CSAC. It is certainly an extremely helpful venue for the cross-fertilisation of ideas. It was noticeable on the group that in fact the breadth of expertise there was actually rather helpful. So the fact that you have different CSAs with different expertise was actually rather useful, so I would commend that immensely. Of course, whether it addresses all of your

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questions is another matter, but it is certainly a vehicle by which these extended collaborations can be effective.

Q106 The Chairman: Do you have anything to add, Mr Greenish?

Philip Greenish: I have no direct examples that I can give you, but my own experience of attending CSAC occasionally is that community definitely does talk together and work together on specific issues.

The Chairman: I would like now to draw the session to a close and thank our team very much indeed for their helpful evidence and remind you that you will be sent a transcript of the session for your corrections in the next week or two. We thank you again very much for your evidence.

Campaign for Science and Engineering—Written evidence

Introduction

1. The Campaign for Science and Engineering is a non-profit organisation which advocates for the UK to become a better place in which to conduct science and engineering. We are supported by a hundred different organisational members in the science and engineering sector, ranging from universities and companies to learned societies and research charities.
2. Science and engineering impacts on the work of every government department, from climate change to transport infrastructure and military defence to school-age education. We believe that independent scientific advice should be at the heart of government and that each department should have a Chief Scientific Adviser (CSAs) to deliver expert advice and oversee science policymaking.
3. Based on the responses to a series of parliamentary questions asked by Lord Willis of Knaresborough in June 2011, data provided by the Government Office for Science (GO Science), and our own research, CaSE has put together a scorecard to rate the suitability of each departmental CSA. Note that the scores relate to the departmental structure for the CSA, rather than the suitability of the individuals who fill those roles. The scorecard underpins CaSE's response to this inquiry and can be found in the appendix attached.

Appointing departmental CSAs

4. Further to calls made by CaSE and others, CSAs have been appointed in nearly all government departments to ensure that robust, joined-up evidence is at the core of decision-making. Most recently we welcomed the appointment of Dr James Richardson as the first Chief Scientific Adviser at HM Treasury. CaSE has long argued for someone to be appointed within the department who can act as a champion for evidence-based policy in that department, and to be a link with the network of Chief Scientific Advisers within Government. We look forward to meeting with him shortly.
5. However, this momentum across government risks being undermined as a number of CSA positions have been vacated and no successor appointed. Currently, four government departments have vacant CSA positions. The role of CSA at the Department for Transport (DfT)³ and Department for Business, Innovation and Skills (BIS)⁴ has been vacant since May 2011 and are only now being advertised, with the process due to conclude at the end of September. The previous departmental CSA, Professor Brian Collins, held the position jointly between the two departments and there is some

³ Recruitment consultancy firm 'Odgers Berndtson' website, <http://bit.ly/n3jmn0>

⁴ Recruitment consultancy firm 'Odgers Berndtson' website, <http://bit.ly/rrHcuE>

confusion over whether the positions advertised are in a joint or separate capacity.

6. The position of CSA at the Department for Culture, Media and Sport (DCMS) is vacant, with the department currently “considering options to fill this role”.⁵ The tenure of Professor Sir Mark Welland as departmental CSA at the Ministry of Defence (MOD) came to an end in August 2011 and the department is planning to reduce the grading of its CSA position⁶. We are concerned that, due to increased financial and staffing restrictions placed upon them, government departments may be less-inclined to fill CSA vacancies, or downgrade their importance.

Action: **Chief Scientific Advisers to be appointed in all government departments.**

Regular Meetings with Ministers and Policy Makers

7. Nine government departments failed to publish the precise number of times their departmental CSA met with the Secretary of State or the Minister to whom they have direct responsibility, between June 2010-2011.⁷ It is crucially important that Secretaries of State and relevant Ministers have regular meetings with their departmental CSA. Without adequate interactions with their CSA, Secretaries of State and Ministers that do not see science and engineering as central to their mission may develop policies without considering their importance. For greater transparency and accountability, records of these meetings should be made public.

Action: **Secretaries of State and relevant Ministers must hold regular meetings with their departmental Chief Scientific Adviser and should publish relevant records.**

Independent Expertise

8. Departmental CSAs should be independently appointed from outside Whitehall, ideally with a concurrent placement in the science and engineering community. Three of the currently-appointed CSAs are not independent professionals from outside government, but rather civil servants appointed from within the department.⁸

Action: **All departmental Chief Scientific Advisors to be appointed from outside of government**

Action: **All departmental Chief Scientific Advisors to have expertise relevant to the department’s mission.**

Sufficient Oversight Powers

⁵ Parliamentary written question, Lord Willis of Knaresborough, 22 June 2011, <http://services.parliament.uk/hansard/Lords/ByDate/20110622/writtenanswers/part012.html>.

⁶ House of Lords debate, ‘Research: Science and Technology Committee Report’, 8 June 2011. <http://www.publications.parliament.uk/pa/ld201011/ldhansrd/text/110608-0002.htm>

⁷ CaSE Departmental CSA Scorecard (Appendix).

⁸ Ibid.

9. In order to fulfil their duties and scrutinise policy thoroughly, CSAs need to have sufficient oversight powers. Only three departments have a place on their management board for the CSA⁹, despite recommendations by GO Science that a senior analyst should sit on the executive board of each government department to ensure that decisions on strategy and resources are fully evidence-based¹⁰. Similarly, only five CSAs have direct control over their department's science, research, or evidence budget¹¹, despite GO Science recommendations that CSAs should be consulted by departmental strategy and finance teams on strategic and budget proposals.¹²

Action: All departmental Chief Scientific Advisors to have a seat at their departmental board and to have oversight over the department's R&D budget.

Science Advisory Councils

10. Science Advisory Councils (SAC) support the work of CSAs and provide expert, independent and published advice on science policy and strategy at a departmental level. However the majority of departments have yet to establish these councils – currently only four departments have a purpose-led Science Advisory Council in place.¹³

Action: Every government department to create a Science Advisory Council to support the work of the departmental Scientific Advisors

Engineering & Technology Advice

11. In those departments where engineering advice is particularly important, the appointment of a departmental Chief Engineering Adviser (DCEA) should be considered. Each should have direct access to the Secretary of State and relevant ministers. Like DCSAs, a DCEA should have direct access to the Secretary of State and relevant ministers.

Action: Government departments that would benefit from having a departmental Chief Engineering Adviser should appoint one.

16th September 2011

⁹ Ibid.

¹⁰ GO Science report, 'Science and Engineering in Government' (2008).

¹¹ CaSE Departmental CSA Scorecard (Appendix).

¹² GO Science report, 'Science and Engineering in Government' (2008).

¹³ CaSE Departmental CSA Scorecard (Appendix).

CaSE Response to the House of Lords Science & Technology Committee Inquiry into the Role and Function of Departmental Chief Scientific Advisers (CSAs): Departmental CSA Scorecard (Appendix)

This scorecard rates the current suitability of each departmental CSA position up to September 2011. Note that the scores relate to the departmental structure for the CSA, rather than the suitability of the individuals who fill those roles. The scorecard is based on departmental responses to a series of Parliamentary Questions asked by Lord Willis of Knaresborough (June 2011), supplemented by CaSE’s own research and data provided by the Government Office for Science (GO Science). The scorecard rates each department across six categories:

- Was the departmental CSA appointed externally from the department?
- Does the departmental CSA have academic or other expertise relevant to the department’s mission?
- How many times has the departmental CSA met the Secretary of State or relevant ministers between June 2010 and June 2011?
- Has the department appointed a Scientific Advisory Committee (SAC) to support the work of the departmental CSA?
- Is there a seat on the department’s management board for the departmental CSA?
- Does the departmental CSA have full control over the department’s science, research, or evidence budget?

Government Department	Departmental Chief Scientific Adviser	Scorecard (Max 6)	Summary
Department for Environment, Food and Rural Affairs (DEFRA)	Professor Robert Watson is Chair of Environmental Sciences at the University of East Anglia and Director for Strategic Direction at the Tyndall Centre.	*****	<ul style="list-style-type: none"> ✓ External appointment ✓ Relevant expertise ✗ Published record of meetings with Secretaries of State and relevant Ministers ✓ Scientific Advisory Committee ✓ Seat on the management board ✓ Control over the R&D budget
Department of Health (DH)	Professor Dame Sally Davies is employed by the civil service full-time and is also Director General for Research and Development in the department.	*****	<ul style="list-style-type: none"> ✓ External appointment‡ ✓ Relevant expertise ✗ Published record of meetings with Secretaries of State and relevant Ministers ✓ Scientific Advisory Committee ✓ Seat on the management board ✓ Control over the R&D budget <p>‡Prof Davies was previously employed by the NHS as an R&D leader, and is now also the Chief Medical Officer, but for the</p>

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			purposes of this study is considered sufficiently external from the civil service proper.
Department for International Development (DfID)	<p>Professor Chris Whitty is Professor of International Health at the London School of Hygiene and Tropical Medicine. Between June 2010-11 has held 7 meetings with the Secretary of State, 1 with the Minister of State, and 11 with the Parliamentary Under-Secretary of State.</p> <p>His deputy is Tim Wheeler, a Professor of Crop Science at the University of Reading.</p>	****	<ul style="list-style-type: none"> ✓ External appointment ✓ Relevant expertise ✓ Published record of meetings with Secretaries of State and relevant Ministers ✗ Scientific Advisory Committee ✗ Seat on the management board ✓ Control over the R&D budget
Department for Energy and Climate Change (DECC)	<p>Professor David MacKay is Professor of Natural Philosophy at the Department of Physics, Cambridge University and a Fellow of the Royal Society.</p>	****	<ul style="list-style-type: none"> ✓ External appointment ✓ Relevant expertise ✗ Published record of meetings with Secretaries of State and relevant Ministers ✓ Scientific Advisory Committee ✓ Seat on the management board ✗ Control over the R&D budget ± ± Only part of budget is under CSA control.
Home Office	<p>Professor Bernard Silverman is employed by the Civil Service full-time. He has held senior academic appointments in statistics at the Universities of Bath, Bristol, and Oxford, and is a past president of the Royal Statistical Society.</p> <p>Between June 2010-11 he held 2 meeting with the Home Secretary, 7 meetings with the Minister for Crime & Security, 7 meetings with the-then Minister for Security and Counter-Terrorism and one meeting with the Immigration Minister and Minister for Equalities.</p>	****	<ul style="list-style-type: none"> ✓ External appointment ✓ Relevant expertise ✓ Published record of meetings with Secretaries of State and relevant Ministers ✓ Scientific Advisory Committee ✗ Seat on the management board ✗ Control over the R&D budget
Department for Work and Pensions (DWP)	<p>Dr Bill Gunnyeon is employed by the civil service full-time and is also Director for Health, Work and Wellbeing. He is a Fellow of the Faculty of Occupational Medicine and holds Fellowships of the Royal College of Physicians of London, the Royal College of Physicians of Edinburgh and the Royal College of General Practitioners.</p>	***	<ul style="list-style-type: none"> ✓ External appointment ✓ Relevant expertise ✓ Published record of meetings with Secretaries of State and relevant Ministers

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	Between June 2010-11 he held 68 meetings with the Department's Ministers. He has also provided support to Ministers on a further 19 occasions.		<ul style="list-style-type: none"> ✗ Scientific Advisory Committee ✗ Seat on the management board ✗ Control over the R&D budget
Department for Communities and Local Government (DCLG)	Professor Jeremy Watson is a chartered electrical engineer with visiting professorships at the Universities of Southampton and Sussex in schools of Civil and Environmental and Engineering and Design.	**	<ul style="list-style-type: none"> ✓ External appointment ✓ Relevant expertise ✗ Published record of meetings with Secretaries of State and relevant Ministers ✗ Scientific Advisory Committee ✗ Seat on the management board ✗ Control over the R&D budget
Foreign & Commonwealth Office (FCO)	Professor David Clary is President of Magdalen College Oxford and Professor of Chemistry at the University of Oxford.	**	<ul style="list-style-type: none"> ✓ External appointment ✓ Relevant expertise ✗ Published record of meetings with Secretaries of State and relevant Ministers ✗ Scientific Advisory Committee ✗ Seat on the management board ✗ Control over the R&D budget ≠ ≠ FCO does not have a dedicated R&D budget.
Department for Education (DfE)	<p>Carole Willis is employed by the civil service full-time and is also Director of Research and Analysis, which includes the role of Chief Scientific Adviser. Her background is in economics.</p> <p>Between June 2010-11 she held 16 meetings with the Secretary of State and other Ministers.</p>	**	<ul style="list-style-type: none"> ✗ External appointment ✗ Relevant expertise ✓ Published record of meetings with Secretaries of State and relevant Ministers ✗ Scientific Advisory Committee ✗ Seat on the management board ✓ Control over the R&D budget
HM Treasury (HMT)	Dr James Richardson is employed by the civil service full-time. He has a PhD in labour economics from the London School of Economics and fulfils the post part-time alongside being Chief Microeconomist and Director of Public Spending.	*	<ul style="list-style-type: none"> ✗ External appointment ✓ Relevant expertise ✗ Published record of meetings with Secretaries of State and

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			<p>relevant Ministers ∞</p> <p>? Scientific Advisory Committee ∞</p> <p>? Seat on the management board ∞</p> <p>? Control over the R&D budget ∞</p> <p>∞ Dr Richardson was appointed in June 2010. HMT is “currently looking at how the CSA function will be best delivered”.</p>
Ministry of Justice (MOJ)	<p>Rebecca Endean is employed by the civil service full-time and is also Director of Analytical Services. She has a BSc (Hons) in Economics and Economic History from London School of Economics, and a MA in Economics from Warwick University.</p>	*	<p>✗ External appointment</p> <p>✗ Relevant expertise</p> <p>✗ Published record of meetings with Secretaries of State and relevant Ministers</p> <p>✗ Scientific Advisory Committee</p> <p>✗ Seat on the management board</p> <p>✓ Control over the R&D budget</p>
Ministry of Defence (MOD)	<p>✗ Position vacant. Professor Sir Mark Welland was the previous CSA and also served as Head of the Cambridge University Nanoscience Centre. His tenure expired in Aug 2011 and the Ministry of Defence now plans to “reduce the grading of its CSA”. The MOD has downgraded its CSA position in the department from 4* to 3*.</p>	-	<p>? External appointment α</p> <p>? Relevant expertise α</p> <p>✗ Published record of meetings with Secretaries of State and relevant Ministers</p> <p>? Scientific Advisory Committee α</p> <p>? Seat on the management board α</p> <p>? Control over the R&D budget α</p> <p>α Position currently vacant. Department planning to “reduce the grading of its CSA”.</p>
Department for Business, Innovation and Skills (BIS)	<p>✗ Position vacant. Currently advertising – deadline 23rd Sept. Previous departmental CSA, Brian Collins, was Professor of Information Systems at Cranfield University and shared the position with the Department for Transport.</p>	-	<p>✓ External appointment +</p> <p>✓ Relevant expertise +</p> <p>✗ Published record of meetings with Secretaries of State and relevant Ministers</p> <p>✗ Scientific Advisory Committee</p>

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			<ul style="list-style-type: none"> ✗ Seat on the management board ✗ Control over the R&D budget <p>+ Position advertised as part-time to allow “one foot to be retained in the field of academia and or other commitments”. Applicant to be a “pre-eminent scientist or engineer”.</p>
Department for Transport (DfT)	<ul style="list-style-type: none"> ✗ Position vacant. Currently advertising – deadline 23rd Sept. Previous departmental CSA, Brian Collins, was Professor of Information Systems at Cranfield University and shared the position with the Department for Business, Innovation and Skills. 	-	<ul style="list-style-type: none"> ✓ External appointment μ ✓ Relevant expertise μ ✓ Published record of meetings with Secretaries of State and relevant Ministers ✗ Scientific Advisory Committee ✗ Seat on the management board ✗ Control over the R&D budget <p>μ Position advertised as part-time to allow “one foot to be retained in the field of academia and or other commitments”. Ideal candidate to be a “pre-eminent scientist or engineer in a relevant field”.</p>
Department of Culture, Media and Sport (DCMS)	<ul style="list-style-type: none"> ✗ Position vacant. The department is "considering options to fill this role". 	-	<ul style="list-style-type: none"> ? External appointment ~ ? Relevant expertise ~ ✗ Published record of meetings with Secretaries of State and relevant Ministers ? Scientific Advisory Committee ~ ? Seat on the management board ~ ? Control over the R&D budget ~ <p>~ Vacant position. The department is "considering options to fill this role".</p>

Professor Brian Collins and Professor Paul Wiles—Oral evidence (QQ1-20)

Evidence Session No. 1.

Heard in Public.

Questions 1 - 20

TUESDAY 18 OCTOBER 2011

Members present

Lord Krebs (Chairman)
Lord Broers
Lord Crickhowell
Lord Cunningham of Felling
Baroness Hilton of Eggardon
Baroness Neuberger
Earl of Selborne
Lord Wade of Chorlton
Lord Warner
Lord Willis of Knaresborough

Examination of Witnesses

Witnesses: **Professor Brian Collins**, former CSA at the Department for Transport and the Department for Business, Innovation and Skills, now Professor of Engineering Policy at University College London, and **Professor Paul Wiles**, former CSA at the Home Office and Government Chief Social Scientist, now Visiting Professor in Criminology at Oxford University.

Q1 The Chairman: I would like to welcome our two witnesses, Professor Brian Collins and Professor Paul Wiles, both former Chief Scientific Advisers. In a moment, I shall invite you to introduce yourselves for the record and if you wish to make any opening statements, please feel free to do so. I would like also to welcome the members of the public with us, who should find a note about the purpose of the inquiry. So may I, without further ado, invite you to introduce yourselves for the record?

Professor Paul Wiles: Thank you very much, Lord Krebs. My name is Paul Wiles. I was going to say I was Chief Scientific Adviser, but initially I was not appointed as Chief Scientific Adviser. I subsequently received that title, but I was at the Home Office, whatever my title was, from 1999 until just before the last election. Prior to that, I was Professor of Criminology at the University of Sheffield, which for reasons that we might go into later on, I

resigned when I went to the Home Office. I am now retired but I have a Visiting Chair at Oxford.

Professor Brian Collins: Good morning. I am Brian Collins. I was appointed Chief Scientific Adviser for the Department of Transport in 2006 and to the Department of what was then Business, Enterprise and Regulatory Reform in 2008. Following the machinery of government change, I inherited, for a period, part of the role of Chief Scientific Adviser in the newly formed Department for Energy and Climate Change. When the Chief Scientific Adviser at the Department for Energy and Climate Change was appointed, David MacKay, I relinquished that role and the new Department for Business, Innovation and Skills—BIS—was created, so my route through being Chief Scientific Adviser has been somewhat affected by the machinery of government changes. During that period, I also held a Chair of Information Systems at Cranfield University, which I have now relinquished, and I am now Professor of Engineering Policy at University College London.

Q2 The Chairman: Thank you both very much, and do I see you do not wish to make any further opening statements? In that case, I will lead off with the first question, which is really very general, just to ask both of you in turn how you, in your experience, saw and see the role of a departmental scientific adviser and Chief Scientific Adviser, and how that role has changed during the last two years. So perhaps, Professor Collins, you could kick off.

Professor Brian Collins: Thank you. The first thing to say is that, from where I have sat and as my introductory remarks would indicate, I have seen a variable set of departments, but every department is different. It is more or less self-evident that that is true, and that means that the role of the Chief Scientific Adviser within each department is going to be different. Some are more dominated by science per se of all the scientific disciplines, while some are less so, and some more by social science and some more by hard sciences. That observation, I think, means that there is not a one-size-fits-all model for Chief Scientific Advisers in departments because the departments are quite different.

The second point I would like to make is that only in the last five years, indeed during my period as one, have a lot of departments had a Chief Scientific Adviser, so it is only when you reach the level of having maybe 10 that you can start to see the differences and similarities as a result of evidence of how we behave and how we interact with ministers and senior officials and the outside world. It has evolved during that period because of the numbers of people under the stewardship of Sir David King and then Sir John Beddington. It is worthy of note at that point that neither of them has been a departmental Chief Scientific Adviser, so their role as steward of departmental scientific advisers has not been on the basis of their own experience, which is, I think, an observation that is perhaps worth reflecting on.

The fourth point and penultimate one is that the role in the department has been very much, in my experience, to do with the central department. Quite a lot of departments have executive agencies, and certainly one of the two that I was responsible for, transport, had some very significant executive agencies, in particular the Highways Agency. Although you would not call Network Rail an agency, in some ways it is funded that way. My role did not have oversight, although it had some limited influence of the activities that had to do with science and, in particular, engineering in those two agencies. I think that is an issue that may be worthy of consideration across the broader ecosystem, if I can use the word, of a department and what the role of the CSA is with regard to it.

The last point I would like to make is that being a member of the network of Chief Scientific Advisers now exists almost as a standalone activity from being a CSA in the department. It is

now a very important voice about science, engineering, technology and mathematics advice to Government and to the broader ecosystem, and that has evolved over the last five years, so not only has the individual role moved, but the collective role has moved.

Professor Paul Wiles: Perhaps I could pick up some of those things if I may, Lord Chairman. When I went to the Home Office—I think I am right—there was a Government Chief Scientific Adviser, a Chief Scientific Adviser in the MoD, and I am not sure whether Defra at that point had quite appointed a Chief Scientific Adviser. No, I think you are probably right, not.

I was appointed to the Home Office to be what in those days was called Director of Research Development and Statistics, and I had responsibility initially for social research statistics, economic analysis and operational research, but not for the physical science and technology, although the Home Office did have two laboratories. I subsequently did take on responsibility for that, but that came later on. When I was first appointed, there was not a network of CSAs in the way that Brian has just described it, and most departments did not have CSAs. The Home Office, on the other hand, had a long tradition of having a Director of Research or somebody in charge of research regardless of what their title was, and, of course, the Home Office really from the post-war period onwards had had quite a commitment to research in the crime area—I stress “in the crime area” because that was predominantly where the research was, and the physical science and engineering that went on in the Home Office was also focused on crime and policing.

The reason I am drawing your attention to that is that one of the things I was surprised by when I arrived at the Home Office was to discover that although there were statistics on migration, there was no research function about migration. So, one of the first things I did when I arrived at the Home Office was to create a research function for migration—we might come back to that later on. The Home Office had a long tradition of research but almost entirely focused on policing and crime and to some extent prisons as well and probation, but migration in particular had been largely ignored in that process.

As you realise, I spent quite a long time at the Home Office for various reasons. One consequence of that was that the development that Brian was describing sort of took part around me, so I gradually found myself in a position where I was supported by a group of CSAs across government, and that was extraordinarily helpful, particularly in relation to some of the most serious problems the Home Office had during that period, especially counterterrorism. It was absolutely crucial to have that CSAs network in response to that particular issue.

The other thing of which I think you are aware is that, later on at my time at the Home Office, I also became Head of Profession for Social Research across the government of the UK, so I also had a sort of secondary, rather broader role of being concerned about social research and how the different—I was going to say “sciences”, but this is precisely one of the problematic issues, the use of language here. On the one hand, we talk about science and the CSAs very comfortably talk about science. Most of the senior Civil Service, in my experience, talk about analytic services and they do not regard science as part of that. They regard analytic services as being the social sciences and economics and perhaps statistics, but not science. One of the issues that I certainly tried to deal with in the Home Office was to bring together those different kinds of, in my view, sciences so that we had some kind of integrated response to the problems we were trying to deal with, and that separation, I think, is still largely true in many departments, but some of your later witnesses might be able to talk about that.

Q3 The Chairman: Can I just follow up with just one brief point before I hand over to you all? After you retired, the Government did not replace you with a Chief Social Scientist. Do you think that is a gap in the scientific advisory structure?

Professor Paul Wiles: You have to be careful here about the use of words. Strictly speaking, I was Head of Profession for Social Research. I took to myself the title of Chief Social Scientist because I wished to make a point across government about something that was lacking. When I left, there was an appointment of two joint Heads of Profession for Social Research, so in that sense, I was replaced, yes.

Q4 The Chairman: Do you think that, from what we have seen, that replacement is working satisfactorily?

Professor Paul Wiles: I think it is working from the Head of Profession side; they are two extremely competent and able people. I think there is a broader question that you are hinting at: should the Government have a Chief Social Science Adviser or, indeed, should the Government Chief Scientific Adviser not be a social scientist? After all, the majority of science used across government is social science, so there is an interesting question about whether the Government Chief Scientific Adviser should be a physical or a social scientist or whether there should be both.

Q5 Lord Cunningham of Felling: You both have considerable experience in Whitehall, and while I accept there cannot be a rigid blueprint just placed on every department of state in these matters, in practice, it does seem, to put it bluntly, erratic in Whitehall and I just wonder if you recognise a best practice model that you think should be generally perceived.

Professor Paul Wiles: Although as you have described it as somewhat erratic, the role of CSAs across government at the moment is essentially along a continuum. At one extreme, you have the model of a CSA which is a completely independent adviser to ministers and perhaps to senior officials without any line management responsibility for the production of science or analysis or research within the department. I think Professor Watson, whom you are seeing later this morning, probably approximates fairly closely to that model of a CSA.

At the other extreme, you have the CSA who has line management responsibility for the whole of the science and research in a department as well as trying to give independent advice to ministers, and my role in the Home Office approximated most closely to that end of the continuum, and you have various things in between. Both of those models have potential pitfalls. If you are the purely independent adviser without any line management responsibility, if you are not very careful, you can fairly easily be marginalised. Within the Civil Service, as I am sure I do not have to tell you, budgets and commands carry a certain status and entitle you to be part of certain decision-making processes. If you do not have those things, you might be seen as an interesting commentator and no doubt regarded with great affection but not necessarily have a great deal of influence, if you are not careful. Now, I am not suggesting that is true of Professor Watson, because it is possible to overcome that, but that is the risk.

At the other extreme, in the sort of role that I played, the danger is that you become so much of a team player that you cease to have the kind of independence to provide the kind of challenge that you should be providing, and that was a danger. I was aware of that and did various things to try to make sure the Home Office was getting independent challenge, and that is why, when I left, before I left, we redesigned my former job before we appointed my successor to try to ensure that that independence was there. What I am saying to you is there is a continuum there. With both elements that you need.

In terms of what a CSA needs, I have a kind of mental list of what you need to really have influence. First of all, I think you need to be on the Board, the main Board of the department. Secondly, I think you need to hold a budget, because if you do not hold a budget, you cannot move resources around in response to different demands because it gets embedded in businesses that will not give it up. Thirdly, I think you need to be able to integrate the different kinds of science and analysis and not have them separated into analytic services and science. You need to bring those together, including statistics. What I found in the Home Office was that at some time I had all of those; at no time did I have them all together, which was deeply frustrating.

Q6 Lord Cunningham of Felling: You have not mentioned access to ministers in your list of things you think should be in place.

Professor Paul Wiles: I was assuming that that was a given. The reason I am assuming that is a given is—

Lord Cunningham of Felling: It might come as a surprise to simply pop in and see them.

Professor Paul Wiles: I am sure it will come as a surprise. I think, to be blunt, the CSA has to assert that and make sure it happens. It does not always happen and sometimes you are denied when you think you ought to have access, and I think we have probably both had experience of that, but I think part of the job of a CSA is to make sure they kick the door down, frankly.

Professor Brian Collins: One of the ministers I worked with, Lord Drayson, when he was Minister of Science and Technology, shares your view about the aspect being erratic. I think he used a slightly stronger term at the time. But he did feel, therefore, very strongly about it and, as a result, we created together an assurance process that I oversaw but did not necessarily execute for the challenge to evidence that was being used in policy creation inside BIS, and that was then taken on by Sir John Beddington's team to see how well it fitted with other department activities. That is an ongoing process as I understand it. What is called a STEM assurance process—you will find it described in other documentation—is now a developing way of doing exactly what you suggested was erratic to make it less erratic.

If I could comment perhaps on the last point with regard to access to ministers, that was my major problem in both departments. As I have indicated, the number of machinery of government changes and the number of changes of leadership in the Department for Transport—this is rather topical—were just such that no one was prepared to settle down and discuss the issues of the day for very long. Two of the five Secretaries of State for Transport I worked with in four years were prepared to do that, and that was very easy, but others were not and that made the whole process for me erratic and problematic. One tried to work around it by using then machinery of government in different ways, but it is not really the way I felt business should be run at the top of the department of state.

Q7 Lord Cunningham of Felling: Is it fair to say then that you both believe that a fundamental reappraisal of these operations is necessary?

Professor Brian Collins: I would not go as far as to say “fundamental”. I think there are some aspects where the operationalisation, if I can use a terrible phrase, of the principles could be enhanced considerably, and one factor that I would like to bring to the Committee's attention is to what extent ministers and Secretaries of State, when they take up their post, are inducted, are told about what the role of the CSA is, what the value proposition of the CSA is, to make very sure that they spend a serious amount of time with them as much as with other advisers who are surrounding them, otherwise what is the value

of the proposition? I believe that should be part of the machinery of government for a new Secretary of State's appointment, or a new Minister, or indeed a new Permanent Secretary. For me, that formality was missing, and given the number of times I went through the process, that was significantly frustrating at times.

Q8 Lord Crickhowell: On the subject of marginalisation, I am reading your submission, Professor Wiles. You clearly had a somewhat bumpy ride. You say it is very important to get your evidence considered early and it is important to be on the Board, but then you ceased to be on the Board and presumably the evidence was not coming early enough. You say that some ministers were keen to have your advice. I am interested to know whether there are some—we heard about Lord Drayson—ministers who simply refuse to take advice. My final related question is: did you give strong, clear advice—under the rules you were entitled to do it publicly, not bound by the ministerial code—and was that easily and likely accepted or did you find yourself having a rough time with the Permanent Secretary for having expressed disagreement with other officials or other ministers?

Professor Paul Wiles: That is not a short question; that is rather a long one. Let me try to take some of the points you asked. First of all, what you lack if you are not on the Board is potentially an early sight of new policies being developed and new ideas being developed, although not necessarily, because that does not necessarily happen on the Board, so being on the Board does not guarantee that even if you are. More important, if you are on the Board, I think, is that you have regular and sustained contact with the senior management team of the department and, therefore, you, even if informally, know a great deal more about things that may be happening. The danger if you are not is that something happens, and we might go on to an example later on, where you simply were not aware it was occurring until it was really rather late in the day.

I never felt that in terms of the development in policies of the Home Office—except for one or two exceptions—I did not have the opportunity to make sure that whatever advice I felt ministers needed to have on the science or evidence base was not put to them, not necessarily by me. It could have been by the Science and Research Group in the Home Office; as long as I was certain it was going up and it was the correct advice, it did not matter whether it came from me personally or not. That was beside the point.

On your last point, you are touching on something much more difficult. In my experience, there is no acceptance among ministers or Permanent Secretaries that such advice should be given publicly. I think that is seen as extremely disruptive in Whitehall, and I have to say I have some understanding of that, because if you are going to develop policy in government, there has to be a process by which ministers and advisers can talk out of the public gaze before they come to some kind of conclusion. I am not sure how helpful the idea that a CSA in the middle of that programme was going to toss in a public set of advice would be, quite frankly.

Q9 Lord Crickhowell: If the Committee, for example, was cross-examining you and was clearly dissatisfied with the advice it received from the department and asked you a straight question, “Do you agree with that advice or disagree with it?” what would your reaction be?

Professor Paul Wiles: Then I would give you an honest answer, as I must do before such a Committee, of course, but that is not quite the same thing as saying, “I know, Minister and senior officials, you are considering this option and I am going to give you some advice that you will not particularly like or you might not necessarily welcome, and what is more, I am going to put it on the front page of the press.” That is a rather different situation and I think,

frankly, that is not very realistic. Also, I think there is a matter of political judgment here, to be honest. There are issues when a CSA or the Government's Chief Scientific Adviser might think it proper to go public because an issue is of such importance. Sir David King did that with climate change. I think he was quite right to do so; it was a major issue and I think he was correct to do that, but there were endless issues in the Home Office that frankly were not at the level of importance, and I am not sure what point would have been served.

Q10 Lord Warner: I certainly do not want to go down the track of the Home Office history, having played some part in that. Could we turn to the subject of evidence-based policy, and could you say a little bit about how you were able to provide independent challenge and ensure that policies were evidence-based, and then go on to say a little bit about at what stage in the policy process you were consulted? Can you provide some examples that best demonstrate the positive impact you had and some where you were a little less successful, shall we say?

Professor Brian Collins: I will go first this time. The first comment to say is that, in my period as a CSA, I never had a feeling that my independence was under scrutiny. There was no concern that I was being influenced at all, which I think is a very important starting point for that conversation. The resources that I had in DfT to enable me to gather further evidence that was independent of what was happening in the department as a whole were somewhat limited, but I did have some. In BIS, I had next to nothing, which limited very much what I could do with real cash to do real funded research from my own unit. That meant I had to, as it were, put myself out and about with the research community in general to garner evidence that had been created as a result of research council funding and other funding in universities and elsewhere. That, of course, provided me with another group of external, uninfluenced experts to provide me with evidence in support of policies.

To answer your question as to when I was involved, in general, it was not early enough. There were instances where it was, and there were definitely instances where it was almost too late, and one or two where it was probably too late to have a significant influence on the outcome of policy decisions.

Q11 Lord Warner: Professor Collins, could you just be clear where those instances were the result of Civil Service officials not telling you or whether there was an edict coming down, "Keep this guy out of the loop"?

Professor Brian Collins: I have no evidence to suggest one or the other, but my perception is it was the former. It was not a politically driven agenda. It was to do with the lack of instantiation of a formal process in policy creation that the CSA shall be involved and it shall be discussed. Now, it may be, for the reasons that Paul alluded to, that they were afraid I was going to say something that could rock the boat rather considerably. I felt my role was to be not only a challenge function but also a critical friend; that it would not be helpful to be overcritical without coming up with solutions to the inadequacy of the evidence base for the policies that were being created.

Of the two examples, to move on to the latter part of your question, of where I think what I did might have made a difference, I have reported one already to this Committee; it was on the Thameslink programme, which is ongoing. I, in fact, learnt last night that one of the London Underground lines has asked for the same type of advice, and I am seeing the Chairman of Crossrail this afternoon to persuade him to do further work in the whole area of how people get on and off trains. Biofuels was another really good example where the then Secretary of State, Ruth Kelly, involved me very early; it was a very complex issue—an ethical issue, a scientific issue, as well as an economic issue. That was complex and I was

involved very early. The outcome was not a clean, nice, pretty argument but it was pragmatic in a scientific and political sense in that it basically moved us into a position of needing a lot more evidence than we had in order to sustain a somewhat modified policy that we then created as a result. Volcanic ash was an example where, in the face of a significant emergency, with Sir John Beddington, we marshalled a considerable amount of research to get ourselves into a good position with regards to the evidence that was needed as to what density of ash it was safe to fly in.

On a slightly longer timescale, we did a lot of work early to help understand how to reduce the greenhouse emissions from energy-intensive industries, which is very important for our manufacturing base. A project that did not go ahead as a result of some of the work that I corralled was the Severn barrage, in the period when I was looking after the energy portfolio. I worked very hard to connect the automotive industry to the research base that existed in universities. They did not know about it, but there was a period about two years ago when the automotive industry was not looking in a very healthy state and they realised innovation and research was going to be one way of them getting into a better shape, and I helped with that.

One of the negative ones was that I found it very difficult to get my hands on the rail research programmes. They were out in agencies and out in all sorts of complicated structures within the rail community. It was very difficult to get that packaged up. We eventually got there but it was really hard. I do not say that I was obstructed by what was going on inside the department but I was not particularly helped either.

There was an issue to do with Heathrow, when Heathrow's third runway was an idea that was on the table, to do with the air quality statistics that surrounded that proposal. It was very difficult to get hold of objective evidence in time to influence the various political decisions. There is still a running issue to do with cybersecurity in industry as opposed to in government. I did not have my hands on the broadband issues at all. That was seen as something that was managed by civil servants and industry. It did not need any extra scientific or technical advice.

Probably the one that I found the most problematic was offshore wind, again in the period when I was looking after energy. The engineering evidence that was needed in order to show what was feasible from an engineering point of view was not on the table when the decisions were taken as to what targets we would be legally bound by. That was a really difficult period where I was just not invited to the table. I knocked on the doors, as Paul has said, and was finessed in all sorts of quite complicated ways, and with very limited resource around me there was not much more I could do. I look back on that and think, "No, that was something I would not say I had failed at, but I certainly did not succeed at it." That is a sort of litany, I am afraid.

Lord Warner: That is very helpful indeed.

The Chairman: I will ask Professor Wiles to offer his views, but Lord Broers has a brief question.

Q12 Lord Broers: I just want to follow up on the question on wind. That has been something that has troubled the engineering community a great deal because we worried about how the Government could come up with energy strategies that were apparently innumerate. Who did make that decision?

Professor Brian Collins: The then Secretary of State at the Department for Energy and Climate Change.

Lord Broers: What, on their own?

Professor Brian Collins: With advisers from the industry.

Lord Broers: Which industry?

Professor Brian Collins: The energy industry.

Lord Broers: The wind industry?

Professor Brian Collins: Yes.

Lord Broers: Without a sort of professional critique of that?

Professor Brian Collins: The professional critique was there but not listened to. The research I funded worked to show what the evidence said about the feasibility of achieving the number of gigawatts that were needed from those funds by 2020 in particular and showed how improbable it was likely to be that that could be the case without a very serious investment in skilled people, in imported capability and in plant.

Lord Broers: I was once told by a civil servant after a briefing from the Minister of Energy, I forget which one fortunately, that they were not sure whether the Minister did know the difference between a megawatt and a gigawatt. Do you think that is credible?

Professor Brian Collins: Yes.

Q13 The Chairman: At this point, I will ask Professor Wiles if he has any experiences to share with us along the same lines as those from Professor Collins.

Professor Paul Wiles: I think the question was about evidence-based policy and, of course, the interesting thing about that is, are we talking about policy that grows out of evidence or policy that is made and then challenged by evidence? Those are two rather different things, so I could give you examples that cover that kind of spread. A positive example of where policy in the Home Office did emerge out of evidence was a whole body of work that was done in the fairly early period when I was in the Home Office—research on crime prevention and a lot of analytic work on the nature of the active offender community in this country and, therefore, what sort of policies should be followed to prevent crime happening, to protect victims and to reduce the extent to which active offenders were being active offenders. Over quite a long period, under various Secretaries of State, Home Office policy did broadly follow that evidence base—not always, not every time, but broadly. We had policies to deal with persistent offenders. We had policies and police actions to try to protect victims and reduce crime and so on. That was an example of the development of quite a significant evidence base, building on what was already there, and then used in all sorts of ways by the department over quite a long period in its policy development and thinking. That is quite a positive example of that.

On a slightly different example—I am giving the positive ones first, and this was process rather than evidence, but a process to get to evidence—and I have already mentioned it, it was obvious after 9/11 that this country faced a new and rather different kind of terrorist threat. It was equally obvious that the kinds of things that needed to be done were quite significant and could not be done by the Home Office alone. Although the Home Office had prime policy responsibility for counterterrorism, it was quite clear that many of the things had to involve other departments of state. The Department of Health, for example, the MoD, the Department of Transport and so on had to be involved in that process. In other words, we needed a cross-government research programme, an R&D programme, to deal with those new counterterrorism threats, but, as you know, one of the most difficult things to achieve in Whitehall is a cross-Whitehall budget. They hardly ever exist. The Treasury is

somewhat resistant to the idea. What we did—and I think you were part of this, Lord Krebs—is together with the other CSAs and Sir David King, who was then the Government Chief Scientific Adviser, we wrote a joint letter to the Treasury saying that this really was essential and we needed a budget for a cross-Whitehall counterterrorism R&D programme, and we received that. It was modest; it was not anywhere like as much as we had asked for, but, nevertheless, it was a budget, and although it was given to the Home Office, it was not just for spending in the Home Office and it was not just spent in the Home Office. It was spent right across Whitehall specifically on research we felt was necessary for counterterrorism purposes but would not otherwise have been funded from departments out of their normal R&D budgets, and that was a very important step forward. It is a bit early to say how successful that was but certainly it meant that in many ways we were able to move much more quickly. That became the basis for the Treaty of Co-operation that was negotiated with the Department of Homeland Security and some other key allies and it became one of the bases for the creation of the Office for Security and Counter-Terrorism, so it was quite an important step. It was a process step rather than an evidential step, but it was the first step towards providing the kind of evidential need that was there for counterterrorism.

As for the less successful, the most obvious example of a situation where I was not in the loop—not only was I not in the loop early enough, but I was not in the loop at all—was ID cards. The first I heard about ID cards was on the *Today* programme. The result of that was I requested and obtained, to be fair, a meeting with the then Secretary of State. We had what I think diplomats would refer to as a “robust” conversation. My particular concern was not the fact of ID cards—whether there should be ID cards is a political decision—but what the Secretary of State had said they would deliver, given the error margins around biometrics and the technology then available to deliver those biometrics. As a result of that conversation, to be fair to the then Home Secretary, who was David Blunkett—one good thing about David Blunkett as the Home Secretary is that you could have a row one day and it was all fine the next day—he did listen and he took on Board some of the points I was making. The purpose of ID cards did begin to subtly shift but then, of course, I did what I had to do in those circumstances, which was to go away and work out how we were going to deliver the ID cards programme in terms of pushing the technology to try to reduce those error margins, but also to design a system that was going to use multiple biometrics in order also to try to reduce the error margins. That was an example where I was not in the loop. I, therefore, did not get an opportunity to make those points to the Secretary of State before he announced the decision publicly. That was unfortunate, but there we are; these things happen.

The other thing that I regarded personally as a failure in my time in the Home Office was that, as I have said, I created soon after I arrived there a research programme for migration. Some quite good work was done in that area, but I failed repeatedly to persuade people that there needed to be a much larger programme of research on the consequences and impact of migration on this country. I still think that was a failure on my part. I also think it was an unfortunate failure because it left the Government of the day, indeed the country, without the kind of evidence that, frankly, we ought to have about the consequences of migration. The reasons for that were quite complicated. What was then the Immigration and Nationality Directorate, what subsequently became the UK Border Agency, had operational responsibility for processing both visa and asylum claims and it also had responsibility for border security, and it had policy responsibility for those areas even when it became an agency. What was less clear was who had the policy responsibility for the broader consequences of migration, and that was because again it was a cross-Whitehall issue. It was

the Department of Health, the Department for Education and the Department for Transport that were responsible for some of the policy consequences of migration and where migration went, and rather like counterterrorism but this time not successfully. It was extraordinarily difficult to brigade the kind of interest and resources that, in my view, were needed to do that. We did it in some limited way. The then National Statistician and I did manage to do things to improve the statistical data on migration but I felt, all the time, we were in a situation where we had estimates of net migration, but they were estimates. The biggest single driver of population change during my time in the Home Office was migration, so it was a major factor of population change. Even though we had estimates of net migration, we did not have accurate data about where those migrants went to, the distribution of migration across the country, or very much understanding of the processes by which migrants did or did not integrate into society. That became a much bigger issue later on with counterterrorism. We did not understand that.

Q14 Lord Broers: This question has, to a large extent, been addressed, but there are branches of it that you might want to comment on. Where within the departmental organisation structure should CSAs be positioned in order to fulfil their roles successfully? Different departments have different arrangements for their CSAs. Some are internal appointments and some external, for example. Is this justified, or is there a best model that should be adopted by all departments? Professor Wiles, you have commented on this already but you might like to fill in.

Professor Paul Wiles: All right. I was appointed via an external process, although it predated the emergence of CSAs in their modern form, and there were external assessors on that appointment Board. When I left the Home Office, my successor was appointed, I think absolutely correctly, by an external recruitment process with the Government Chief Scientific Adviser on the Board and the Permanent Secretary of the department, and I think that is the way in which CSAs should be appointed.

The key difference between my appointment and my successor's appointment was that I was initially appointed for two years to the Home Office with the possibility of an extension and I had to resign my university position in order to go and work in the Home Office because, at that time, the Home Office took the view that there was a potential conflict of interest. Since I would be responsible for research budgets for which universities might be competing, the Home Office felt there was a conflict of interest, and I can see why, and, therefore, in order to work at the Home Office, I had to resign my university position. We now seem to have come to the conclusion that that conflict of interest can be managed and CSAs are largely on secondment from their universities. I think that has great advantages because you will not necessarily find people who will take the risk that I took at the time of throwing up their career and going to work in the Home Office with only a two-year contract. It ended up being a lot longer than two years, but it was a risk, and at the present point the system is much better.

Where should the CSA be located? The question is not just where; it is at what rank. I am afraid the Civil Service in general is rather status-obsessed and, therefore, what position in the hierarchy a CSA plays does speak quite importantly to how the department sees the CSA and what the CSA is allowed to do, frankly. As I told you, I was appointed as a director. The Government Chief Scientific Adviser is a Permanent Secretary rank, a grade 1. The MoD CSA is a grade 1—or it was, I beg your pardon. That is news to me since I left government. So I think there are some quite serious issues here now. What I tried to do in the Home Office was to work the magic of saying, "Well, the CSA was not any grade in particular; it was a CSA," and get around the problem that way, but there is a problem,

there is no question. I personally would like to see it rather more officially acknowledged that the CSA does not have an obvious place in that hierarchy, precisely because they need to be able to get wherever in that hierarchy they need to go. At the moment, that is a problem.

I think there is also an important issue of whom the CSA reports to. I reported to the Permanent Secretary. There was a move, at one time, to prevent me reporting to the Permanent Secretary on the grounds that I was only a director and I ought to report to the Director General, not a Permanent Secretary. I refused to report to anybody else. I said I would resign.

Professor Brian Collins: I echo that. I just worked out that I had eight Permanent Secretaries between the two and a half departments I worked for in four and a half years, so stability of oversight was negligible. Some of them did not know I reported to them, but rather like Paul I refused to consider any other reporting line. It did not make any sense to me not to have that access, in extremis of course, but change, as I have indicated, is one of the things that confounds the development of personal relationships and trust, and for me the trust issue is the most important and that is built on a personal relationship with Director Generals and with the Permanent Secretary, and continuous change, in my experience, made it really difficult. I spent a lot of time just building the process of being able to do the job, not doing the job, which was an overhead I could have done without.

The external appointment process, as Paul has suggested, which was my experience with both roles—also as Civil Service Commissioner chairing both Boards with the Government Chief Scientific Adviser, in one case not with the Permanent Secretary but the second one with—is absolutely crucial. That externality gives the caché of being able to be a critical friend and not overfriendly, not part of the machinery.

The access to the influential committees is crucial, and if it is the Board, then it is the Board. In my experience, that does not necessarily always have to be the case if you can manage the influence some other way, but it comes down to personal relationships and how well you can get under the skin of policy directors' agendas early enough to make a difference. Sometimes that is at a Board; sometimes it is being able to drop into an office and have a real conversation, as it were, off the record to some extent to say, "As you start moving this policy forwards, then you need to take account of this set of evidential areas of activity, and if you do not do that, then I am going to start talking to you in a slightly different tone of voice further down the road," so being very friendly to begin with but with the possibility you may be more critical later.

Q15 Lord Broers: Who reports to you? I note, Professor Wiles, that our information says that you manage the 350 scientists—

Professor Paul Wiles: Five hundred at one time, yes.

Lord Broers: Does that mean you set their work programme for them?

Professor Paul Wiles: In broad, general terms, yes. I was not managing 500 people directly individually, obviously, but yes. I did have line management responsibility for both the science and technology in the Home Office, the economics, the statistics, the social research and the operational research. Obviously, I had quite a small number of people reporting directly to me, mainly the director of what was then called the Home Office Scientific Development Branch, which has since been renamed, the Chief Statistician, the Chief Economist for the Home Office and so on, so a relatively small number were reporting direct to me, but yes, I had my management.

Lord Broers: So you had a large resource available to generate your advice.

Professor Paul Wiles: Yes.

Lord Broers: Was that the same with you, Professor Collins?

Professor Brian Collins: No, not at all. I had 12 people in DfT and one in BIS.

Lord Broers: It is a remarkable difference, is it not?

Professor Brian Collins: Absolutely, and that is why we are saying one size does not fit all and indeed, departments are at a different level of maturity with regard to their development of how a CSA should function. I know that Sir John Beddington has been reviewing various departments and is trying to get every department to a more equal state of maturity. Indeed, the report that is in the public domain, the review of BIS, says exactly what should be done. I know that is a work in progress for BIS.

If I may just say one other thing, most of the engineers and scientists who work in and around transport were in agencies, in Network Rail or in Highways Agency or the Civil Aviation Authority, not in the central department, although there were some. So the influencing capacity was much more important than the direct line of control, and that varies department to department. I keep saying that one size does not fit all, but nevertheless the outcomes should be similar, so there are some principles that could be adopted without necessarily instantiating the same rules.

The Chairman: Lord Willis, Baroness Neuberger and Lord Warner would all like to ask questions. I hope we can keep the questions and answers fairly brief because we are running towards the end of our time.

Q16 Lord Willis of Knaresborough: We will try our best. Can I say I love that phrase, “different level of maturity”? I did not know whether that was their age or what happens within the department. I feel, and I would just like you to comment on this, that the departmental Chief Scientific Advisers during the period of the last Government received an area of influence that previously had never happened, and I think that under successive Chief Scientific Advisers we were developing a cadre right across government where scientific advice—other than social science, and I think that is a real problem and I accept what Professor Wiles said—is a major issue. But I get the impression now that we are slipping down the maturity scale and that—and I think BIS is a classic example, but so is the Treasury—we are seeing it as an add-on function rather than a prime function. Wherever you have current civil servants simply adding that function on, it becomes a tick box rather than a prime function. The Committee has listened to both of you describe the range of activities you were involved with. How that can be added on to a full-time grade 3 civil servant’s role beggars belief. Would you two like to comment on that, but very briefly? Am I right?

Professor Brian Collins: I agree with you entirely. You need the appropriate level of skilled resource around the CSA. In my experience, that is not a lot of people. It is 10, 15 really sharp people and quite often the new entrants, the new highflyers straight out of university, who do not necessarily know how Whitehall works but are very sharp in their discipline, and that is what, of course, you need at that point. It gives them a really good opportunity to get their teeth into some real science and they pick up the Whitehall stuff very quickly because they are bright. It was very fortunate at DfT that I had fast-streamers attached for six to nine months, and all of them have done extremely well as a result of being fairly near the top of DfT doing some fairly broad-ranging things. I do not think that it is a question of resource. It is a question of making sure that the focus of the activity is part of the

machinery of a department, that it is not an add-on and that it addresses the critical issues. Not every issue needs to be addressed in this sort of way, but the big policy issues, the top things that are on the Boards' agenda, on the Secretaries of State's agenda, those are the things that we were looking for and got our teeth into. It is much more difficult in BIS because of the diversity of activity and, I keep on saying this, machinery of government changes that surrounded me most of the time I was there, and with just one person, the level of influence I could have was very limited. I begged, borrowed and stole resources from everywhere I could and helped other people spend their money wisely if I had the opportunity, but yes, I agree.

Professor Paul Wiles: Can I just make two comments very quickly? I have no knowledge of what has happened since I left government. I would say you cannot appoint a grade 3 civil servant to be a CSA because the word "independence" matters here, and I resisted thinking of myself as a civil servant for the whole of the time I was in the Home Office for that reason. Secondly, I think the network of CSAs across government is a very important aspect of what was developed.

Q17 Baroness Neuberger: Can I pursue that, precisely on that point and particularly about social science, where, if you like, insiders have been appointed and you said very satisfactorily as Head of Profession? Could you comment on what their status is, however, and what status they bring to social science in general? That, I think, you have talked about briefly before. Do you need an outsider to come into a department to really raise the level of social science in government?

Professor Paul Wiles: I think there are two different aspects. The Head of Profession role, which is looking after the professional interests of social researchers, ensuring their research is an adequate standard and looking after all their training development, and all the rest of it, I think that can be done by somebody who has come up through Government's social research; I have no problem with that whatsoever. What I think has sometimes been missing on the social research side, and indeed the social science side in general, has been the kind of external independence and challenge that you have had on the science side. That has been, I think, the missing element, and I totally agree with you; I think that would be helpful. For departments that are largely reliant on social science research, which, after all, is the majority of departments, then I think there is a serious question about why they do not have the equivalent of CSAs for social science.

Q18 Lord Warner: Professor Wiles, you had the capability of the R&D budget and staffing and the statistics budget and staffing of a large department of state at your disposal. Your colleague sitting next to you had, if he was lucky, 12 people. Does that change the dynamics significantly, having that kind of capability of what you might call the oomph of a departmental CSA?

Professor Paul Wiles: Yes, it obviously does. The only thing I will point out to you is that I only had that resource for a brief period of my time in the Home Office before it was taken away again and given to the businesses of the Home Office. At the time you were in the Home Office, Lord Warner, the description you have given is correct, but that subsequently changed and the money was put into the businesses. So although I had the line management of the specialist staff, I did not have the budget for social research or statistics. That was in the embedded businesses, so it does not quite work like that, but, nevertheless, you are broadly correct in what you are saying—if you have the ability to not just give advice but commission research in order to give advice, then that obviously makes a difference, although, of course, you have to persuade your ministers that you should spend the money in that way, because ministers will very jealously guard the spending of their resources and

will want to make sure that you are not just spending it on things that they do not think are important. There is a dialogue between a Minister and a Head of Research about what the budget should be spent on, and if everything goes well and you are lucky, you have commissioned the research on the right things that then are needed in order to give advice.

Q19 Earl of Selborne: Clearly you both had very different roles and resources in your time as CSAs. Could you tell us, nevertheless, how your performance as a CSA was assessed within the department? Did you have objectives to achieve?

Professor Brian Collins: To be honest, I think the assessment of my performance was almost totally omitted. There was very little engagement in terms of oversight of what I was doing. Yes, there were some broad objectives, but those were not passed on to postholders when postholders changed, so everything was reinvented again and again and again. In transport, it was more consistent. One Permanent Secretary was there for quite a lot of the time I was there, and certainly we had quite a few discussions about objectives and how the role of the CSA could influence policy development in the department, but unfortunately the influence was more at the Director General level and the Director Generals changed quite regularly as well. The rate of change of governance caused achieving objectives and assessing whether or not I achieved objectives to be quite problematic for both of us. I do not feel it was a particularly satisfactory situation and I fell back on my own feeling of integrity and my own judgment about how well things had been going, and indeed on the evidence of impact that others then put forward.

Professor Paul Wiles: Let me divide that into two, if I may. Yes, I had objectives. Yes, I reported to the Permanent Secretary. Yes, he assessed my performance each year in the usual way it is done in the Civil Service, but that was very much focused on my role as a director responsible for line management of a large number of people and a budget. It was very much in that area.

What was not so well done in that context was an assessment of how well I was doing as a CSA, if I can put it that way, and because of that I felt the need to try to get that from somewhere else, in particular by creating a structure of scientific advisory committees in the Home Office. I know it is obvious to all of you, but science, in the end, depends on challenge, and I thought it was terribly important to make sure in the Home Office that that challenge was there and that I listened to it whether I found it comfortable or not. So I deliberately created both an overarching scientific advisory committee, deliberately chaired by the Permanent Secretary, not me, and then underneath that a series of advisory committees to deal with different scientific questions that I thought we needed advice on, but also to act as a challenge to me to make sure I was doing the right job.

Q20 Earl of Selborne: When the Government Office for Science produced their reviews of each appointment, sometime in 2010 I think, quite a long list of recommendations came out of those reviews. Did you see that as something that was part of your objectives to implement or to react to?

Professor Brian Collins: Yes, certainly, and certainly in the case of the Department for Transport we started along that process. The review in BIS appeared about two months before or was approved by the Permanent Secretary about two months before I left, so my understanding is that is still a work in progress.

The Chairman: We have reached the end of our time, and I would like to thank both of you very much indeed for an excellent session. Thank you for your evidence. If there are any points you would like to follow up on in writing with us, please do so. I have one particular point for Professor Collins. You said that although there is no particular set system for CSAs

and invariably the structure might vary across departments, there are some general principles that might apply. It would be helpful if you could just jot that down for us and put that in a note for us. I would like to thank you both very much. As you are know, a transcript will be sent to you for correction and, in due course, you will see the totality of our report, but thank you very much indeed.

Professor Brian Collins—Supplementary written evidence

Principles by which departmental CSAs should carry out their function

This short note is in response to a request from the Chairman of the House of Lords Science and Technology Committee, Lord John Krebs, at the verbal hearing I attended on the 18th October 2011.

The principles I outline below are derived from two sources, recent advertisements for CSAs at DfT and BIS and my own views based on my experiences as a CSA and my observation of other CSA activities. I have expressed them in terms of aspects of the role that I think are essential for the CSA to be successful and to be able to make a contribution to the Department and HMG

1. The CSA should as part of raising the Department's STEM capability, ensure that the systems for the governance, generation, management and use of independent STEM evidence throughout the Department and all its agencies are of sufficiently high quality to enable robust policy and investment decisions to be made.
2. The CSA should provide and coordinate independent STEM advice to ministers and senior officials in those priority areas that require STEM evidential input and take the initiative in leveraging expertise and resources from elsewhere to improve the evidence base for policy where it is lacking, ensuring at all times the independence and quality of external sources of evidence and advice.
3. The CSA should be active in influencing and helping ministers and officials reach balanced decisions on wider discussions on policy, investment and delivery, drawing on his/her STEM and other expertise as appropriate, either through regular attendance at departmental Board meetings and/or when appropriate project, programme or investment related Board meetings.
4. The CSA should stimulate using departmental resources and/or other resources the investigation into and research of those areas of policy related STEM evidence that

need confirmation or elaboration , and where appropriate to undertake speculative research to prepare evidential material for future departmental policy or investment initiatives.

5. The CSA should actively participate in and contribute to the cross-Government community of CSAs, and becoming actively involved with other bodies domestically and internationally as needed.
6. The CSA should engage with stakeholders in the appropriate external communities to inform and help deliver departmental and HMG objectives and policy and to be prepared to act as an ambassador for the Department on all STEM related issues.
7. The CSA should engage with the media, in consultation with the Department and its ministers, to explain how science and engineering evidence informs the Department's policy and investment activities.

Ex CSA DfT and BIS

6 November 2011

Department for Business, Innovation and Skills—Written evidence

RESPONSE FROM THE DEPARTMENT FOR BUSINESS, INNOVATION AND SKILLS TO THE COMMITTEE'S QUESTIONNAIRE TO ALL DEPARTMENTAL CHIEF SCIENTIFIC ADVISERS

The post of departmental Chief Scientific Adviser (CSA) for the Department for Business, Innovation and Skills (BIS) is currently vacant. A recruitment process is currently ongoing and is being jointly administered with the Department for Transport (DfT). BIS expects to announce the name of the successful candidate before the end of the year.

Employment Arrangements

Professor Brian Collins was BIS¹⁴, CSA from May 2008- 2011 (Part time (0.4 full-time equivalent, pay band 2). He was also the CSA at DfT and is currently Professor of Information Systems at Cranfield University. Professor Collins CB was elected a Fellow of the Royal Academy of Engineering in 2009. He is also a Fellow of the Institute of Civil Engineers, the Institute of Physics and an Emeritus Visiting Professor at City University London and holds an Honorary Doctorate from Kingston University.

A three year contract will be offered to the successful candidate of the current CSA recruitment process with the possibility of extension for a further year by mutual agreement. This post will be 0.4 full-time equivalent (pay band 2) and be supported by a full time SCS Deputy CSA and small core team.

The BIS/DfT recruitment panel comprises: Mark Addison, Chair and Civil Service Commissioner; Martin Donnelly, BIS Permanent Secretary; Professor Sir John Beddington, Richard Hatfield (DfT) and a senior representative from business/academia.

Relationships within the department

Professor Collins reported to the Director General, Economics, Strategy and Better Regulation. The new CSA will report to BIS's Permanent Secretary.

Professor Collins was a member of the Department's Executive Policy Board. The CSA will be invited to BIS's Board by the Permanent Secretary to present and advise on the development and delivery of priority policies that support BIS's growth agenda; advise on opportunities and strategies for longer-term SET research; identify, communicate and mitigate risks and advise on BIS's STEM Assurance Scheme.

Professor Collins offered a constructive challenge function to a wide variety of BIS policy makers in a responsive manner. His role was to ensure that BIS's policy development and delivery was consistent with the best available scientific evidence, including proportionate assessment and mitigation of risk.

¹⁴ Including BIS' predecessors: The Department for Business Enterprise and Regulatory Reform (28 June 2007 - 4 June 2009). The energy remit moved to the newly created Department for Energy and Climate Change on 3 October 2008.

BIS provides public funding for the Research Base which is independent of policy making. The results of the socio-economic research produced by ESRC funded research can feed into BIS policy making where applicable. BIS – as other Departments – has a concordat with the ESRC which it uses to discuss strategic direction and common interests. The CSA is part of the concordat meetings. In addition, specific scientific research to support policy making is commissioned by Groups across the department, with advice from the CSA and his/her staff where appropriate.

The CSA will work closely with members of the Senior Analysts Group to actively influence the integration of science, engineering and technology analysis into the evidence base of BIS's policies. He/she will provide a strategic oversight of BIS's research strategies and provide advice to ensure that the department delivers its objectives. This may influence research spend decisions by directorates or groups as policy questions arise in line with overall research priorities.

David Willetts had three bi-lateral meetings with Professor Collins. Professor Collins was also present at wider meetings with the Minister including those with Sir John Beddington and also external stakeholders. Meetings with ministers are arranged by their Private Offices according to their priorities.

Professor Collins's utilised his wide network of science and engineering contacts in the academic and business communities to contribute to the advice he provided. The new CSA will consider options for providing him/her with external advice such as the appointment of a Departmental Scientific committee. Other sources of advice for the CSA will include BIS's extensive network of partner organisations that includes the Atomic Energy Authority, the UK Space Agency, the National Measurement Office, the Met Office and Ordnance Survey.

The CSA met Sir John Beddington and the cross-Government CSAs colleagues on a regular basis. He also maintained frequent contacts with other colleagues in OGDs both formally and informally.

September 2011

Department for Business, Innovation and Skills, Department for Education, Department for Environment, Food and Rural Affairs, and Department of Health—Oral evidence (QQ210-233)

Department for Business, Innovation and Skills, Department for Education, Department for Environment, Food and Rural Affairs, and Department of Health—Oral evidence (QQ210-233)

[Transcript to be found under Department for Education](#)

Department for Business, Innovation and Skills—Supplementary written evidence

[Letter from Rt Hon David Willetts MP, Minister for Universities and Science]

CHIEF SCIENTIFIC ADVISER

During my appearance before your Select Committee, I stressed the Department's strong commitment to developing and delivering policy that is consistent with the best available scientific evidence and indicated we would shortly be making a senior appointment to the Chief Scientific Adviser post.

I am pleased to tell you that we have, following an external recruitment competition, appointed Professor John Perkins CBE FREng to the post. I wanted you and members of your Committee to receive an advanced copy of the Press Release that will issue later today.

Professor Perkins was formerly Vice-President and Dean of the Faculty of Engineering and Physical Sciences at the University of Manchester and Principal of the Faculty of Engineering at Imperial College London. Among his many other roles in the UK and overseas, he was Vice-President of the Royal Academy of Engineering from 2007-10 and was awarded CBE in 2006 for services to Science and Engineering. As Chief Executive at the MASDAR Institute of Science and Technology, Professor Perkins was responsible for leading and setting the strategic direction of this new institution. He completed his PhD at the Institute of Industrial Chemistry at Imperial College London after graduating there in Chemical Engineering.

When Professor Perkins starts at BIS early in the New Year, he will focus on the following priorities:

- Ensuring that there is proper science and engineering evidence as part of the policy making process
- Ensuring that we have the right systems in place to ensure that voice is heard
- Linking to the Chief Scientific Advisers' network across Whitehall
- Providing a leadership role for the science and engineering expertise within the department.

I'm looking forward to working with Professor Perkins in order to ensure that BIS has a strong scientific base for future projects.

15 December 2011

Department for Communities and Local Government—Written evidence

Questionnaire to all departmental Chief Scientific Advisers

The House of Lords Science and Technology Committee is currently undertaking an inquiry into the role and function of departmental Chief Scientific Advisers (CSA). In order to understand the CSA landscape, the Committee requests the following information from each departmental CSA.

- **Name of department:** Department for Communities and Local Government
- **Name of CSA:** Professor Jeremy Watson

Employment arrangements

- **Grade:** Grade 3 / SCSPB2
- **Tenure (and, if on a fixed-term contract which is due to end in the near future, arrangements for appointing a successor):** Professor Watson was appointed in November 2009, for a period of three years.
- **Whether full or part time (and, if part time, other work commitments):** His post is part time, 0.5 Full Time Equivalent and he is also Global Research Director at Arup.
- **Qualifications and background:** Professor Watson's areas of expertise include the strategic management of research and innovation, including technology evaluation and transfer between Higher Education Institutions and public and private sectors. He has worked across sectors to create and implement strategic research agendas, and has led research programme management teams for public, private and voluntary sector organisations. A chartered electrical engineer, he is technically qualified in applied physics, particularly building energy, control and automation, and has worked as an expert in industry in these areas (Eurotherm and the British Oxygen Company).

Before taking up the role of Chief Scientific Adviser in DCLG, he worked as Technology Director for BOC Edwards, and is currently Global Research Director with Ove Arup and Partners (part-time). He has additionally served on the Governing Board of the Technology Strategy Board, as a founding trustee of the Institute for Sustainability, and is currently a Council member of EPSRC.

Professor Watson is a Fellow of the Royal Academy of Engineering, a Fellow of the Institution of Civil Engineers and of the Institution of Engineering and Technology. Academic engagement is actively maintained through Visiting Professorships at the Universities of Southampton and Sussex in schools of Civil and Environmental and Engineering and Design, respectively. He is a member of advisory boards at the Universities of Cambridge, Imperial College, Reading, and University College London.

Relationships within the department

The Committee would like to understand how each departmental CSA develops and maintains influence within the department. To this end, the Committee requests information about the following:

The CSA's reporting line: Professor Watson reports to Sue Higgins, Director General Finance and Corporate Services.

Whether he or she is on the departmental Management Board: He is not on the departmental Management Board, but takes part in the weekly directors' meeting with the Directors General and the Permanent Secretary.

- **How his or her relationship with policy makers and involvement with policy decisions can be characterised:** Professor Watson works alongside members of other analytical disciplines and with departmental Boards and ministers, to ensure robust, joined-up evidence is at the core of decisions within DCLG and across government. He also collaborates with other departmental CSAs, and with Research Councils and similar bodies, under the Government CSA's leadership, to address and advise on issues which cut across government. He provides an independent challenge function to the Department, ensuring that science and engineering evidence and advice is robust, relevant and high quality and that there are mechanisms in place to ensure that policy making is underpinned by science and engineering.
- **Whether the CSA is involved in the development of departmental research strategies and decisions on research spend and, if so, to what extent:** Professor Watson contributes to the development, delivery, implementation and monitoring of the Department's evidence and innovation strategy. He is involved with other Heads of Analysis in the formulation of departmental research, and submissions to ministers seeking their approval for research spend. Once programmes are approved, Professor Watson sits on a Research Gateway Committee, alongside other senior analysts and representatives of finance and procurement to comment upon and approve business cases for individual research projects.
- **Frequency of meetings with ministers (and, specifically, how many meetings has the CSA had with the relevant minister in the period from beginning of September 2010 until end of August 2011):** Professor Watson has met the Secretary of State once during this period.
- **How access to ministers is controlled:** Access to ministers is controlled through their private offices.
- **The CSA's relationship with the departmental scientific advisory committee:** DCLG does not have an overarching Science Advisory Committee. It has one Science Advisory Committee – the Building Regulations Advisory Committee. Professor Watson attends these meetings, and has regular contact with the Chair and other members. He is also the convenor of the Department's

Behavioural Research Network, made up of volunteers from academia and business. This is not a scientific advisory committee, but does provide the Department with insights into behavioural science.

Relationships across the departments

The Committee would also like to understand how departmental CSAs interact with each other and the nature of their relationship with the Government Chief Scientific Adviser: Through regular meetings, Professor Watson collaborates with the Government Office for Science, with other departmental CSAs, and with Research Councils and similar bodies, under the GCSA's leadership, to address and advise on issues which cut across government. He works with other analytical Heads of Profession (economics, social research, statisticians and operational researchers) and Departmental Directors of Analysis (DDAs) to ensure a robust and integrated evidence base underpins policy formulation, delivery and evaluation

September 2011

Department for Education—Written evidence

DfE’s response to the questionnaire issued by the House of Lords Science and Technology Committee on the CSA landscape

1. Carole Willis is the Chief Scientific Adviser for the Department for Education. Her civil service grade is SCS2 and she was appointed in August 2008 on a permanent contract. Her post is a full-time post as Director of Research and Analysis, which includes the role of Chief Scientific Adviser.
2. Ms Willis’s background is in economics (she holds an MSc in economics from the London School of Economics, and a first class BSc honours degree in economics from Nottingham University), and she has experience in other government departments as well as from the private sector.

Relationships within the department

CSA’s reporting line and membership of departmental Management Board

3. Ms Willis reports directly to the Director-General for Education Standards, who in turn reports to the Permanent Secretary. She is not on the departmental Management Board, but is invited to present items at meetings of the Executive Management Board and the department’s main Ministerial Board. Ms Willis has regular one-to-one meetings with the Permanent Secretary.

How CSA’s relationship with policy makers and involvement with policy decisions can be characterised

4. Ms Willis has strong and positive relationships with policy makers across the department. She works closely with Directors and Directors-General in all three policy Directorates through formal Boards/Steering Groups and informal networks. She leads on cross-cutting projects which involve policy teams across the department, and is responsible for the department’s data and statistical collections which feed policy and operational decisions. Ms Willis works closely with analytical teams based in each of the policy Directorates, headed by Deputy Directors (including the 4 heads of profession roles for economics, social and operational research, and statistics). This “bedded out” model of analytical advice and support ensures there is a very close relationship between policy makers and analysts.
5. The 2010 Science and Analysis review of DCSF (now DfE) found that “the Department is an evidence-rich department, very familiar with acquiring and using analytical evidence to inform and guide its policy decisions. There is strong and active leadership support for evidence-based policy making from both the Department’s senior analysts and the Board.”
6. The Science and Analysis Review also reported that the department’s “focus on the need for an analytical and evidence-based approach has been a strong priority for over a decade. This focus has been further strengthened by the Department’s current Director

of Research and Analysis (also [DfE's] Chief Scientific Adviser) and her direct engagement of the Permanent Secretary, Directors General and other Directors in the evidence-based, analytical approach.”

Whether the CSA is involved in the development of departmental research strategies and decisions on research spend and, if so, to what extent

7. Our CSA is responsible for overseeing the annual process of setting analytical and research priorities, reviewing the state of the current evidence-base, and identifying key research and analysis needs for the year ahead and beyond. Development of the analysis and evidence strategy is coordinated with the Department's annual business planning round. Plans are discussed with key stakeholders, including analysts in key delivery partners, other government departments and external academics, with Analytical Planning Board workshops chaired by the CSA, as well as ad hoc engagement throughout the year with external experts.
8. Ms Willis has responsibility for the Department's dedicated research budget which accounts for about a third of the Department's annual expenditure on research and evaluation. She chairs the Research Approvals Committee (RAC) which scrutinises proposals for all externally funded research and evaluation to ensure that the work offers value for money and supports departmental needs and that the methodologies, timing and scale of the proposed research are appropriate. The RAC meets monthly to consider proposals and it reports directly to the Secretary of State on whether the proposed research should go ahead. The Committee can (and does) reject proposals or may recommend that changes are made to a proposal before it is taken forward.

Frequency of meetings with ministers

9. Ms Willis has met with the Secretary of State for Education, and other ministers for the Department for Education, on 15 occasions since September 2010.

How access to ministers is controlled

10. As a civil servant, our CSA has access to ministers' Private Offices, and therefore is able to approach ministers routinely, both in setting up meetings on specific topics (recent examples include a discussion of the research programme with a Minister, and arranging for a presentation from one of our Research Centres), and through written submissions.

The CSA's relationship with the departmental scientific advisory committee

11. The DfE has no Scientific Advisory Committees at present, although it has networks of academics and research experts advising on specific policy issues. The CSA ensures that DfE analysts with appropriate expertise are actively engaged with these expert advisers.

Relationships across the departments

How departmental CSAs interact with each other and the nature of CSAs' relationship with the Government Chief Scientific Adviser.

12. Ms Willis maintains close links with the Government's Chief Scientific Adviser through regular meetings and attendance at the quarterly CSAC meetings. She is in regular contact with other CSAs across government. This is covered more fully in the overarching memorandum recently provided to the Committee by GO-Science.

September 2011

Department for Education and Department for Environment, Food and Rural Affairs—Oral evidence (QQ 21-51)

Department for Education and Department for Environment, Food and Rural Affairs—Oral evidence (QQ 21-51)

[Transcript to be found under Department for Environment, Food and Rural Affairs](#)

Department for Education, Department of Health, Department for Business, Innovation and Skills, and Department for Environment, Food and Rural Affairs—Oral evidence (QQ210-233)

Department for Education, Department of Health, Department for Business, Innovation and Skills, and Department for Environment, Food and Rural Affairs—Oral evidence (QQ210-233)

Evidence Session No. 9.

Heard in Public.

Questions 210 - 233

WEDNESDAY 23 NOVEMBER 2011

Members present

Lord Krebs (Chairman)
Lord Broers
Baroness Hilton of Eggardon
Baroness Neuberger
Baroness Perry of Southwark
Lord Rees of Ludlow
Lord Wade of Chorlton
Lord Willis of Knaresborough
Lord Winston

Examination of Witnesses

Witnesses: **Mr Nick Gibb**, Minister for Schools, Department for Education, **Earl Howe**, Parliamentary Under-Secretary for Quality and Government Spokesperson, Department of Health, **Mr David Willetts**, Minister of State for Universities and Science, Department for Business, Innovation and Skills, and **Lord Taylor of Holbeach**, Parliamentary Under-Secretary of State, Department for Environment, Food and Rural Affairs.

Q210 The Chairman: Welcome to all four members of our second witness panel this morning. Thank you very much for making time in your busy ministerial diaries for this session. As you know, we are looking into the function and role of departmental Chief Scientific Advisers and we are very grateful to you for coming along to talk about your departments. In a moment, I will invite each of you just to briefly introduce yourselves for the record, and if any of you wish to make any opening statement, please feel free to do so, otherwise I will proceed with the first question.

Department for Education, Department of Health, Department for Business, Innovation and Skills, and Department for Environment, Food and Rural Affairs—Oral evidence (QQ210-233)

So perhaps, Nick Gibb, I could start with you and move along the row. Would you introduce yourselves for the record.

Nick Gibb: I am Nick Gibb and I am the Minister for State for Schools.

Earl Howe: I am Frederick Howe and I am Parliamentary Under-Secretary of State for Quality at the Department of Health.

David Willetts: David Willetts, Minister for Universities and Science.

Lord Taylor of Holbeach: John Taylor, Parliamentary Under-Secretary at Defra.

Q211 The Chairman: I will kick off and start with a general question on which you might all wish to offer a view, which is really about describing how you see the function of the Chief Scientific Adviser in your department and how you ensure that your CSA is able to give independent advice and challenge, and whether you think part of that process involves the CSA being on the departmental Board. We have heard mixed views about that. Bob Watson in Defra, for example, felt that it was important that to be on the Board, whereas in Education, Carole Willis is not on the Board, and she did not think that was an important impediment to her functioning. But perhaps you, with experience in those departments, and indeed in Health and BIS, could offer a view on that. So perhaps could I start with Nick Gibb.

Nick Gibb: Yes. Carole Willis is our Chief Scientific Officer, and she plays a very important role in the department. We believe, as a new Government, in evidence-based policy making, and she has played a very important role in that. She is not on the Board, she is not a director general, she is at a director level, but she has a team of analysts that work with her. I met her more than a dozen times over the period as a Minister. She is involved with all the statistics that we publish, but also the evidence. The Secretary of State is particularly keen on ensuring that we have evidence to our policy. Before the *White Paper* was published, *The Importance of Teaching*, we published a lead-up paper, which was the evidence, *The Case for Change*, which was an accumulation of all the evidence that has informed the way we have made policy in the *White Paper*. So in the whole range of measures we use her work. She has a budget of, I think, £25 million in 2010-11, and it will be broadly a similar figure next year that we spend on evaluation and research. We regard these as very important in policy making.

The Chairman: Thank you. Earl Howe, do you wish to add anything from a DH perspective?

Earl Howe: Thank you. The Department of Health is—I am sure along with other departments, but maybe par excellence—committed to ensuring that our policy is based on the best available evidence of what works. In Dame Sally Davies, our Chief Scientific Adviser, we have someone who is ideally placed, we believe, to provide that element of independent challenge that you referred to, where necessary and appropriate. She is also, as you will know, the Chief Medical Officer, combining those two roles. She combines those roles ad personam with the agreement and approval of Sir John Beddington. We do not necessarily anticipate that the two roles will be joined in perpetuity, but I think it is an arrangement that works well with Dame Sally. We are very aware that early warning, early insight, is essential to the CSA function. Policy teams in the department are open to Dame Sally's advice and challenge.

Department for Education, Department of Health, Department for Business, Innovation and Skills, and Department for Environment, Food and Rural Affairs—Oral evidence (QQ210-233)

You asked about whether the CSA should sit on a department Board. Dame Sally is in fact a member of the departmental Board. She meets very frequently with me and my ministerial colleagues. I would judge that a seat on the departmental Board is not essential necessarily for a CSA, as long as there is adequate access to ministers and senior policy-makers. That would be my judgement.

David Willetts: Yes, I would say in answer to your broader question that we see that a Chief Science Adviser would have four roles: first, ensuring that there is proper science and engineering evidence as part of the policy making process, very much what the Minister for Schools said; secondly, ensuring that we have the right systems in place to ensure that that voice is heard; thirdly, linking to the Chief Science Adviser network across Whitehall; and, fourthly and finally, providing a kind of leadership role for the science and engineering expertise within the department. The discharge of those four functions does not, I think, require that the Chief Scientific Adviser should necessarily be on the Board. I think that it is possible to discharge them without that and we have not historically in BIS had the Chief Scientific Adviser on the Board.

For us in BIS, of course we did have a rather salutary review, the *Science and Engineering Assurance Review*, last summer, which had some very frank criticisms of the position as reviewed in the period March to June 2010, and although it has taken us a while, we have tried to act on that review. I think one of its criticisms was that our previous Chief Scientist, Brian Collins, excellent man though he was personally and for whom I have great regard, just was not provided with sufficient support and back-up to do the job properly. That is why we have, even while we have been reducing the departmental budget overall, allocated more funding to establish the Office for the Chief Scientist. We are very close to appointing our new Chief Scientific Adviser. I hope it will be a Christmas present for this Committee, and we should be able to announce it before Christmas. It is very close to a conclusion. Of course, we are strengthening the resource around him with the new appointment of a Deputy Chief Scientist.

The Chairman: Will the new CSA, when appointed, as recommended in the *Go Science* review, be appointed for four days a week, or what level is it likely to be at?

David Willetts: We are not currently envisaging that the post will require more time than in the case of Brian Collins, but that is open for review. When he arrives, if he were to argue that more time was needed, we would consider that very carefully.

Lord Taylor of Holbeach: Thank you, my Lord Chairman. As you might expect with a department that has to use science a lot in its portfolio ranging from animal health to climate change adaptation, our Chief Scientist is a very important person. You have had the opportunity of interviewing Bob Watson, who we all rate very highly, I have to say. He is, as you know already, substantially integrated into the whole departmental decision-making process, not only by rank but also by practice. He is a member of the management Board, he meets with ministers weekly on a Monday as part of the management team. We also of course see quite a lot of him in terms of briefings and advice, because he heads up a team within the department that we use to provide evidence to support policy making. Therefore, I would like to think that his relationship with the department and his work within the department is very effective.

The Chairman: Thank you. Perhaps I could turn to Baroness Neuberger for a follow-up on this.

Department for Education, Department of Health, Department for Business, Innovation and Skills, and Department for Environment, Food and Rural Affairs—Oral evidence (QQ210-233)

Q212 Baroness Neuberger: More particularly for Mr Willetts on this, you have referred to the *Go Science* review and you are going to give us our Christmas present, which we are very much looking forward to, but we have heard a great deal of variation in the status of CSAs and in their access to ministers directly. You have all four talked very warmly about them, but would you think that there would be some value in there being either a Minister—and you as Science Minister perhaps could talk to this—or a Cabinet Committee that had some oversight of CSAs, and could perhaps ensure that they get the kind of access and have the sort of status that might be required?

David Willetts: I think all departments, in order to function effectively and draw upon science advice, need to have an arrangement in place that ensures that that voice is heard, and that includes direct access to the Permanent Secretary and ministers. Different departments will deliver in different ways, but I think all four of us here—I think the expression for us in the Coalition nowadays would be “the quad” before you today—we are all, in our different ways, committed to that.

There was, under the previous Government, a separate Cabinet sub-committee on science. I do not myself think that that is necessary for the science voice to be heard. To some extent, it happens within the departments, and for me personally, as the Minister for Science sitting on both Home Affairs Committee and Economic Affairs Committee, it is an opportunity to make sure that that angle is properly covered. I was reflecting on discussions that we have had, when the Department of Health was discussing mental capital and well-being, that the *Foresight Report* and the scientific advice fed into that; perhaps dare I say the Home Affairs discussion of bovine TB involved quite a significant discussion of the science. So it is fed into the mainstream policy discussions that we have in the main Cabinet Committees of Government.

Q213 Lord Broers: I wanted to address my question to David Willetts. We had a very interesting discussion with Sir Gus O’Donnell about the transparency that is maintained in making policy decisions. Now, in BIS, of course very major policy decisions on transport, for example, and on energy. The policies, the mechanisms that we use to come up with those policies, are singularly opaque, in my experience. He cited the example, looking at economics, of the Monetary Policy Committee, where it is done, if you like, by technocrats—the new term—but at least economists know who they are, they know whether they respect them or they do not respect them, whether they agree with them or they do not agree with them, and they know how they voted on that committee.

The energy policy, or even transport policy, has come out of the blue and we engineers sit on the side wondering who on earth could have come up with that policy. There does not seem to be any mechanism of finding out who it was and whether the people who made that decision we have respect for or not. Do you think that with the new CSA and the support that the process could be made a little more transparent?

David Willetts: I am obviously not the Minister in Transport or Energy, but I think that there has been rather a lot of published evidence on both transport infrastructure decisions and on energy policy. What we do have a responsibility for in BIS is the infrastructure as a whole, and I have to say that probably the main focus of Brian Collins’ work, when he was the Chief Scientific Adviser, was working on infrastructure, and a lot of proposals on infrastructure do involve BIS and we do have a wider role as a department, and that is a crucial role for our Chief Scientist. Of course Brian himself, just now having moved on from

Department for Education, Department of Health, Department for Business, Innovation and Skills, and Department for Environment, Food and Rural Affairs—Oral evidence (QQ210-233)

BIS, is currently working within the Treasury, partly on its infrastructure policy. We can therefore be confident that there is an extremely competent and experienced scientist who is ensuring that that angle is covered in the policy process.

Q214 Lord Willis of Knaresborough: Yes, I was particularly interested in Nick Gibb's opening comment about the departmental Scientific Adviser being very important in terms of evidence-based policy making, and I was also intrigued to hear that you had a number of meetings with the Departmental Scientific Adviser. She did not say that when she was before the Committee. In fact, she said quite the opposite, and also that she had little access with the Permanent Secretary; she did everything through the DG.

But can I just press you on this issue of evidence-based policy? We got the distinct impression that the role of the Scientific Adviser within DfE was that when ministers have decided on their policy, her job was to find the evidence to support that policy, rather than finding evidence that would inform the policy before it was made. Could you tell us which is right?

Nick Gibb: On your first point, Carole and I have met about 16 times since I became the Minister.¹⁵ She is involved in all the briefings when we release statistics, for example, on results, but the department is an evidence-rich, data-rich department, which is why there is involvement particularly with the Minister for Schools and the CSA. In fact, the *Go Science* report praised us for being a data-rich department.

But, we do have policy that was formulated before the general election that went into the manifesto, and so we start from the premise on our major policy direction that that is the direction in which to take the country in—

Lord Willis of Knaresborough: Can I stop you, Minister. I do not disagree at all that as a Minister you have a right to have a policy, and I think the Permanent Secretary made it absolutely clear that ministers make policy. My question is whether in fact you gather the evidence, which is empirical evidence, which is peer-reviewed evidence, before you make a policy, or whether you then have an idea and then you find the evidence afterwards.

Nick Gibb: I was trying to address your question directly by saying we do come to government with a number of policy initiatives that were in the manifesto, they were elected upon, and then we asked the department to make sure that we are not doing things that are not sensible. So we do ask the department to check the evidence, and it has done a lot of work. As I said, the evidence, *The Case for Change*, we published before the White Paper, setting out what the evidence was for the initiatives that are in the White Paper, and I think that is an unusual initiative. But we have relied very heavily on international evidence. We look at the PISA data, for example, that does drive our policy. The *National Curriculum Review* has been established using an expert panel which has been charged with looking at the evidence from around the world, and a huge amount of work has been conducted under

¹⁵ DfE drew the Committee's attention to Ms Willis' evidence. In response to Q25, Ms Willis said "in our evidence to the Committee we identified that I had met Ministers 15 times in the last year and I have regular contact with Ministers' private offices and with advisers. I also regularly meet with the Permanent Secretary." "I meet with David Bell very regularly. We have one-to-one KITs at least once a month." In answer to Q45, "I would feel quite comfortable about joining in meetings with Ministers on particular topics that are organised by other people or requesting meetings, which I have done in the past, to talk about particular topic areas."

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Carole Willis' tutelage, if you like, or direction, with her team of analysts, looking at that international evidence, which has then informed the expert panel and informed the advisory panel as we begin to develop programmes of study and the *National Curriculum Review*. We do rely very heavily on it, but of course we do have policy direction that was established before the election.

Q215 The Chairman: Could I just pick up on this point about international evidence? I just want to read you a quote from the Swedish Education Minister, Bertil Ostberg. He said, "We have actually seen a fall in the quality of Swedish schools since the free schools were introduced. The free schools are generally attended by children of better educated and wealthy families, making things even more difficult for children attending ordinary schools in poor areas". I wondered whether that summary of the Swedish experience fed into the policy preparation for free schools in this country.

Nick Gibb: Well, of course the difficulty with education policy is that people have very strong opinions on it from all angles, and that is why ultimately ministers have to take a decision.

The Chairman: But this is not about opinions. This is about evidence.

Nick Gibb: No, sure. Well, all evidence is open to interpretation. There are people in Sweden saying other things, and I have a list here of evidence about the Swedish example. There is clear evidence that standards do rise in the schools that are established, the free schools, and in schools in the surrounding area. Now, there are a whole host of other factors that will be impacting on the Swedish education system, external assessment and so on, and we have to look at the evidence of the micro-issue of that particular policy of establishing new schools. What happens when you bring in a new school into a municipality? You have to look at it at that kind of micro level, and there is evidence from the United States that it does raise standards, not just in the new school that is established but also in the surrounding area. As the tide rises, it raises all the ships that are on the tide.

Q216 Baroness Perry of Southwark: Yes, my question is: within your department, how you do ensure that appropriate use is made of scientific evidence, what structures are there or what systems are there? And perhaps you might offer evidence or suggestions of when ministers decide on the grounds of public interest or on their own policy interests that they will not follow scientific advice how is that handled, or would it be handled, if it were a scenario that has not yet happened. Can you give us any examples? So two questions, really.

The Chairman: Would Lord Taylor like to pick up on this?

Lord Taylor of Holbeach: Well, we of course have the science to back up the policy making decisions, and we rely on the evidence presented, but in the end it is for ministers to make the decision, and the Minister's role is a political one, measuring the impact of a decision in the political context of its time. It has never led to any tensions when this has occurred. In my own case, I have not had to make a decision contrary to ministerial advice in the short time that I have been in office, but within the department I do not think tensions exist, because there is sufficient mutual respect between the scientific team and the ministers involved.

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I might also add we do have externally a Scientific Advisory Committee that supports the Chief Scientist, and this is a body appointed from outside on the Nolan principles, and we also have 11 Scientific Advisory Committees with specialist subject areas within the department. So I hope I have answered your question satisfactorily.

Q217 Baroness Perry of Southwark: My question was really about what structures and systems you have within your four departments that ensure that advice is received and is available. I suppose your committee would be one of the structures that would ensure that, would it, because presumably in the event—I know you said it has not happened—that a Minister, for quite proper public opinion reasons or political reasons, decided not to follow advice, that would have to be reported back to the committee?

Lord Taylor of Holbeach: Yes, and if we have submissions, they clearly include the evidential element in order for us to determine what we should be doing and we can call on scientific input at the time when we are discussing this matter or talking about things with the specialist team within the department. So I find that the system does work pretty well, as long as it is integrated at official level as well as at ministerial level.

Baroness Perry of Southwark: Exactly.

Q218 The Chairman: Could I just perhaps tease that out a little bit further? In many cases where the scientific advice comes forward, it will not be absolutely clear-cut one way or the other. There will be uncertainty and there will be a range of opinions about what the evidence says.

Lord Taylor of Holbeach: Yes.

The Chairman: One of the things that Sir John Beddington said to us was that it was very important that advisers expose the uncertainties in the scientific evidence and the assumptions that underlie a particular conclusion. Do you feel, in your department, that that is satisfactorily delivered to you? When you are provided the evidence on a particular policy issue, does the advisory system explain the level of uncertainty and why group A of scientists might think one thing and group B thinks something else?

Lord Taylor of Holbeach: Yes, I think one of the vehicles for doing that of course is the impact assessment, which is often not seen by ministers at the time of making submissions initially. For example, on the whole business of greenhouse gas emissions and the reporting of them, the assessment projected quite a range of benefits, and to some degree costs, but more specifically on benefits, because they were difficult to pin down. It was not the lack of scientific input, but that the science is uncertain and cannot necessarily be quantified directly. We were aware of that and we are making a decision in the context of the advice we have been given in that way, and I hope therefore that is the right approach.

David Willetts: In BIS we are in the very fortunate position of having a kind of cornucopia of science advice. We have the Chief Scientist advising the Government as a whole based in BIS, and of course there are all the Research Councils, but I guess for the purposes today, we are thinking specifically about the departmental Chief Scientists. There I would say for me personally, the way that that advice is most valuable is as we think about the high-tech industries of the future. Be it space or synthetic biology, nuclear fission, generation for nuclear fusion, you need briefing for policy discussions in those areas. It is informed by our

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scientists and indeed you would quite often have one of our scientists sitting and participating in the policy discussion. Brian came along to the Space Leadership Council and contributed to our discussions there.

In terms of the second question, kind of what happens if things go wrong, this is an opportunity for me just to report to the Committee that this morning we have published our new *Code of Practice for Scientific Advisory Committees*, the updated code. Christmas has come early. This updates the code in the light of the advice, some of it from the previous Government, which we then took into account. It does provide very clear statements of the ethical principles, and also of course the procedures in the event of things going terribly wrong. Obviously, Scientific Advisers might want to speak to their own Permanent Secretary, they would be able to speak to Sir John Beddington, the Chief Scientist, and it might well come to me as the Science Minister.

Q219 Lord Winston: David, it is really on your first point. We have some evidence from the adviser to the Treasury with regard to the announcement about graphene research, and we know graphene is obviously an extraordinarily exciting material that may have massive economic potential. He gave us the impression that really he had not consulted the community much and he said he had read the papers, so the question really is where would the Government get its scientific advice about that announcement? Did it come to your department, for example? How much cross-departmental advice is there? How much co-ordination is there in the advice that ministers get?

David Willetts: Of course we were already aware of graphene and the excellent work that had been done, not least because of the prominence of the Nobel Prizes for Professors Geim and Novoselov. The immediate focus ... we received a joint letter from Manchester University and Manchester Council to the Chancellor, which the Treasury immediately passed on to my office as well. It led to commissioning advice, which was provided through BIS. I do not know exactly the internal Treasury advice, but I know that we got internal advice in BIS, and that both Treasury and BIS drew on advice from the EPSRC who were already thinking about graphene, because of course it was already funding some research in graphene. So this was not new as it built on work that was already under way; secondly, the TSB, who also had been considering graphene as part of its kind of horizon scanning work on future technologies. So in that way, I think there was very well-informed advice, both on the science from the EPSRC and the kind of technological opportunities from the TSB, which was then reported both to me and to the Chancellor.

The Chairman: Thank you. Going back to the original question that Baroness Perry asked, perhaps I could turn to Earl Howe now for comment.

Earl Howe: The question related to how each department had systems in place to make sure that appropriate use was made of advice that came forward and I think, for our part, that depends on two main ingredients being in place. The first is that the Chief Scientific Adviser should be heard and be able to be heard at ministerial level whenever appropriate, but also that she should be adequately supported. Now, Dame Sally is supported in her role by the Research and Development Directorate, because she is of course in charge of our research effort. She is supported by a whole range of Scientific Advisory Committees. I counted up the number, we have 23 in the department, ranging from herbal medicines to human genetics, and she is also, as lead for research and development, responsible for our policy research programme. She has a budget of about £50 million for that, and that entails

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that there is a regular channel of communication between her and the policy teams so she is supported by the policy teams and she herself supports them.

It is important from our point of view as ministers that the submissions that we see have input from the Chief Scientific Adviser. That happens on a routine basis and Dame Sally herself regularly sends submissions to me as the Minister responsible for research as she does to my colleague who is in charge of public health. So I think that is how I would summarise the systems in place that we have and we regard them as working very well.

On the policy research side, a review was done by the Government Office for Science in 2008 which found that the PRP was a model of good practice in concept and operation and that is certainly our judgement.

Q220 The Chairman: Could I just follow up with a couple of questions. You described Dame Sally's role and the input that she has. Is that in her position as CMO or as CSA or both?

Earl Howe: I was focusing on her role as CSA and not on her role as CMO.

The Chairman: So if in future the posts were separated then how you describe Dame Sally operating would apply to a new CSA if that individual were not CMO as well.

Earl Howe: It would. I did refer to her input to the Minister for Public Health and the work done there, and of course that is very often in her role as CMO but not always. For example Dame Sally contributed in a major way to the work we did to produce the Public Health White Paper very much from the scientific perspective and the evidence that we used to underpin that paper.

Q221 The Chairman: My other question is a bit of a curve ball but one that you might well expect. When we took evidence from Sir John Beddington we asked him whether there were any cases that he regretted that scientific advice had not been followed by government. The one he chose to refer to is in your department—namely, the fact that the NHS spends money on homeopathic medicines for which there is absolutely no scientific support whatever. Is this recognised by ministers in the Department of Health as a case where scientific advice has been, let us say, relegated in favour of other considerations?

Earl Howe: I cannot speak for that particular example as I was not personally involved in it. I do know that that particular issue has been a source of considerable debate and discussion in the department and I know that strong views are held on both sides. There is a policy that we as a Government have about patient empowerment and it is not that the science is ignored. I am not aware of any instance in fact where Dame Sally's advice has been ignored or sidelined, but maybe that is one example of where there are overriding considerations that we think take precedence.

Q222 The Chairman: Just to be clear, when you say there are strong views on both sides, you do not mean there are strong scientific views on both sides.

Earl Howe: No.

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The Chairman: There are strong views of people who take homeopathic medicines and believe they do them good and scientists believe they do not.

Earl Howe: That is right. There are two opposing views, exactly as you have described. It is not in terms of the science.

Q223 The Chairman: I turn then to Nick Gibb, coming back to Baroness Perry's question.

Nick Gibb: Carole Willis combines the role of CSA with being Director of Research and Analysis, so she, or her team, is involved in all the policy submissions that come to ministers. She herself has direct access to ministers. She is a senior civil servant in the department with access to the private offices and can ask for meetings whenever she seeks them. She also chairs the Research Approvals Committee, which is the committee that scrutinises what we are going to spend on external research, so she is very much part and parcel of what the department is doing. You asked for examples of where her advice has been ignored or challenged. There are not many examples I can think of but there was the issue of the pupil premium, about whether we should spend money evaluating the effects of pupil premium. There is an argument against doing an evaluation because you cannot really have a control group of children who qualify for free school meals where the school will not get the money to see how they compare. However, in view of the huge amount of money we are spending on the pupil premium we did bow to Carole Willis' advice that we should have an evaluation, albeit difficult to put together, but we rely on her to do so and we have gone ahead with her advice.

Q224 Baroness Perry of Southwark: Can I just follow that up? I was a little surprised when Lord Taylor said that the impact assessment was not part of what ministers sought at the time they were making decisions. Is that common across Whitehall? It seems rather an important part of the scientific advice.

Lord Taylor of Holbeach: In my case, I do not see impact assessments when submissions are presented, except in circumstances where the impact assessments may be contentious. But elements of course that go to make up an impact assessment, which may well be an extremely thick, robust document, are included in the submission. As I said earlier, any submission regarding policy includes the evidence that the department has available to support alternative policy changes but it is not in the form of an impact assessment.

Q225 Lord Willis of Knaresborough: Very briefly, to all four of the ministers. We have heard evidence during this inquiry and indeed in the previous inquiry that Baroness Neuberger conducted about the status of social science across government, and while certainly three departments rely heavily on the physical sciences to underpin policy, I wondered whether you would accept that there is a need to beef up our approach to social science in all your departments and whether in fact having a government Chief Social Scientist would be an advantage.

The Chairman: Maybe I could ask Nick Gibb to start that since it probably applies particularly to his department.

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Nick Gibb: Carole Willis is an economist not a physicist or a chemist. Inevitably our policy is social science rather than hard science, which means there are nuances to it. That is why it is difficult to say you ought to have somebody on the Board or a Chief Social Scientist. What is the purpose of having such a senior appointment? Is it so that they can overrule decisions by ministers? That is the danger of elevating these positions to that height. No Minister wants to take a decision that is not based on the evidence. You would be mad to do so because you as a Minister are responsible for the outcomes of those policies and if they are not based on all the evidence available they will not go in the direction you expect them to go in and you will pay the price for that in this building and with the electorate. So we want to have evidence-based policy but because social science is more nuanced than hard science, ultimately ministers have to take those decisions having looked at the evidence and also challenged the evidence. What I want to be able to do is to say to the CSA, “What was the methodology behind this evidence? How do they come up with the view that 90% of teachers are against this policy?”, or, “This policy is very popular with teachers,”, or, “It worked.”. If you say that this approach works in classrooms and the evidence for that is 90% of teachers liked it rather than the attainment of the children improved, it is probing into that kind of issue that I think it is very important for ministers to be engaged with. Therefore I would not want to see social science elevated in departments such that it meant that ministers were not ultimately taking those decisions.

Q226 The Chairman: When the evidence is, in your view, unconvincing/incomplete, do you sometimes ask Carole Willis to put in place a pilot study or commission research to establish what the evidence is before you implement a policy?

Nick Gibb: Yes. An example of that would be the phonic screening check. This is a test of six year-olds at the end of year 1 in primary schools, 40 words. We wanted to make sure that it worked and there were no administrative problems or difficulties with children of that age taking the test. We did pilot it in 300 schools and we learnt a lot from it. So, yes, we would do that.

Q227 Baroness Neuberger: Can I just probe a little further about the role of the social sciences? In the inquiry that I chaired on behaviour change, it was perfectly clear that government were interested in the behavioural economics and the behavioural psychology areas where indeed you would need very specific expertise. Some of our criticism is that the expertise is not present throughout and indeed that the small Cabinet Office team possibly does not have sufficient reach. Is that not a good argument for having particularly in your department a senior social scientist who understands those issues?

Nick Gibb: We would argue that we do, in Carole Willis. We have three centres; the Centre for Analysis of Youth Transitions; a Centre for Childhood Wellbeing Research; a Centre for Understanding Behaviour Change. So we are engaged in all those areas of social research that you are talking about. Should Carole Willis be a Director General? Well, I am sure she would like the salary boost but is it necessary within the department given that she does have access to ministers? Her team is involved in all policy submissions. What more would she achieve by having a higher status? What is it that lies behind the question? If what lies behind the question is to reduce the policy making decisions of ministers to move to a more technocratic form of government, I think that would not be in the interests of a democratic state.

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David Willetts: Can I just clarify the position on this? The Department for Education has an excellent arrangement for drawing on evidence from social science as you have heard from the Minister. There is a wider question about social science across government as a whole and on that I think there are arguments in favour of a further identification of that function. We are not ruling that out. We will consider it. I think the Cabinet Office is very strong on all this and David Halpern and his group are already doing excellent work and I can see its influence across government. What we do in BIS, we do draw very heavily on the SRC. There is a capacity there so that if you are having discussions—I am trying to think of an example overlapping with Education—for links between neuroscience and education; for links between neuroscience and policy on youth. I was at a ministerial meeting this week where one of the things that we drew on was the excellent research paper that Tim Loughton had been involved in on what we know about neuroscience and how our understanding of neuroscience is an important perspective on understanding the behaviour of teenagers. You start with some physical science. Incidentally, I hate this thing that I noted from a previous exchange where the physical sciences become the “hard” sciences. Social science can be pretty hard as well. There are physical sciences and social sciences. So we do try to draw on it but all of us, John Beddington, myself, we are open-minded and look forward to the Committee’s advice about how the social science function could be strengthened across government as a whole.

The Chairman: Would anybody else on the panel like to comment on that particular point?

Lord Taylor of Holbeach: Can I just say that one area where we are particularly engaged in understanding people’s behaviour is in the area of waste, which I have departmental responsibility for. Given the current trend towards non-regulatory governance of issues in politics generally, nudge theory and understanding people’s motivations is very important, and we have within the department’s family, RAP, which is a body that clearly works very strongly on this front and their input on all waste policy is very robust and also very useful to the department. So while we do not have a specific social scientist working at the senior level within the department, we do draw on that experience in making policy.

Q228 Lord Winston: I think we take Nick Gibb’s point very well, it is a very good point, but I suppose I am really interested the Department of Health, here. As we both know, one of the issues are behaviours that make a massive difference in health and I wonder how you see the roles of social science in trying to persuade people to adopt behaviours that are perhaps a bit more healthy.

Earl Howe: There is no doubt that social science has risen in importance in terms of policy making in the Department of Health over the last few years and certainly since May last year. The way in which people behave in terms of their lifestyle, the way in which we can influence people on diet, physical activity, the way they use medicines or do not use medicines; all these things have a behavioural aspect to them and what is often criticised, I am afraid and I feel unfairly, the nudge policy which we have as one ingredient of the public health agenda is I think going to be increasingly influential. So yes, of course, we do expect our scientific advice to take a full account of the latest thinking in these sorts of areas.

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Q229 Lord Winston: Do they commission research themselves or do you leave it to the Research Councils to do the kind of research that you need to have done?

Earl Howe: My understanding is that we feed off the work that is being done outside the department in this area.

Q230 Lord Wade of Chorlton: Just following on from Nick Gibb's point between this line between the technocratic and the democratic Government, which I agree with entirely. At the same time you have to admit that a lot of democratic Governments in my lifetime have made some appalling mistakes that have been very, very costly to the taxpayer and against the interests of the nation as a whole because they have been driven by some short-term political ambition that has turned out to be entirely false. So in a sense I agree that has to be where the decision-making lies, what I think the purpose was, was to make sure that at least the chances of making those mistakes are very much reduced in the future than they have been in the past. So the technocratic advice is there within Government so that people do not just see the short-term advantages politically but see the long-term disadvantages, if they are there, for the nation as a whole.

Nick Gibb: I could not agree more. To make a partisan point, we are paying the price with the public spending problems we are now facing.

Lord Wade of Chorlton: Why is Europe in such a mess? Because of political decisions that should have never been taken in the first place but I do not want to go down that route.

Nick Gibb: I would just add that we need to have more reliance, we need more evidence, more data. We need to make sure our policy making is evidence-based, absolutely, but I think also ministers have a responsibility to understand how that evidence is gathered and not just to look at a black box and say, "Oh, that's science; we must obey".

Earl Howe: I was going to say that if there are two areas in particular that my department is involved in that relate to the long-term agenda for the country, they are public health, the health and well being of the nation over the next two decades, and research, also a very long-term business. We want to be absolutely sure that we are directing our efforts and our money in a way that will provide value over the long term.

Q231 The Chairman: Could I perhaps just ask a closing question—any of you might wish to answer—which is something we have asked other witnesses, including CSAs themselves, about the situation in which the CSA's advice disagrees with the policy decision that is made. The question we are interested in is what your view is on the transparency of that process. Is it fine for CSAs to make public the fact that their advice to you has been overridden by other factors or do you feel that is an internal matter in the machinery of government?

Nick Gibb: We are very keen to publish as much evidence as possible and that is what we are doing. In terms of all the data we have, we are publishing them and putting them out into the domain. So all the pupil-performance data are now going to be published so that parents and the public and policy analysts can have access to that data. So absolutely we want that and we have been publishing and will continue to publish the scientific evidence behind our policy decisions. Having said all that, I think it is also important that ministers have access to advice from civil servants, whether they be a CSA or head of analysis, that is not subject to being published because otherwise you fetter the free thinking that should be taking place

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within departments by ministers and their civil servants and you move that debate out of Whitehall if you pursue that. I think it is important that ministers have confidence in being able to challenge the evidence before them and that they have confidence to seek evidence from sources where they know in advance that they may not be comfortable with the results. I think it is important that they can feel free to do that without worrying that if it is published it will embarrass their ultimate policy position.

Q232 The Chairman: Do others agree with Nick Gibb?

David Willetts: I think Nick put it very well. In fact if I may say so, I think the way this question has been formulated is slightly odd. When should science give way to interests of policy or public opinion? Science is part of the evidence and there is then the exercise of judgment, which has to be by democratically accountable ministers. Scientific evidence should be at the table and it should be heard and I think we all have very strong procedures in place now to ensure that happens but ultimately democratically accountable ministers have to reach a judgment and often evidence itself conflicts. But on the “ought” decision—what ought you to do; what is the right thing to do?—it is very hard for that to be completely determined by the “is” evidence; descriptions of circumstances. That is where democracy and ministerial responsibility comes in.

The Chairman: Do Lord Taylor or Earl Howe wish to make a comment?

Lord Taylor of Holbeach: I suppose I could refer to the TB issue.

The Chairman: That is dangerous territory, I would say.

Lord Taylor of Holbeach: I appreciate that but I felt that to some extent your question provokes a situation where one Government evaluating came to one decision and another Government comes to a contrary decision. I think that just points out that there can be a political evaluation of scientific data. I think that is a reasonable thing and indeed Bob Watson’s own position on that is that he accepts that scientific evidence is not the policy making—that is a matter for ministers—but he has told me, and I would agree with him, that if that scientific evidence is being misused, then he has a responsibility as Chief Scientist to speak out. Otherwise it is a matter for ministers to carry the can for the decisions that they are publicly accountable for.

Earl Howe: I have very little to add to what has already been said, all of which I agree with. I think as regards a situation of this kind, which I hasten to say has not happened in the department during my time there, if there were to be a situation where scientific advice had been ignored or misused, then one could imagine there was an overriding public interest in that fact being made known. As a generality I absolutely concur with Nick that a Minister should feel that the advice they are getting from several quarters, whatever quarters, of the department, should be there for them to assimilate and take a judgment on without fear that somebody is going to pipe up and say that they do not feel that sufficient weight has been given to that advice, whatever it may be. So I think it does depend on the circumstances.

Q233 Lord Rees of Ludlow: The view has been expressed by many witness that there is an advantage in having scientists who are appointed from outside of the Civil Service because of their expertise and the fact that they are more likely to feel unconstrained by career

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prospects and so on. Would you feel in general that there should be an external appointment?

David Willetts: I think it is clear that in the majority of cases it is now an external appointment and Lord Rees puts very clearly the arguments for that. We have not said this is the blanket rule because the advantage of the internal appointment is that those are people who understand the system and are able to operate very effectively within it. There is this permanent trade off that people who have strength externally do not necessarily understand the wiles of Whitehall and the people who are entirely Whitehall warriors may not have a sufficient external understanding. If I may say so, going right back to where we began, just for us in BIS it is one of the reasons why at the moment we are still inclined to have our Chief Scientist a part time post; some time inside Whitehall advising us but also time to be connected with the external science community. I think in general, but not universally, Lord Rees' advice applies.

The Chairman: Any other views about that?

Nick Gibb: I do not have strong views about that particular point but if I can just say one final thing about expert advice. The exchange rate mechanism in the early 1990s, there was huge consensus among all the expert economists that Britain joining the exchange rate mechanism was in our best interests— it was hard to find economists that would challenge that; there were some—and we did it and it was not a success. I think ministers always should be challenging the evidence that they receive.

The Chairman: Thank you. That is a good note to end on. I would like to thank all four of you for this session, which has been very useful to us. We very much appreciate the time you have spared for us. As you well know, because you are familiar with this process, there will be a transcript coming to your office shortly and you have an opportunity to amend it. I should also say, as I always do, if there are any points you would like to add in writing, please feel free to do so. Thank you very much indeed.

Department for Education—Supplementary written evidence

Response to the Committee request for additional material

At the end of evidence session No. 2 with Chief Scientific Advisers (CSAs), Carole Willis (DfE) and Robert Watson (Defra) on 18th October, the Committee Chair requested that both witnesses write to the Committee with examples of where they have been less successful in ensuring policy decisions have been informed by evidence.

DfE's written evidence to the Committee highlighted the extent to which the Department uses evidence and analysis to inform decisions about policy and delivery. The department has around 200 professional analysts working closely with policy teams throughout the organisation, on behalf of the Chief Scientific Adviser, to ensure that policy advice to ministers is based on sound analysis, research and other evidence. The CSA herself has good links with Ministerial offices, advisers, and senior policy officials throughout the organisation and considers her advice to be taken seriously. The CSA also oversees the development of the evidence base to inform policy decisions – through the rich set of statistics that we publish, and our research programme which includes a number of evaluations of policy pilots.

The independent Go-Science “Science and Analysis Review”¹⁶ of the Department concluded that the current arrangements are very effective in ensuring good use of evidence and analysis. Their report states that:

- “The review made a strong positive assessment of the Department’s use of science and analysis. There is a clear focus on the use of analytical evidence to inform and guide the development and delivery of policy.”
- The Department’s “...focus on the need for an analytical and evidence-based approach has been a strong priority for over a decade. This focus has been further strengthened by the Department’s current Director of Research and Analysis (also [DfE’s] Chief Scientific Adviser)....”

It is thus difficult to identify any examples where the available evidence and analysis has not been used in developing policy advice for ministers. To date, an area where our CSA has not been closely involved in the creation and use of evidence is within our Arms Length Bodies (ALBs). ALBs have their own standards and principles, including complying with the UK Statistics Authority (UKSA) Code of Practice for Official Statistics, where appropriate. A number of activities will be transferring from these ALBs to four new Executive Agencies in the Department by April 2012, under the Departmental Reform Programme. In future, therefore, the Department’s new Executive Agencies will follow the same processes for developing and using research and analysis as the existing Department, overseen by the CSA and her team.

November 2011

¹⁶ ¹⁶ <http://www.bis.gov.uk/go-science/science-in-government/reviewing-science-and-engineering/completed-reviews/department-for-education>

Department for Education—Further supplementary written evidence

[Letter from Nick Gibb MP, Minister of State for Schools]

Thank you for your letter of 29 November, seeking more information on the evidence about Free Schools and inequalities following my appearance at the House of Lords Science and Technology Select Committee on 23 November. I have set out below my response to your questions.

First, it is important that the Swedish Education Minister's quoted remarks about Free Schools you mentioned at the hearing are seen in the context of what he wrote the following day in a Swedish publication *Varldenidag*: “The article is very biased. It is taken out of context and misleading. I have not warned the British Government against introducing Free Schools. As for the Swedish Free Schools, I clearly said to the newspaper that the Swedish Free Schools are here to stay and it is something positive”.

<http://www.publications.parliament.uk/pa/cm201011/cmhansrd/cm100722/debtext/100722-0002.htm#10072245001903>

With regard to the wider evidence base, there is good evidence from studies of Charter Schools in various US cities and states. These studies suggest that good-quality Charter Schools do help to narrow the attainment gap for disadvantaged students in urban areas (notwithstanding academic debates about different methodologies used and precise effect-sizes):

- Abdulkadiroglu, A., Angrist, J., Dynarski, S., Kane, T.J. and Pathak, P. (2009) *Accountability and Flexibility in Public Schools: Evidence from Boston's Charters and Pilots*, National Bureau of Economic Research Working Paper 15549. Cambridge, MA, November 2009.
- Hoxby, C.M., Murarka, S. and Kang, J. (2009) *How New York City's Charter Schools Affect Achievement, August 2009 Report*. Cambridge, MA: New York City Charter Schools Evaluation Project, September 2009.
- Centre for Research on Education Outcomes (CREDO) (2009) *Multiple Choice: Charter School Performance in States*, Stanford, CA.
- Gleason, P.C., Clark, M., Tuttle, Clark, Tuttle, C. and Dwoyer, (2010) *The Evaluation of Charter School Impacts: Final Report*, US Department of Education, Washington DC.

There is evidence from Sweden that Free Schools have higher achievement than other schools, higher average points scores than state schools in most subjects, a higher proportion of pupils eligible to progress on to upper secondary education, and have more pupils progressing onto higher education. Free School growth has also had positive spill-over effects on municipality academic performance.

In addition there is some evidence from studies of Free Schools in Sweden that the largest beneficiaries were children from highly-educated families, with the impact on children from low-educated families and immigrants being less. However, there are a variety of views.

Some authors place the onus for any school segregation entirely on the housing system and argue that school choice provides the only opportunity for children from segregated areas to attend schools with a wider intake. Other authors argue that school choice does increase segregation but that its effects should not be exaggerated. A study in Stockholm considered whether students who left low-achieving urban schools and opted for higher status schools really achieved more integration and whether those left behind urban schools suffered detrimental effects. Neither were found to be the case - pupils who moved were satisfied with their education but maintained their previous peer relationships. Students who remained in low-status urban schools were also satisfied with the quality of their education but sought more co-operation with other schools:

- Allen, R (2010), *Replicating Swedish 'free school' reforms in England*, Research in Public Policy, Issue 10, Summer 2010, CMPO, Bristol.
- Sandstrom, F.M. and Bergstrom, F. (2005) *School Vouchers in Practice; Competition Will Not Hurt You*, Journal of Public Economics 89, 351-80.
- Bunar, N. and Kallstenius, J. (2007), *Free of Choice, Integration and Segregation in Stockholm*, Stockholm: Stockholms Stad.
- Bohlmark, A. and Lindahl, M (2007) *The Impact of School Choice on pupil Achievement, Segregation and Costs: Swedish Evidence*, IZA Discussion Paper No. 2786, Uppsala University.
- Bohlmark, A. and Lindahl, M. (2008) *Does School Privatization Improve Educational Achievement? Evidence from Sweden's Voucher Reform*, IZA Discussion Paper No. 3691, Uppsala University.
- Lindbom, A. and Almgren, E. (2007) *The Effects of School Choice for Schools' Student Composition*, in *Free Schools and the Future*, ed. A.Lindbom, 175-84. Stockholm.

Professional researchers in the Department for Education have carefully considered the published evidence, together with any available reviews, critiques or debates, about the appropriateness of methods used and the robustness of findings presented. Their advice to Ministers and policy officials was based on what was considered to be the highest quality evidence, whilst acknowledging that evidence can often be ambiguous and that national contexts are often very different. A good example of how the evidence is contested is the debate over the findings presented by Hoxby *et al* on Charter Schools in New York. This was the subject of an academic review:

- Reardon, S.F. (2009) *Review of 'How New York City's Charter Schools Affect Achievement'*, Education and the Public Interest Center, University of Colorado, Boulder.

The debate was well-summarised by Matthew di Carlo (2011), *A Summary Opinion Of The Hoxby NYC Charter School Study*, available at: <http://shankerblog.org/?p=3083>

There are also other factors that we need to take into account in deciding policy including, but not limited to, considerations such as: how evidence from one country translates to our national context; what else was going on in each country when the reform was implemented; how policy is translated into delivery on the ground; and what the impact on the schools in the surrounding area is likely to be.

I hope that this response fully addresses your questions.

12 December 2011

Department of Energy and Climate Change—Written evidence

This submission responds to the questionnaire issued by the Lords Science and Technology Committee on 8 August 2011. It provides details about DECC's CSA in relation to his employment arrangements, his relationships with DECC and his relationships across the departments.

1. Name of department

Department of Energy and Climate Change (DECC)

2. Name of CSA

Professor David MacKay

Employment arrangements

3. Grade

SCS Pay Band 3

4. Tenure

Professor MacKay was appointed on secondment from the University of Cambridge on 1 October 2009 for one year initially, but this was extended to three years – until September 2012.

5. Full or part time

Professor MacKay's post is part-time: 0.8 of a full-time equivalent. He is also employed by the University of Cambridge as Professor of Natural Philosophy at the University's Department of Physics.

6. Qualifications and background

David MacKay is Professor of Natural Philosophy at the Department of Physics, Cambridge University and a Fellow of the Royal Society. He has a B.A. degree in Natural Science from the University of Cambridge and a PhD in Computation and Neural Systems awarded by the California Institute of Technology. Since 2005, he has devoted much of his time to public teaching about energy and in 2008 published a book on sustainable energy consumption and demand.

Relationships within the department

7. The CSA's reporting line

David MacKay reports to DECC's Permanent Secretary.

8. Position on departmental Management Board

He was a member of DECC's Management Board until March 2011. This Board was dissolved in March 2011 and replaced by a departmental Board. Although Professor MacKay is not a member of the departmental Board (chaired by the Secretary of State), he has an open invitation to attend Board meetings where there is discussion of scientific issues.

9. How his or her relationship with policy makers and involvement with policy decisions can be characterised

One of DECC CSA's key objectives is to ensure key policy and planning decisions in DECC are evidence-based.

DECC CSA is a Director General of the Science and Innovation Group (SIG). This contains 84¹⁷ staff, 59 of which are scientists or engineers. As a result of business planning following the Spending Review settlement, SIG is merging with the Chief Economist's Directorate (that includes DECC statisticians and some of its operational researchers) and the Strategy Directorate to form a new Strategy and Evidence Group (SEG), jointly led by the CSA, the Chief Economist and the Director of Strategy. The aim of SEG is to provide joined up, rigorous multi-disciplinary analysis for ministers, the Permanent Secretary and the rest of the Department.

As with other departmental CSAs, DECC's CSA works alongside other analytical disciplines, with departmental governance structures and ministers, to ensure robust, joined-up evidence is at the core of decisions within DECC.

Professor MacKay is an active member of a number of high-level Governance Boards or Panels. These are:

- a. **Approvals Committee** - (chaired by the Permanent Secretary) - approves major new investments and scrutinises detailed delivery plans that translate strategies into action for DECC's major programmes and policies.
- b. **Strategy Board** - a sub-committee of the departmental Board, supporting the Management Board's responsibility to define DECC's strategy. The role delegated to the Strategy Board is guiding the development of UK energy and climate change strategy within DECC.
- c. **Evaluation Board** - oversees and steers the department's work on measuring the impacts of policies. It identifies, prioritises and steers evaluation across DECC.
- d. **Evidence Panel** – provides challenge and advice on evidence and analysis for DECC's delivery programmes. Professor MacKay jointly chairs the Panel with DECC's Chief Economist.

10. Whether the CSA is involved in the development of departmental research strategies and decisions on research spend and, if so, to what extent.

DECC's CSA has direct control over research spend within the Science and Innovation Group (approximately £20m per annum on research projects). Individual policy programmes within DECC also have discretion to commit Programme budget to research projects. DECC policy programmes spent approximately £3.5m on research in 2010 – 2011. Research projects which contain significant scientific or technical content require the CSA's approval, as part of their Business Case approval.

¹⁷ Following the completion of the Spending Review the Group has increased to 84 staff of which 27 specialist posts and 2 generalist posts are vacant (as at end of July 2011).

At the present time the CSA does not formally approve the research of our arms length bodies, including the Nuclear Decommissioning Authority (NDA), which has an annual research budget of approximately £25m. He is, however, consulted on the NDA's research plans and priorities.

The CSA is a member of the Scientific Advisory Committee (SAC) of the RCUK Energy Programme. The SAC meets at least three times a year to advise the participating Research Councils on the strategic direction, scientific content and coordination of the programme and monitor progress.

11. Frequency of meetings with ministers (specifically, how many meetings has the CSA had with the relevant minister in the period from beginning of September 2010 until end of August 2011).

This question cannot be answered accurately. DECC does not hold a complete record of all meetings involving the CSA and ministers. DECC ministers meet regularly and frequently, informally and formally, with the CSA, both bilaterally and in other meetings.

12. How access to ministers is controlled

The CSA sends ad hoc advice to ministers via the standard departmental routes of submissions that are copied to the Permanent Secretary, all Director Generals and Press Office.

13. The CSA's relationship with the departmental scientific advisory committee

Professor MacKay has established an interim Science Advisory Group (SAG), comprised of world-leading independent scientists, engineers and social researchers. The SAG, chaired by Professor John Shepherd, FRS, exists to provide high-quality, independent scientific challenge and support to DECC CSA, to ensure DECC has access to the best possible scientific evidence to inform policy, and to increase DECC's engagement with the scientific community. The CSA attends all SAG meetings, held quarterly, and meets between meetings usually once with Professor Shepherd

14. Relationships across the department

Please refer to the GO-Science memorandum.

5 October 2011

Department of Energy and Climate Change—Supplementary written evidence

[Letter from David Mackay]

Re: supplementary evidence to the Committee's inquiry into the role and function of chief scientific advisers following the public Committee hearing of 25th October 2011

You asked me to come back to the Committee in writing on whether my team agreed with the content of DECC's Secretary of State's speech to the Royal Society on 13 October 2011.

A record of the request is in the final paragraph of the draft hearing transcript in Annex I of this note¹⁸.

The transcript of the Secretary of State's speech to the Royal Society is in Annex 2 [submitted but not printed].

To confirm my remarks to the Committee, my office was sent a draft of the speech, requesting comments. Unfortunately I was not available to comment on the draft because of a family bereavement. My office, however, made comments about the factual accuracy of the speech, which were addressed. I am happy with the speech that was delivered and the work of my team in assisting with the speech in draft. I have since watched the recording of the speech and I agree with its factual content.

During the evidence session, you asked if my team agreed with the Secretary of State's statement that,

"the problem with the UK nuclear programme was that it was run by scientists and engineers who promoted their own interests over that of the nation and produced a bunch of fiddly over-engineered reactors".

This statement is however not in the written version of the Secretary of State's speech, nor in the recording that I've seen and so is not I believe a factual representation of his view.

3 November 2011

¹⁸ See Q84

**Department of Energy and Climate Change Science Advisory Group,
Ministry of Defence Scientific Advisory Council, and Home Office
Science Advisory Committee (QQ247-277)**

Evidence Session No. 11

Heard in Public.

Questions 247 - 277

TUESDAY 13 DECEMBER 2011

Members present

Lord Krebs (Chairman)
Lord Broers
Lord Crickhowell
Lord Cunningham of Felling
Lord Rees of Ludlow
Earl of Selborne
Lord Wade of Chorlton
Lord Willis of Knaresborough
Lord Winston

Examination of Witnesses

Witnesses: **Professor John Shepherd**, Chair of the Department of Energy and Climate Change Science Advisory Group, **Professor Ian Poll**, Chair of the Ministry of Defence Scientific Advisory Council, and **Dame Helen Ghosh**, Chair of the Home Office Science Advisory Committee

Q247 The Chairman: Good morning. I would like to welcome our three witnesses this morning. Thank you very much for joining us for this session, which is part of an inquiry into the role of departmental Chief Scientific Advisers. Members of the audience should find on their chair a sheet that describes the purpose of the inquiry and the declared interests of members of the Committee. In a moment I would like to invite the witnesses to introduce themselves for the record. If you wish to make any brief opening statement, please feel free to do so, otherwise we will go straight into the questions. Without further ado, I will start with Professor Poll and move along the row.

Professor Ian Poll: Good morning, my name is Ian Poll. I am Professor of Aerospace Engineering at Cranfield University, Technical Director of Cranfield Aerospace Limited and Chairman of the Defence Scientific Advisory Council at the Ministry of Defence.

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Dame Helen Ghosh: I am Helen Ghosh; I am the Permanent Secretary at the Home Office, where I have been for nearly a year. Before that, for five years, I was the Permanent Secretary at Defra. I am a slight oddity in this line-up in that the Home Office Chair of the Science Advisory Committee is the Permanent Secretary, which demonstrates the link between policy and scientific and analytical advice. I am very familiar, from my time at Defra, with the alternative model, which my two colleagues represent.

Professor John Shepherd: I am John Shepherd from the National Oceanography Centre at the University of Southampton. I am currently Chair of the Science Advisory Group for DECC and was formally a member of the Science Advisory Council for Defra for many years.

Q248 The Chairman: Thank you very much. I should have said that the proceedings are being webcast—you can see the sign up there saying that we are broadcasting—so any comments will be observed by the wider public, including sotto voce comments. I would like to kick off with a question for all three of you to answer in turn. This is a very general question: could you describe how you see the purpose of the scientific advisory council or scientific advisory group that you serve as chairman of, and how does the group that you chair promote the use of scientific evidence in policy formulation? Do you think there are ways in which the current system could be improved and, if so, how? Perhaps John Shepherd would like to kick off.

Professor John Shepherd: As I see it, the purpose of the system is to provide support and challenge to the Chief Scientific Advisers in the departments. They are in a special and occasionally isolated position and I think it is the function of their scientific advisory councils to support them by providing information, to challenge them by asking for evidence and evidence of the quality of the evidence, and to help them form links outside the department into the wider scientific community. They all have those links when they are appointed but that can decay with time. So maintaining good contact between the Chief Scientific Advisers and the outside world is an important function that these groups can help with.

In terms of the use of scientific evidence, our role is primarily to ask questions about the quality of that evidence to try to ensure that the evidence for policy is sound. We can do that both through the Chief Scientific Adviser and directly. I know that all the different groups operate in somewhat different ways, but in DECC we ask the people involved in the formulation of scientific policy to come and talk to us and be questioned by us, in sometimes quite a lively manner. That is important in percolating the questioning and challenge into the wider reaches of the department.

The system could be improved. Again, it varies from department to department, but certainly in DECC the group is being run on a shoestring and some additional resources to provide support for research in relation to inquiries and the gathering of evidence, both for the Chief Scientific Adviser and for the advisory group, could be extremely cost-effective and worthwhile. Also, extending the reach and awareness of these groups into the people in their day-to-day work in the departments is always an uphill struggle, and we need to work harder and find more effective ways of reaching out into the department.

Q249 The Chairman: Could you exemplify how these additional resources would be useful? Could you point to a particular case?

Professor John Shepherd: Yes, for example in relation to fracking for shale gas, which is quite a controversial issue at the moment, we have asked one of our members to produce a briefing note for discussion at our next meeting, but he is doing that without resources.

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Certainly if there were more secretariat staff resources available to the Science Advisory Group, that could be done more comprehensively than it is being done at present.

Q250 The Chairman: Thank you, Dame Helen?

Dame Helen Ghosh: HOSAC, the Home Office Science Advisory Committee, obviously fulfils some of the common functions that my two colleagues will describe. I see its purpose as providing advice, in particular to Bernard Silverman but across the department to my policy colleagues, on appropriate research priorities and quality assessment of the research that is carried out. Something that I value very strongly—again, this is very much influenced by my time at Defra—is the fact that it gives me and the department a network beyond the chairs of our specific advisory committees and into the learned societies. I think it gives the chairs of our advisory committees a forum in which they can get together and discuss issues of common interest.

An area I would like to develop for the future is how we move on from a rather siloed approach. As you all know, we have individual committees, whether it is on animal experimentation, statistics or drug misuse, or input from expert colleagues on criminology, statistics, CBRN and other issues. That should move into something that looks more holistically at the challenges that face us. For example, when I was in Defra the Science Advisory Council played a large part in the Living with Environmental Change project, which was going on across government, the research councils and the learned societies. I have not yet found or identified that same sense of the advisory council being able to look across the piece. Indeed, as I was walking over here it struck me that the response to the summer riots could be a thing that was like that. Clearly our scientists and analysts have already done work on the statistics of who was involved, the socioeconomic and diversity background they came from, and their previous relationships with the CJS. Clearly there are all sorts of economic and social research, and technological issues in terms of the police response, that you could join up into a whole. My ambition is—and I agree with Bernard Silverman that we should start with a more informal seminar than our slightly formal meetings at the moment—to try to draw the various parts of HOSAC together into a greater whole. That would be my main area of focus.

Q251 The Chairman: Thank you. I just want a brief clarification. Did I understand from what you said that HOSAC is populated by the chairs of your specific advisory committees on issues like drugs, statistics or crime?

Dame Helen Ghosh: It is in two parts and has four of our chairs of committees. It includes Professor Lowe, who is the Chair of the CBRN Committee; Chris Hughes from the DNA Database Ethics Committee; Les Iversen from the Misuse of Drugs Committee; and Sara Nathan from the Animal Procedures Committee. Then we have five representatives from the learned societies—for example, Professor Newburn from the British Society of Criminology, Professor Shadbolt from the Royal Academy of Engineering, and Professor Dame Ann Dowling from the Royal Society—so we have a mix of learned societies or representative bodies and the chairs of the committees. So that is how it is made up.

Q252 Lord Willis of Knaresborough: Please do not take my question the wrong way; I am not questioning anything of what you said. GO-Science, in their evidence to us, said that the “councils are there to provide departments with strategic, independent, expert and cross-cutting advice”. Dame Helen, I question whether the fact that you as the Permanent Secretary chair not only the so-called independent challenge but also have the departmental

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Chief Scientific Adviser reporting to you is in fact a healthy way of creating independent challenge within the Home Office.

Dame Helen Ghosh: My honest reply is that I was surprised that that was the system I had inherited. As I said in my opening remarks, I can see that it was set up in that way to demonstrate the link between the scientific and analytical advice and the policy making process.

Lord Willis of Knaresborough: You control it.

Dame Helen Ghosh: I can absolutely assure you that I do not control it in any way. HOSAC meets on a quarterly basis. Of course, all the work of the individual committees, if you take the example of the Committee on Drugs Misuse, happens independently of HOSAC. All those committees are putting in their advice subject to the protocols that have been getting quite a lot of coverage in recent months and years. All the work of the individual committees is completely independent and is reporting within a statutory context.

I am very happy if the outcome of this Committee is to consider whether I should be the chair or one of the distinguished members of my committee should be the chair. Actually my interest is just in making sure—and I feel very passionately about this, from both my Defra days and before—that evidence has to be at the heart of the policy making process. Whatever happens, whatever arrangement you have, the voice of evidence has to be powerful in policy making. We just need to make sure that, were I to step down as chair and hand over to somebody else, it continues to be as powerful as it is now.

Q253 The Chairman: Professor Poll?

Professor Ian Poll: DSAC is one of the oldest science advisory councils; it goes back to World War II. Our remit is written down and is pretty clear: we are there to provide a source of informed, independent and impartial advice and challenge on all matters relating to science, engineering, technology and analysis, but not nuclear; MoD has separate advisory committees for nuclear issues. DSAC reports through the chair directly to the Secretary of State for Defence, but on a management basis that is normally delegated to the Minister for Defence, Equipment, Support and Technology.

We really have three roles. The first is to support MoD departments as required, on the basis of tasks such as evaluation, assurance, studies on issues, inquiries and the like. The second is to bring to the attention of MoD, including ministers, any matters that we believe should be considered. So we have the opportunity to raise any issue that we think is of interest or relevance. Thirdly, we have to develop and exploit a national and international network of high-quality, informed and independent seats of expertise. In the independent domain, this means that DSAC forms links with the Royal Academy of Engineering and its committees, the Royal Society and its committees, professional institutions in general, and with industry, though perhaps not to such a great extent. That is on a national basis but it is also on an international basis. For example, in the USA there is the Defense Science Board, which is similar in principle to DSAC. The Defence Science Board is closely linked with the National Academy of Sciences, so DSAC, through me, have already approached the National Academy of Sciences in the US to see if we can link the independents internationally, particularly through allies.

The features of DSAC are that the council has 18 independent members, all recruited through public advertisement and processed through Cabinet Office rules. They are very high-calibre people with national and international reputations, which is part of the appointment criteria. Thirteen of them are professors and six are Fellows of the Royal

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Academy of Engineering. Our council meetings are attended by the Chief Scientific Adviser, the Deputy Chief of Defence Staff for Capability and Personnel, the Surgeon-General, the Chief Executive of Dstl, representatives from Abbey Wood on the procurement side, and others as necessary. We also have a standing representation from HOSAC, and I sit on HOSAC as a reciprocal member. We also have cross-representation. Some of our members also sit on the MoD medical advisory committees and, as I said, there is cross-representation across other government departments, principally through HOSAC.

Q254 The Chairman: In the last part of my question I asked each of you for your view on whether the system could be improved and, if so, how. Both Professor Shepherd and Dame Helen have given us some hints on that. Are there any suggestions you have as far as the MoD is concerned?

Professor Ian Poll: You can always make improvements. The whole of the MoD is currently going through review and transformation, and DSAC is part of that. My personal view is that the current situation provides many opportunities where DSAC could be used more extensively than in the past. Over the past 30 years, the nature of science within MoD has changed from a situation where they used to choose areas, fund developments and become world leaders to a situation where, courtesy of developments in the commercial domain, it is more about finding out what is going on out there, identifying threats and opportunities and applying advances in defence terms.

To answer your question, DSAC needs to develop that outward-looking side to a greater extent. That is under our control and we will do that. Equally on the inside, more of the departments within MoD need to be accessing DSAC and getting information and evidence as part of their decision-making process. So my other role is to try to get DSAC used in more areas, for example by front-line commands.

Q255 Lord Broers: I was triggered by something that Professor Shepherd said. You said you support and challenge CSAs and you question those who develop policy, sometimes in a lively manner. Do you see CSAs developing policy or just advising on it?

Professor John Shepherd: No, I apologise if I gave that impression. I see the CSA as being very much involved in the discussion of policy formation to ensure the evidence on which that policy is based is sound. I think it is important that the scientists are involved in that debate but not involved in the final decisions on policy, which should remain in the political arena.

Lord Broers: What should happen if there is a disagreement between the CSA and those in the department defining policy?

Professor John Shepherd: Assuming that we agreed with the Chief Scientific Adviser, we would endeavour to assist him by further questioning of the officials involved in the policy and by trying to expose the source of the disagreement and resolve it. The group is independent and has the right to publish its advice. As a last resort, I suppose a major dispute might be made public in that way, but that has not arisen yet.

Q256 The Chairman: Can I just pick up on that last point about transparency? Do you normally publish the minutes of your meetings and the advice you are given? Is that just normal procedure?

Professor John Shepherd: Yes.

The Chairman: Is that true for all three committees?

Dame Helen Ghosh: I think the position is slightly different for the Home Office committee. Clearly that was the model I was used to in Defra—there were open meetings, openly advertised, and very rich meetings with members of the public. The nature of some of the stuff we deal with means we operate a more closed process. We do not have open meetings and we publish truncated notes of transactions, but I could come back with the specifics on how much we publish and how much we redact. We certainly do some redaction.

The Chairman: What about in MoD?

Professor Ian Poll: Most of our meetings involve classified material, for reasons I do not need to explain. All the meetings are properly minuted and are available internally. Sometimes we publish material; there are DSAC reports available on the internet. It tends to be rare, but we do produce very substantial pieces of work that are widely disseminated to the people who requested them and beyond.

Q257 Lord Crickhowell: I was going to ask my question a little later, but I think it follows very naturally from the question put to Professor Shepherd by Lord Broers. You will be aware that this Committee recently issued a highly critical report on nuclear research and the policies adopted by the department. During our inquiry, the Chief Scientific Adviser gave splendidly robust and independent advice and comment, which I am not sure endeared him to some of his senior officials in the department. We talked about supporting and challenging. Did your committee get involved in these very crucial issues that led to the department being heavily criticised in this Committee and, if so, in what way?

Professor John Shepherd: The short answer to that is no. The group has only been in existence for less than two years, and nuclear power is on the agenda for our next meeting and has not so far been discussed in detail by the advisory group. Those events you are referring to took place without intervention from our group.

Lord Crickhowell: I must say I am surprised by your answer. Our inquiry took place over quite a long period, so perhaps you could tell us how often you meet. To me it seems astonishing that, at a time when this inquiry was putting some crucial questions to the department of a highly critical nature, which involved the Chief Scientific Adviser's independent advice in major way—advice that contradicted most of the advice his department was giving—your council did not get involved in any way.

Professor John Shepherd: I can only say that, as far as I am aware, that is accidental rather than deliberate. When we were formed we created a list of issues that we wished to discuss and we have attempted to schedule those. For practical reasons, nuclear power did not reach the top of the list at an earlier date. In retrospect I would agree that does seem to be an omission.

Q258 Lord Willis of Knaresborough: I do not want to add to your pain, but I thought your earlier remarks were really quite telling. You said in terms of improvement that it would be useful to have a budget available to conduct independent research to support that challenge function. When we have heard from various departmental Chief Scientific Advisers, they have said to us that they have had either no budget or millions and billions and regard the entire departmental budget as part of their province. What are you talking about in terms of resource that would make it useful and why do you think you do not have

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one? Really you cannot do the work that Lord Crickhowell wanted you to do unless you have some resources to do it.

Professor John Shepherd: The sum of money I am thinking about is about £200,000 or £300,000 a year. The reason we do not have it is probably historical. When DECC was formed its budget was put together from those of its predecessor departments. At that time it did not have a significant budgetary item for the operations of the Chief Scientific Adviser or support for him. Once these things are set, they become difficult to change, so again I think this is as much a historical accident as anything, which I know the Chief Scientific Adviser has been active in trying to redress. However, in the present financial climate, of course, getting extra resources for anything is difficult.

Q259 Lord Willis of Knaresborough: Dame Helen, I recall in an earlier inquiry that I was involved with Paul Wiles said there had been a budget for research, and that continues, but in fact if it was inconvenient to the Government, the research was never published. Do you now have a policy of publishing all evidence that has been prepared at public expense?

Dame Helen Ghosh: We would have a policy of publication, although, picking up on Professor Poll's point, if it were in any way related to national security or sensitive in some way, we would not publish. Other than that, yes we would have a policy of publication built into the contract with whoever was providing. To describe the Home Office position—again, I suspect this is slightly different from the DECC arrangements—at the core of my advisory committee are powerful independent advisory committees, which have their own budgets, support, secretariats and so on. That is where they get the power and resources to do the research they are doing, whether it is the Drugs Misuse Committee or the Migration Advisory Committee; that is how they are financed.

Out of a total budget of something like £55 million across the department, Bernard Silverman controls £20 million. The rest is research work of various kinds that happens within the policy groups but is supervised in terms of priorities, quality, and making sure it joins up, by Bernard as Chief Scientist. So he has £20 million of his own and he influences the other £35 million across the policy group. That is how he could respond to any particular issue or priority that was identified by the advisory committee.

Q260 Lord Rees of Ludlow: Our study is focused on the particular role of the Chief Scientist at the departments on the advisory structure. I would like to ask for a bit more detail on the extent to which the CSAs inform the agenda of your committees, to what extent your committees assess the role and qualities of the CSA, and more generally whether you think the type of qualifications of the present CSAs are well matched to the requirements of the post.

The Chairman: Perhaps Professor Poll could answer that for us.

Professor Ian Poll: Our relationship with the CSA is one of providing support. We formally report at Minister level, but of course the CSA is the obvious internal person. So I meet the CSA at least once a month, possibly more than once a month, and if he needs things that DSAC can provide, then we provide them. He has a standing invitation to our meetings and he attends unless there is something really pressing that keeps him away. Basically, it is a relationship of support and encouragement, and it is a situation that works very well. I suppose it depends on personalities to a certain extent, but the present situation works very well.

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Within the Ministry of Defence, the quality and standing of the people who have been CSA is very important indeed. Certainly from the point of view of developing a strong DSAC, a high-profile, strong CSA is an essential prerequisite. As I say, I think it works quite well. That is not to say that it cannot be improved, but it is more of a personal relationship than a command and control relationship for us.

Q261 Lord Rees of Ludlow: Are you concerned about the perceived downgrading of the post in the MoD?

Professor Ian Poll: Like everybody else I saw the tabloid headline, and of course it is just that: a tabloid headline. If you look behind the words, what you see is a reorganisation and rebuilding of the department in which everybody's role has been reassessed. If roles change in response to need, then so be it, and the roles have to be given the appropriate levels of authority and so on. I thought that Mark Welland gave a very good description of the situation in his evidence to you, and I support that view. It may look as though science is being downgraded; I do not believe it is. I do not believe it would be in anybody's interests, certainly in the context of defence and security, to do anything to diminish the quality of scientific advice. If anything, as we go forward, we are going to need more of it, not less. The headline is misleading, as headlines often are. The real issue is that the whole system is being rebuilt to face future challenges.

Lord Rees of Ludlow: Do you think the person appointed will have equal credibility with the US and France?

Professor Ian Poll: That depends on the person. I have no knowledge of who it is, but my own view is that it has to be somebody who is an international big-hitter. If you do not have that, you do not get the relationships, the response and the engagement.

Q262 Lord Rees of Ludlow: Perhaps I could ask the other witnesses about the issue of the relation to the CSA.

Dame Helen Ghosh: Again, my position is slightly different. Lord Willis picked up some of the inherent tension and benefits of that. Do I think I have a CSA who is sufficiently big hitting, given the particular policy challenges and issues that face the Home Office? I certainly do. I think Bernard Silverman has built his role very strongly in the past year. He has considerable access to ministers. Only the other day I went along with him and some of his senior team to a meeting with the Home Secretary to go through the next round or phase of our social research programme; Bernard provides a gateway on that. He sees me and the Home Secretary at a series of weekly round-up meetings, so he has visibility and he has access. When he speaks, ministers listen, which I think is the ultimate test. Incidentally, after this I am off to a two-day meeting with the Department of Homeland Security, which we have on a twice-yearly basis, and Bernard Silverman will be lunching with his opposite number from DHS at the Royal Society to talk about issues of common interest, such as bioterrorism. Again, there are good international relationships there.

Going back to Lord Willis's question, I think that having a Chief Scientist who is embedded in the management of the department is, overall, a benefit. I have seen less successful models in the past. This is by no means a criticism of either the department or the individual, but I think the very roving role that someone like Sir Gordon Conway had at DfID, when I was a non-executive there, meant that he was so disconnected—and obviously travelling around the world and so on—that he could not feed into the weekly discussion and have the visibility that someone like Bernard can have.

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Given that I am an amateur, it is not for me to comment on the distinction of the members of the committee, who, given their background from the learned societies, appear to me to be very distinguished. My interest and my challenge is whether we make the whole greater than the sum of the parts. That is something about how you pull these groups together into the cross-cutting challenges that face us.

Professor John Shepherd: The situation in DECC is again somewhat different. Our relationship with the Chief Scientific Adviser there is more that of professional colleagues. We have a very energetic two-way debate, something of the sort you might get in a common room, with a very frank exchange of views. The impact of that is difficult to measure because it is very informal. My perception is that our CSA is very effective and influential within the department. In particular he has been very influential in pushing forward the consideration of scenarios for the energy mix to 2050, which has been something of a personal initiative, and has been very effective in doing that. So we have a very capable and energetic person, which is very important. He is also well connected into the management structure of the department, which I agree is also crucially important.

Q263 Lord Rees of Ludlow: There have been some comments from other witnesses that perhaps the CSAs are more focused on being academics and there are not enough engineers or social scientists. Perhaps the range of expertise they have collectively may not be as broad as it should be. Would you like to comment on that?

Professor John Shepherd: Is that addressed to me?

Lord Rees of Ludlow: To anyone really, because it is about engineering, which is crucial in some departments, and social science, which is crucial in other departments, such as the Home Office.

Professor John Shepherd: We have a mixed membership, deliberately dominated by engineers, with an economist and a social scientist within our numbers. We are trying to cover all the aspects within a relatively small group, and I am relatively content with that.

Dame Helen Ghosh: I was impressed by the range of disciplines represented on HOSAC when I arrived. It includes Sara Nathan, who chairs our Animal Procedures Committee, and she is by no means a scientific expert; she is a broadcaster by background. For something like animal procedures, having that external view is also very important. I think it is the right range; it certainly has significant representation from the social sciences, which I would expect in the Home Office. I should not really comment on my previous department, but I know that there the work that Bob Watson has been doing has been to move away from traditional animal health sciences, which had been its focus post-2001, and more into social sciences and broader analytical issues. So I was very pleased to see that I seemed to have that kind of range when I arrived at the Home Office.

Q264 The Chairman: Professor Poll?

Professor Ian Poll: I think that the question was about the CSA and his characteristics.

Lord Rees of Ludlow: CSAs in particular, but also the committees.

Professor Ian Poll: First and foremost you need somebody who has demonstrated a deep capability in a particular area. I do not think it matters which area it is; you simply want to know that they know how to do something in depth. Then you want someone who is a shaker and a mover; you need somebody with the big-picture view and the ability to operate

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at that big-picture level. It is a big ask, but we were saying earlier that you need substantial people.

If we go down to the advisory committee level, DSAC is looking to reduce the number of people—we have 18 independents and we think that is too many. We want to move away from the deep specialist for specialism's sake towards that strategic, broader thinker. Behind DSAC is the Independent Science and Technology Advice register, which has 130 people on it. That is where you get your skills in specific areas from, so if you need a taskforce you go to the register, take a council member, organise a taskforce and go and do the job.

Q265 Earl of Selborne: Dame Helen makes it clear that she has much more social science expertise on her committee than is the case for DECC or the Ministry of Defence, as you would expect. However, I am slightly surprised that Professor Shepherd's committee does not see the need for more than one social scientist; after all, behaviour change and the opportunity to get this energy mix sold to the population at large seems to be something of a priority. Would you like to comment on whether you are happy with just the one social scientist?

Professor John Shepherd: One is certainly better than none but may not be enough. I would not contest the fact that we could probably use more expertise in that area. We have the option to adjust that and may well do so in the future.

Q266 Lord Cunningham of Felling: The Government tells the Committee that the role of science advisory councils is to provide departments with independent, strategic, expert, cross-cutting advice and to challenge departments' management and use of science. Given that that is the Government's objective in describing these committees, I would like each of you to tell us how you ensure that that happens, and happens in a timely manner. Can you also give us specific examples from your experience in these roles of where significant influence on policy has resulted?

Professor John Shepherd: In terms of the advice and the challenge, yes, I am satisfied that we do that. I think it is a little bit early for us to claim specific impacts on policy because we have only been operating for about 18 months, but I am aware of issues where the discussions we have had are influencing policies currently being formed, particularly in relation to the side effects of properties using Green Deal grants and the problem of intermittency in renewables and the effect on the energy supply and pricing of energy under the electricity market reform. We are very much involved in those decisions, and I understand that things have been done that would not otherwise have been done because of our discussions.

In terms of evaluating and challenging the departmental spend on science, that is not something we have got into yet. That is deliberate, because we wanted to deal with some of the major scientific and technical issues first. The department is at present rearranging its budget for the provision of evidence. That is something that is on our list and we will come to in due course.

Q267 The Chairman: Dame Helen?

Dame Helen Ghosh: In some cases it is difficult to pull apart the influence that the overall scientific and analytical effort of the department has on policy and to identify the bit that was the Science Advisory Committee. If I have a live example of the influence of analysis on policy development—to go back to the riots—it would be the analysis that our teams did of the people who were involved and their motivation, and the analysis that they have done of

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the role of gangs, or not, in that. You can instantaneously say, “Event, policy response, evidence”, and you can link the three things together.

If I look at what HOSAC itself has done in terms of influencing policy, to be honest I cannot immediately think of a policy problem that the advisory committee itself, rather than one of the advisory sub-committees, transformed. However, what it has done is identified some longer-term or underlying issues for more work. For example—slightly before my time—it was ahead of the game in trying to get more research work on cybercrime and identified cybercrime as an issue, which is now built into our research base, in particular from the Centre for Applied Science and Technology in terms of interception and how you build an internet that is safer against cybercrime. Equally, at the moment they are doing work on ethical standards around new scanners—there is obviously a lot of controversy around some of the new body scanners—and about the use of statistics in counterterrorism work. So they have identified issues that we need to look at further and work is going on on them, but I cannot instantaneously think of an issue that they identified, where they produced advice and it fed directly into policy, in the way that Professor Shepherd has done.

Q268 The Chairman: Professor Poll?

Professor Ian Poll: In our case it is probably a little simpler because the Chief Scientific Adviser uses DSAC as a part of process in planning the research and development spend for the budget, which is £400 million.¹⁹ So we are actually involved in the formulation of that, and we also play a role in evaluation and assessment as it goes through. In addition to that, as I said earlier, we also have our independent activity, and there is an example I can give you that was published some time ago called *Defence in a Changing Climate*. In other words, we brought the issues of climate change into the thinking of the Ministry of Defence, because climate change has an awful lot of implications. That is an example where we have raised something, published something and introduced it. Our role is to give the decision-makers the best view of what is out there; they then decide what to do with it.

Q269 Lord Cunningham of Felling: Dame Helen, you are in a peculiar position because you chair the scientific advisory council in the Home Office. I think you are probably in a unique position in Whitehall in this respect. You are also responsible for the management of the Home Office.

Dame Helen Ghosh: Indeed.

Lord Cunningham of Felling: How can you challenge your own management as chair of this committee looking at the department? Is that not just a clear conflict of interest?

Dame Helen Ghosh: I would come back to the answer that I gave to Lord Willis.

Lord Cunningham of Felling: I do not think that you did answer him actually.

Dame Helen Ghosh: Is it a clear conflict of interest? You can turn that around on its head and say that it means that the voice of HOSAC and the Chief Scientist is more powerful in policy making discussions than it would be if you had a HOSAC chaired by a scientific member reporting in to a CSA who would then perhaps fight for attention with the policy makers.

Lord Cunningham of Felling: But you cannot say it is independent. You are not independent.

¹⁹ Professor Poll clarified after the session that he was referring to science and technology spend.

Dame Helen Ghosh: No, I am not independent and, if I may use an unparliamentary term, that is a fair cop. That is why, when Lord Willis said it, I thought that, if the Committee were to say they did not think it was appropriate, I would say, “Fine”. However, I would want to make sure that we still had that link to evidence.

Lord Cunningham of Felling: I do not want to put words in your mouth, but I think you said in answer to Lord Willis that you found it unusual. Why did you not just change it?

Dame Helen Ghosh: I have been in the job 11 months and have attended two HOSAC meetings so far. I tend to work on the basis of getting to know how a system works before changing it. It did not strike me as dysfunctional—I wanted to learn more about the role of the committee—but I would be very happy to reconsider in light of the views of this Committee. As I say, the most important thing to me is that I have, as I believe I do, a powerful and independent CSA that has influence and, in particular, a series of scientific advisory committees that are high profile, well led and resourced.

Q270 Lord Crickhowell: I want to go back to the issue that Lord Cunningham has been raising. I expressed some astonishment at the answer I received from Professor Shepherd, because I then began to think of the situation that Dame Helen would find herself in. On that occasion, we had received evidence from every official in the department, which was then contradicted and challenged by the Chief Scientific Adviser in the department. There were some slightly uncomfortable relationships for a time between those who had been giving one lot of evidence and the Chief Scientific Adviser, who had been giving contrary evidence. It seemed to me, as I thought of that exchange, that this is precisely the sort of difficult area that Dame Helen might find herself in. There her officials had all taken a particular line and were suddenly challenged openly in evidence to a Committee, as he indeed had a duty to do if that was his scientific view based on evidence, that contradicted everything that had been said so far by the officials. Indeed, to some extent it would contradict some of the evidence we received from the Secretary of State. Dame Helen, if you have a similar situation, are you not going to be placed in an almost impossible conflict? If you and all your officials have supported a policy line that is suddenly being challenged by the Chief Scientific Adviser, who you are there to support. Is this not a difficult situation?

Dame Helen Ghosh: I am just trying to think about how this would work in practice. Frankly, in practice I would see it as no different from the kind of debate that, as you will know from your ministerial experience, would go on in a circumstance of that kind. In a situation where scientific or analytical evidence is a key part of a policy making process, as you will know, the analytical advice will go to the policy making team and it will be highlighted in terms of the advice going forward to ministers. If it were a controversial issue, one would almost certainly have a very open discussion with ministers, where the Chief Scientific Adviser, policy team, the political leaders of the department and I would be present. The fact that I was chair of HOSAC would not make any difference to the fundamental issue: to what extent is the analytical evidence being put forward and championed by the CSA the deciding factor, and to what extent is it outweighed or balanced by broader political objectives? That mix, when ministers are taking a decision of analytical evidence, policy outcomes and politics, is the same whether I am the chair of HOSAC or not. The same people would be in the room, the same challenge would happen and the same challenge to the policy making process would be there. I do not think my chairpersonship of HOSAC makes much difference to that.

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The Chairman: We could develop this further, but I would like instead to turn to Lord Broers.

Q271 Lord Broers: To a certain extent we have discussed this subject, but I want to put it in a rather pointed way. The question is: should CSAs be given resources to commission scientific research or commission independent expert judgment to inform policy making where facts are missing or uncertainties exist? What I have been hearing and have found very interesting is that in effect your committees are there to help CSAs gain such advice. Would I be correct in assuming that the model is of a science advice unit in which the CSA is the CEO and you are the chairman? Is that a correct model? Are your committees more or less there to serve the CSA?

Professor Ian Poll: In my case it says on the tin that I am there to report to the Secretary of State; there is no mention of the CSA in my remit. However, in practical terms the relationship between my committee and the CSA is very clear. We are there as an extra dimension to his capability, should he choose to use it. If he never used us, we would have plenty of other things to do. This is a situation where, in our case, we are used because we have a task that needs to be done.

Lord Broers: So you see yourselves with broader responsibilities.

Professor Ian Poll: Yes.

Lord Broers: Should the CSA have independent resources?

Professor Ian Poll: Yes, of course. I would say that we are the CSA's independent resource. As I say, we are impartial, we are independent and we are informed. We are not under direct control; we are given resource that allows us to do the things we think we should do, within reason.

Q272 The Chairman: Would anybody else like to respond to Lord Broers's question?

Professor John Shepherd: The short answer would be yes; the CSA should have resources to do whatever they think is necessary. That is not quite the same as saying they should be in charge of the whole science budget of the department. There the answer will vary from department to department. CSAs with resources beyond that provided by their scientific advisory groups are a very important part of the process.

Dame Helen Ghosh: As I said earlier, we have a balanced model where the CSA controls slightly under half the budget and half the budget is with the policy teams. Even there, both HOSAC, in reviewing the research as it goes forward, and Bernard, in having a QA and gateway function for ministers, sees what is going on in policy groups as well, so I think that that works well.

Q273 Lord Wade of Chorlton: Who exactly sets your agendas? Who asks the question that you are set up to answer? If it is not the CSA, and it is clear from your comment that it is not, who is it?

Professor Ian Poll: In our case there are two sources. The departments within the MoD themselves raise questions for which they need assistance, and we raise our own agenda. So it is not from the CSA. The CSA is there and has an input, but we get our requests from all the departments and we put in our own. We make our own agenda and our own programme; we control it.

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Lord Wade of Chorlton: You decide the priorities.

Q274 The Chairman: Dame Helen, is it the same at the Home Office?

Dame Helen Ghosh: It is very similar. There is the rolling programme of activity, which is reviewing and QA-ing the rolling programme of research, and then identifying the issues on which the committee wants to focus. I gave the earlier example of cybercrime. Indeed, more recently metal theft was something members of the committee raised and have commissioned work on. I was interested in Professor Shepherd's point about having a long-term plan for what you are going to look at. My impression is that it is slightly more pragmatic than that, and at one meeting the committee agrees in the light of the meeting what they want to focus on next time. So I am not sure, but I stand to be corrected, that we are quite as strategic as the DECC committee is.

Professor John Shepherd: We set our own agenda; the CSA is present at our meetings and clearly has a significant input into those discussions. We would not lightly refuse a request from him to consider an issue, but in my view it is clearly my decision as chair as to what goes on the agenda. We have a draft agenda extending about a year in the future, which evolves as time goes on.

Q275 Lord Rees of Ludlow: I wonder if you feel that these committees meet often enough, given the extensive and fast-changing agenda. I ask that in the context of DECC and the nuclear issue.

Professor John Shepherd: That is a difficult question. At present we meet three times a year, which may not be enough, but getting the attention of busy people is always difficult. If we had more frequent meetings, we would probably have lower attendance at those meetings.

Dame Helen Ghosh: HOSAC meets on a similar timetable to the DECC group, but in between that the chairs of the significant advisory committees are doing a lot of work. So, again, I suspect we could not get the whole group together more often than that.

Professor Ian Poll: We meet five times a year. We have a two-day away-day workshop, and I interact with my group on a daily basis through email. Because we are a small group, we can produce reactions and responses within hours if required.

Q276 The Chairman: Could I just ask a final question? The briefing here says there are eight departments of state that do not have overarching scientific advisory committees. In a sentence, do each you think that they should?

Professor John Shepherd: In principle, yes.

Dame Helen Ghosh: Yes, if it adds value to the existing scientific and analytical work that goes on. I suspect it would depend on the nature of the department.

Professor Ian Poll: Yes, because every facet of modern life involves science, engineering, technology and analysis. If you do not have access to good advice, that is a definite negative.

The Chairman: I said it was the last one, but Lord Willis is pressing for a tiny question.

Q277 Lord Willis of Knaresborough: Professor Poll, I was very impressed with your comment about having big people as the department's Chief Scientific Adviser. Professor Welland clearly fits that bill, Dame Helen has said exactly the same about Professor Silverman and indeed you have said the same about Professor MacKay in those departments.

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Do you think it is essential? You all nodded at that time; are you continuing to nod? Was the Cabinet Secretary wrong when he said to us that we as a Committee were obsessed with big people? Yes? Good.

Professor Ian Poll: The answer is it would not contradict our view.

The Chairman: Okay. Thank you very much, and thank you very much for your time. In due time you will receive a draft of the transcript to correct, and some time in the first part of next year we will be publishing our report. Thank you very much for your contribution.

Department for Environment, Food and Rural Affairs—Written evidence

Questionnaire for the Department for Environment, Food and Rural Affairs Chief Scientific Adviser – Professor Robert Watson FRS

Employment arrangements

Grade:

- Defra's CSA - Professor Watson - is a Senior Civil Service Pay Band 3.

Tenure:

- He was appointed on 17th September 2007 for a fixed term which runs until 16th September 2012.

Full or part time:

- Part-time i.e. 0.8 of a full time equivalent. Professor Watson is also employed as Chair of Environmental Sciences at the University of East Anglia and Director for Strategic Direction at the Tyndall Centre.

Qualifications and background:

- Before taking up post as Defra's Chief Scientific Adviser, Professor Watson was previously at the World Bank where he was the Chief Scientist and Senior Adviser for Sustainable Development. He has also held senior positions at NASA and, more recently, at the White House, where he was responsible for ensuring that science underpinned policy making. He was recently elected as a Fellow of the Royal Society.

Relationships within the department

The CSA's reporting line:

- The CSA reports direct to Defra's Permanent Secretary.

Whether he or she is on the departmental Management Board:

- The CSA is a member of the Management Committee and attends both its meetings and those of the Supervisory Board, as well as weekly ministerial meetings.

How his or her relationship with policy makers and involvement with policy decisions can be characterised:

- The CSA's primary roles are to provide ministers and colleagues with advice on evidence used to inform policy, challenging Departmental plans and use of evidence in advice when appropriate. He is Management Committee champion for evidence-

based policy making, representing all analytical streams, and challenges and advises on policy formulation. To illustrate, he has recently given advice on issues including Bovine TB, the Natural Environment White Paper for England, adaptation to climate change, tree health and sustainable agriculture.

Whether the CSA is involved in the development of departmental research strategies and decisions on research spend and, if so, to what extent:

- The CSA proposes how the evidence budget should be split across Defra's policy and delivery needs, advising the Management Committee and ministers on the allocation of resources for investment in evidence gathering and analysis. With the support of his in-house team he draws up, and regularly updates, an Evidence Investment Strategy (EIS) for the Department, which identifies the evidence needed to meet Departmental priorities of:
 1. supporting and developing British farming and encouraging sustainable food production;
 2. enhancing the environment and biodiversity to improve quality of life; and
 3. supporting a strong and sustainable green economy, resilient to climate change;along with the major responsibilities of:
 4. preparing for and managing risk from animal and plant disease; and
 5. preparing for and managing risk from flood and other environmental emergencies.
- The EIS is based on both a forward looking and top down assessment of opportunities and risks, and the long term needs for capability; and bottom up Evidence Plans drawn up by SROs for their programmes. These Evidence Plans set out the policy context, existing knowledge and resources, and evidence needs. The CSA and his team use these analyses to recommend the best value for money allocation of resources.
- In the current spending round, the CSA made the case for the importance of evidence to Defra, with priorities for evidence spend being based on the EIS and coalition priorities. This resulted in a decision by the Secretary of State, ministers and the management team to maintain investment as a proportion of total Defra budget. Evidence budgets for the Spending Review period were agreed and allocated in late 2010. Approval must be sought from the CSA before any significant changes to evidence budgets can be made.
- Flexibility to respond to future evidence challenges was achieved by reserving a proportion of the evidence budget (an 'unallocated evidence reserve') in the final three years of the Spending Review period (10%, 25% and 50% in years 2, 3 and 4 respectively). The CSA will continue to work with Senior Responsible Owners (SROs), Heads of Profession (HoPs) and evidence teams as part of annual business planning to review evidence needs and priorities in order to distribute the unallocated evidence reserve. SROs will review their evidence plans annually and update when necessary. This ensures that evidence investment is strategically managed across Defra's portfolio.

- A small proportion of the budget is allocated to strategic evidence gathering (including horizon scanning, support for partnership with RCs and others, and innovation) and in addition the CSA has a small “challenge” budget that can be used to fund activities such as the National Ecosystem Assessment.

Frequency of meetings with ministers (and, specifically, how many meetings has the CSA had with the relevant minister in the period from beginning of September 2010 until end of August 2011):

- The CSA met Defra’s Secretary of State and ministers, individually or collectively, to provide scientific advice sixty-three times between 1st September 2010 and 31st August 2011 (of which twenty-three were regular business/Supervisory Board meetings).

How access to ministers is controlled:

- Defra’s CSA is a member of the Management Committee and attends both its meetings and those of the Supervisory Board, as well as weekly ministerial meetings. He also meets ministers, individually or collectively, on an ad hoc basis to provide scientific advice.

The CSA’s relationship with the departmental scientific advisory committee:

- The CSA is supported in his role by Defra’s independent Science Advisory Council (SAC), a non-departmental public body appointed under Nolan rules, and by a number of expert scientific committees. SAC’s purpose is both to support and to challenge the CSA in maintaining his independent role. The SAC helps to guide scientific priorities across Defra’s entire policy making landscape including immediate responses to issues, medium-term opportunities for risk management and longer-term horizon scanning and planning. The SAC communicates advice to the CSA and through him to ministers.

Relationships across the departments

Please refer to the overarching memorandum compiled by the Government Office for Science.

19th September 2011

**Department for Environment, Food and Rural Affairs and
Department for Education—Oral evidence (QQ 21-51)**

Evidence Session No. 2.

Heard in Public.

Questions 21 - 51

TUESDAY 18 OCTOBER 2011

Members present

Lord Krebs (Chairman)
Lord Broers
Lord Crickhowell
Lord Cunningham of Felling
Baroness Hilton of Eggardon
Baroness Neuberger
Earl of Selborne
Lord Wade of Chorlton
Lord Warner
Lord Willis of Knaresborough

Examination of Witnesses

Witnesses: **Professor Robert Watson**, CSA at the Department for Environment, Food and Rural Affairs, and **Ms Carole Willis**, CSA at the Department for Education.

Q21 The Chairman: I would like to welcome our second panel of witnesses, Professor Watson from the Department for Environment, Food and Rural Affairs and Ms Carole Willis from the Department for Education. In a moment I am going to invite you to introduce yourselves. You are both familiar with the setting of the webcast and that sotto voce comments will be picked up by microphones. For any new members of the public here, you should find a piece of paper on your seat, explaining the inquiry we are making here today. Without further ado, I ask the witnesses to introduce themselves for the record.

Ms Carole Willis: Yes, hello. I am Carole Willis. I am Director for Research and Analysis in the Department for Education and the department's Chief Scientific Adviser. I was appointed from outside the department in both of those roles in August 2008. I have been in the department now for three years.

Department for Environment, Food and Rural Affairs and Department for Education—Oral evidence (QQ 21-51)

Professor Robert Watson: I am Bob Watson, Chief Scientific Adviser at Defra. I have been in my role since September 2007.

Q22 The Chairman: Thank you very much. I will start with a very general question, which you are familiar with. I really want you to explain to us what you think is the role of a departmental Chief Scientific Adviser and whether or not that has changed during the time you have been in office.

Ms Carole Willis: Thank you. I see my role as Director of Research and Analysis and Chief Scientific Adviser as synonymous, and there are two key aspects to that, I would say. The first is around ensuring that robust evidence and analysis is brought into the department and undertaken by the department's analysts, and that involves me overseeing our research programme and engaging actively with external academics and researchers. Secondly, it is to actively ensure that that research and analysis is used in strategy development, in policy development and in delivery decisions. Then my role is as head of the analytical community, working with them to ensure that independent advice and challenge are provided throughout the policy development process. Those two key dimensions of my role have not changed at all since I was appointed. Obviously, we have had a change of Government, a change of policy direction, and the analytical community have had to be flexible in responding to the new requests for information and evidence from ministers. I have also taken on some additional responsibilities, mainly to do with my role as Head of Research and Analysis around our data and statistics, and responsibility for things like the new transparency agenda.

Q23 The Chairman: Can I just pick up on that? You said when the new Government came in there was a new policy direction. Was that new policy direction based on new evidence or was it the same evidence but interpreted in a different way?

Ms Carole Willis: The policy direction was set out in the coalition documents and the manifestos. We had to change rapidly in terms of providing the underpinning evidence base and set all of that out for ministers in the process of developing the details of those policy proposals.

The Chairman: So, it was policy-based evidence rather than evidence-based policy.

Ms Carole Willis: We set out very clearly for ministers the range of different evidence to help to develop the detail of those proposals.

The Chairman: So it was policy-based evidence rather than evidence-based policy.

Ms Carole Willis: I would say that there is strong evidence underpinning the policy direction, which I can talk about further.

Professor Robert Watson: Yes, I think it is fairly straightforward. First it's independent advice to ministers and officials. Second is allocation of resources to evidence programmes.²⁰ Third is to ensure that all policies are evidence-based. Fourth is to be the external face of Defra to the public and to have the visibility of science in Defra, and fifth is to be Head of Profession.

Q24 The Chairman: Thank you. Can I just ask a supplementary question in relation to what you have described? During the CSR period, is it part of your role to advise on both

²⁰ Defra clarified after the session that this comment referred to evidence activities.

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the R&D spend that the department makes and the framing of its CSR submission in relation to R&D?

Ms Carole Willis: Yes. I provide advice to ministers about both our forward-looking analytical priorities and our research programme, and I was actually involved in the spending review process in terms of collating the evidence and in discussions with Treasury about how those finances should be allocated.

Professor Robert Watson: Yes, also the same answer. There was a question of what should the cuts, in our case, be in evidence and I made sure that they were proportionate to programme cuts. Then I pushed forward very hard that we should not salami-slice the evidence budget, that we should be quite strategic by effectively setting up a framework of high, medium and low priorities, also arguing that we should not allocate all the money for the four years, that I would hold back 10% of the budget for the second year, 25% of the budget for the third year and 50% of the budget for the fourth year, given that we did not know what policy priorities would change, what evidence priorities would change, what the research councils would be doing, or even what some of the international research would be. So, the answer is yes, it was a role of saying not only where I thought the priorities would be, but strategically how we would set priorities relative to policy.

Q25 Lord Cunningham of Felling: You were present when you heard the previous witnesses talking about best practice and I just wondered, for example, Ms Willis, if you could tell us how many times you have met the Secretary of State since the change of Government.

Ms Carole Willis: I am not sure exactly about meeting with the Secretary of State. I know in our evidence to the Committee we identified that I had met ministers 15 times in the last year and I have regular contact with ministers' private offices and with advisers. I also regularly meet with the Permanent Secretary.

Lord Cunningham of Felling: You cannot remember how many times you have met the Secretary of State?

Ms Carole Willis: I will need to double-check the figures.

Lord Cunningham of Felling: Have you ever met them?

Ms Carole Willis: Yes.

Lord Cunningham of Felling: And the Permanent Secretary?

Ms Carole Willis: I meet with David Bell very regularly. We have one-to-one KITs at least once a month.

Q26 Lord Cunningham of Felling: Would you say you were effectively embedded in the change programme that is going on in the department?

Ms Carole Willis: Absolutely. In a whole range of different areas we have programme infrastructure that supports all of the policy development around the educational reforms. I am actively involved in a number of those groups, as is my analytical community. In terms of our reforms of the structure of the department and the creation of new executive agencies, I sit on the department's reform board for those activities.

Q27 Lord Cunningham of Felling: You have been a civil servant for 14 years and you have worked in several different departments. How would you rate your engagement in the

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current department as opposed to what has happened in previous departments that you have worked in?

Ms Carole Willis: I have been very actively involved in the policy debates and building the evidence base in all the departments I have worked in. Professor Wiles talked earlier about research and policy development on migration. That was actually me; that was one of the first roles I moved into in the Civil Service, working on migration policy at the Home Office and the underpinning evidence base. I think that is one of the reasons I was appointed into this post, because I have that experience of applying evidence and analysis in a policy making environment and I understood that policy making context and how to ensure that research and analysis has maximum traction, as well as my background as an economist and a social scientist.

Q28 Lord Cunningham of Felling: Professor, you are in a different position; you are external to the department. How do you rate your engagement with Defra as compared with what you heard from the previous two witnesses?

Professor Robert Watson: I would say it is outstanding. It was with the previous Government and it is totally outstanding this time. I have probably met the Secretary of State and/or ministers about 63 or 64 times in the last 11 months. I had two meetings, including a one-on-one with the Secretary of State where we just talked yesterday; I will be in a two-hour meeting with the Secretary of State when I go back from this; I probably have four hours a week with the Permanent Secretary and other DGs, so I am totally and utterly embedded both in the management structure and with ministers and with the Secretary of State on a very wide range of issues. I would say it would be very hard to make it much better. The reason is very simply that the Permanent Secretary, the DGs and the Secretary of State and her ministers care about evidence. They want to know inconvenient truths. They want to know the truth and the inconvenient truths.

The Chairman: Is the same true in DfE?

Ms Carole Willis: Absolutely.

Q29 Lord Willis of Knaresborough: Quite frankly, I am incredulous at the difference between two departments, one where you do not even know if you have met the Secretary of State. You do not know whether there is any evidence around the policies that the department is putting forward, and yet you are both departmental scientific advisers. I will move on.

Ms Carole Willis: I did say I have met the Secretary of State.

Lord Willis of Knaresborough: Well, I find it incredulous that, quite frankly, you have such radical policies coming down the track and that you are not having a regular meeting based on an evidence base to underpin what are radical transforming policies.

Ms Carole Willis: Could I just answer that, Lord Chairman? I work very actively through the analytical community across the department and there are bedded out teams of multidisciplinary analysts working in each of the policy directorates very closely on a day-to-day basis with the policy teams to ensure that evidence, research and analysis is fed into all of that policy advice. All the submissions that go up to ministers are based on that evidence and analysis and understanding. That is embedded within the Director Generals, who often seek my advice about particular issues, and the Permanent Secretary. So, that evidence base is feeding into those discussions that are taking place.

Q30 The Chairman: What I do not understand is this. If the evidence was there for the previous Government that had a different policy, were you busy telling them, “You are getting it wrong”, and you sighed with relief when the new lot came in and said, “The evidence is now on your side”? It cannot have been on the side of both Governments if they have different policies.

Ms Carole Willis: If I can clarify that point, the current Government is very interested in international evidence. We have always looked at international evidence, but the current ministers are asking more questions about why we are not doing as well in the PISA international rankings as other countries and what we can learn from other countries. We have been developing evidence within the department, drawing much more heavily on international evidence to inform policy development. That is what I meant by the different kinds of questions as well.

The Chairman: You say the previous lot did not care what happened in other countries.

Ms Carole Willis: They did, but this Government is asking a lot more questions about the international evidence.

Q31 Lord Willis of Knaresborough: Do forgive me, but again I find that incredulous. If you look at free schools policy, the clear piece of evidence coming out of the international evidence from Sweden is that now nearly 70% of all free schools are operated by for-profit companies, and that does not appear in any piece of evidence that is put before the new policy. I will leave that on the table and we will just have to disagree on it. To both our witnesses, how do you provide, as a departmental scientific adviser, independent challenge to ensure that policies are evidence-based rather than the point the Lord Chairman made about how you then find the evidence to support the policy? At what stage in the policy process are you actually consulted? Is it as the policy is being formulated? Do they ask you to come in at that point? Can you provide examples that best demonstrate the positive impact that you have made as an individual departmental Chief Scientific Adviser on the use of science in government and examples where, quite frankly, you have been unsuccessful? Can I throw a final bit in? When have you vehemently disagreed with the Secretary of State and gone in and said, “Look, Secretary of State, you are wrong on this. All the evidence points to B rather than A”?²¹

Professor Robert Watson: I have gone into different parts of the policy, sometimes right at the very beginning and other times when a policy may already have started to form. Especially when I first arrived, many things were already on the table. The various issues I have been involved in—I will use one that I know Lord Krebs will find interesting and it is one of the more positive ones—is bovine tuberculosis. Also, very early on this year, I became involved in the natural environment paper for England, based on some work: tree health, where we are on bee health, whether Bank should be a special area for conservation, et cetera.²² I was often involved both with the officials and with the ministers, so for example

²¹ Professor Watson wrote after the session “In response to your question of where have I been less successful, I have no answer. On all policy issues that are based on scientific evidence I have been able to provide appropriate input. As I said earlier, scientific evidence is a necessary but not sufficient condition for informed policy formulation. Since joining Defra, I have not been involved in an issue where I believe the Secretary of State or Ministers have ignored or distorted the evidence base to support a policy decision. Obviously some issues have a stronger and more robust evidence base than others. In cases where the evidence base is weak the key issue is making a decision recognizing the inherent uncertainties in the evidence base and the consequent implications for policy formulation and delivery”.

²² Defra clarified after the session that Professor Watson co-chaired the National Ecosystem assessment.

on bovine tuberculosis I probably met Minister Paice at least 20 times for one-hour conversations. I probably met the Secretary of State at least 10 times for conversations. So, whether or not one likes the final policy on bovine tuberculosis, what I could put in front of officials and ministers was effectively much of the work that Lord Krebs started with, the results from the trials, but also the economics, what some of the social aspects were, which I think we did not have really good evidence for, to be quite candid. Also, there are some of the very practical issues. If you are going to use a .303 rifle to shoot deer, what is the issue for public health and safety? So on that particular issue, I was heavily involved right from the beginning with all officials, looking at new research, taking it through with the ministers and with the Secretary of State in so far as what I would argue is evidence is absolutely necessary for an informed policy decision. It is necessary but not sufficient, because there are other factors that are sometimes brought into account.

Equally, another issue where I tried to have a significant influence was not to allow the United Kingdom to make the same mistake on the 2020 targets that we made for the 2010 targets on how you save biodiversity. This idea of halting all loss of biodiversity globally and reversing that loss is theoretically impossible, and the European ministers all had a position that we should halt and reverse the loss. I was talking to the Secretary of State, writing just a simple two-sided paper as to why it was theoretically impossible to stop it, given all the direct and indirect drivers of change. She took it in her handbag, basically, to Nagoya, and when the other countries opposed the European position she was well positioned to find a compromise between the European position and the positions of China, India and the United States. I would think sometimes even a two-pager can be unbelievably powerful as long as there is the right evidence behind it. I would say that I am about as plugged-in as one would expect to be. The key point is understanding the business cycle. What are the new policies that are going to be developed in the coming six months, coming year, coming year and a half?

If you were to say, “Which one did not work well?” I am not sure there is one that I would say that did not work well. I was not involved in forest sales but that really was not an evidence issue, so I did not expect to be involved in the forest sales issue. Another issue is when one challenges another government department, which was Brian Collins’s department on biofuels and whether you can use first-generation biofuels. That led, after I ended up on the front page of the *Guardian*, to the Gallagher review, which then actually slowed down the advent of liquid biofuels into the British policy.

Q32 The Chairman: Could I just pick up on bovine tuberculosis, as it is something that I—

Professor Robert Watson: That is why I used the example.

The Chairman: Just very briefly, this is the case where the policy did change, as we referred to with education, between successive Administrations. My question to you is: do you think that evidence had changed that justified a change in the policy, or was it the interpretation of the evidence that had changed rather than the evidence itself?

Professor Robert Watson: Two things. There was additional evidence because we had another two to two and a half years of data that showed that within the culled area you maintained a positive effect on reducing bovine TB, and in the periphery area it actually went down to zero impact. There was not a positive perturbation effect or anything. There was more evidence that a cull could, over the long term, effectively give you a benefit, but it was also interpretation of the evidence. The big difference in essence—I know how hard Hilary Benn looked at this particular issue, as well as Caroline Spelman—was the practicality. The

science did not change, except we had more data for another two and a half years about the impact post-culling. Then the question effectively was: to what degree is it practical? Can you effectively cull over a large area? Can you make sure that you cull 70% of the badgers? Can you make sure you have hard boundaries? Can you make sure it works for four years? So it was largely whether or not it could work in practice rather than a major change in evidence. The extra two and a half years was important information and we got a bit better analysis on the economics. We still did not, in my opinion, get much better analysis on some of the social research issues.

Ms Carole Willis: In terms of my engagement at different stages of the process it is much the same as Professor Watson's. It depends on the particular policy area. I am sometimes involved right at the start in discussing the underlying strategy and development of the policy, and sometimes it is later in the process. Part of my role is to ensure that there are analysts involved at all stages of that policy development process and looking at the different cost and benefits of different policy options. In terms of what has worked well, one of the things I have pushed very actively since I joined the department is developing the skills of the policy teams across the department. I have established a range of tools, a range of training opportunities and a range of seminars to improve policy making skills, particularly around evidence and analysis. We have been rolling that out across the department, working more on the demand side to make sure that evidence is being used appropriately.

I have also been responsible for establishing three new research centres supporting the department, which are external consortia of well-respected academics and experts from various universities and organisations like the Institute of Education. We have a centre for analysis of youth transitions, a centre for understanding behaviour change and a centre for understanding childhood wellbeing. Those academics in turn have a range of networks of wider academics that they can draw on and we use actively in providing what we call a rapid response function feeding into policy development, which is another method of bringing that external and independent challenge of our policies, as well as helping to build the longer-term evidence base.

Q33 Lord Cunningham of Felling: When have you disagreed with the Secretary of State?

Ms Carole Willis: I have had no cause to go rushing in to his office.

Q34 Lord Crickhowell: Listening to the exchanges, one would get the impression that almost all policy issues involve people meeting and having discussions with ministers and so on. I know it is a very long time ago since I was the Secretary of State, but most papers came in my red boxes in the form of papers. Departmental practice was different in my time. I believe the practice of the Foreign Office, or some departments, is that you have one final paper that summarised the conclusion of the senior civil servant having considered all the arguments down the line. I always insisted that every single paper that had led to the construction of that final document was attached. To me, the really interesting thing was turning over the sheets and seeing the disagreements and the arguments developed that led to the final conclusion.

My question, particularly to Ms Willis, who has been rather roughed up for not meeting the Secretary of State and so on, is whether she is satisfied that, in those papers, the submissions that she made go in are attached to the documents, so that any alert Minister going through his papers has plenty of opportunity to see how the argument develops and whether the case has been made. I do not know the practice at the department but it does seem to be

that most policy issues arrive after a tremendous exchange of views, very often disagreements as officials move up the line. Are you satisfied that in the processes of your department it is not just a question of having four-hour chats or two-hour chats with the Secretary of State, but your submissions are being properly considered in the policy preparations that end up eventually in the unfortunate Minister's red boxes?

Ms Carole Willis: Yes, thank you for the question. I agree that the red boxes are full of all sorts of papers for ministers to be looking at on a regular basis. That is another way in which I engage with the Secretary of State. I send up a number of submissions around all the statistics that the department produces and all the research publications that we put out, as well as advice around what individual research projects should be taken forward and what the findings are.

In terms of the policy submissions, yes, I am completely confident that the analysis is fed into those and has been adequately represented, either directly in the submission or in attached annexes and papers. In fact, ministers often ask us for papers on particular issues and want to know more about the evidence underpinning particular areas. The Secretary of State will ask me for background research documents after I have provided summary papers on what the research findings are.

Professor Robert Watson: Clearly the written policy briefs are incredibly important. I rarely personally produce them myself—the policy teams do—but I would review them before they go to ministers and the Secretary of State. I occasionally write my own personal notes to the Secretary of State, as I said earlier, on things such as Nagoya, but my main role is to make sure that the papers going forward from an evidence plan point to: what do we know? What do we not know? What is controversial? What is uncertain? What are the implications of the uncertainties? So, when the Minister or the Secretary of State reviews that policy paper they understand how robust, or not, the evidence dimension is.

Q35 Baroness Neuberger: We have covered some of this in one of the other answers that you have given, but it would be good to hear from both of you about where, ideally, within the department structure a CSA should be positioned in order to best fulfil the role. Clearly we know that there are very different arrangements, but what do you think is the best model, and would you suggest that there was some uniformity across departments?

Ms Carole Willis: Thank you. I think you might get slightly different answers from both of us. We were discussing some of these issues yesterday. Despite the fact that we have probably the two most opposite models in government in terms of how the Chief Scientific Adviser role operates, for different and good reasons we both have had very positive reviews from GO Science, from the independent expert panel and from the independent external stakeholders who were involved in the GO Science reviews of science and analysis. We had a very strong, positive report out last year. I think that demonstrates that different models work.

In terms of my view, I was recruited—to expand a little on that—from outside the department but from across Whitehall, so there was an open, competitive process across Whitehall departments. I was looking back at the job specification, which is clearly for both Director of Research and Analysis and Chief Scientific Adviser. The kind of skills that the department was looking for were around, as I think I mentioned earlier, someone who was able to apply analysis and evidence within a policy context, and somebody who understood that policy context and the way in which decisions are made so that that evidence can have most impact, as well as those social science skills. The big advantage of having somebody from within Whitehall, generally, is that they have a much greater understanding of how

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policy is made. They do not have to get up to speed as quickly as academic external appointments might have to do, so they are in a better position to feed that evidence in at the right time and to be influential and to build networks with the right people. I am not saying that external academics cannot do that, but it takes a little bit of time to get up to speed.

Q36 Baroness Neuberger: What about the independence point? If you are recruited from within Whitehall, how does independence and the independent quality of that advice play out?

Ms Carole Willis: I am sure this Committee has heard this a number of times, but all CSAs, as I understand it, are appointed as civil servants, and we are all required to abide by the Civil Service code, which very clearly includes objectivity and impartiality and making a balanced assessment of the evidence. In fact, our ministers and our senior policy colleagues would not thank us if we were just giving them one side of the story. They want to know both sides of the story.

Q37 Baroness Neuberger: Professor Watson, can I just add to whatever else you are going to say the question about whether it is useful to be a member of the management Board?

Professor Robert Watson: It is critical to be a member of the management Board, and I think they have to be externally hired to be independent. They should absolutely be at the DG level, or Permanent Secretary in a couple of cases. I am a member of both the management Board and the supervisory Board, and in my opinion it is absolutely critical. When I first arrived, Helen Ghosh, who was then the Permanent Secretary, said, “Would you like to be a member of the management Board? You will be at DG level anyway. Do you want to come to management meetings?” It took me a millisecond; the answer was yes. I need to understand what the vision for the department is and help shape the vision; I need to understand what the financial situation of the department is and what the human resources for the department are. Unless I understand all those, I cannot do my job as a Chief Scientific Adviser. If you come in from the outside—I came in from the US, as many of you might know—you do not automatically necessarily know the department you are going into. Therefore, a deputy who is a true mentor, who understands the Civil Service and understands that department, is quite invaluable. I have a superb deputy.

One of the challenges of coming in from the outside is how quickly, if you come in purely from academia, you can get up on to the policy process and the political process. Both are rather important. My background includes working in the White House as a Deputy Science Adviser to Clinton and Gore, and Chief Scientist for the World Bank, so my whole career has been at the science policy interface. This is a more interesting question. To what degree do you want strict, brilliant academics versus someone who may have some experience of the science-policy interface? I do believe they should be external hires. I do believe they should be at DG level and they should be both on the supervisory Board and on the management team, with direct access to ministers and Secretary of State.

Q38 Baroness Neuberger: We were hearing earlier in the first session about how being on the management Board gives particular status. Do you think that is key in a Civil Service that is quite status-conscious?

Professor Robert Watson: I think it helps, to be quite honest. As a science adviser—at first I started purely as a Chief Scientific Adviser—it was over time when they recognised I could manage to some degree as well that I took over allocation of the budget. The key thing is

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building up trust and demonstrate that you add value to your colleagues. If they do not view you as having value, it does not matter what your status is, a DG or not, they are going to ignore you anyway.

The other point is that what we are trying to do is move more and more towards in Defra at the moment is a college of all the Heads of Profession, where I would be the head²³ of the college of the economists, the statisticians, the social researchers, the operational researchers, the vets and the natural scientists. That is collectively, as a set, as the Heads of Profession would look at budget allocation and other human resource allocation.

The Chairman: Would you like to come back on that?

Ms Carole Willis: Yes, I would, because I am not a full member of the Board but I am invited to Board discussions when there are particular issues around research and evidence, and I could request to sit on the Board at any point for those discussions. As Professor Watson was just finishing with, the most important thing for the Chief Scientific Adviser—I think it is helpful to have them in a senior role—is their networks and building trust and building influence. By the time things have got to the Board many decisions may already have been made—you want to be influencing at the earliest possible stage.

Q39 Lord Crickhowell: How is your performance assessed within the department? Do you have set objectives to meet?

Ms Carole Willis: Yes, I have set objectives, which are agreed at the beginning of the year between me and my line manager, who is a Director General, and they are overseen and reviewed by the Permanent Secretary. They include a range of objectives relating to my joint role as Director of Research and Chief Scientific Adviser around championing the use of evidence, around leading the analytical community, developing and ensuring that value-for-money assessments are properly undertaken across the department, and active engagement with external organisations and external experts.

Q40 Lord Crickhowell: Is there not a danger in the process you describe that, if you basically go along with what the ministers and senior officials are currently pursuing as policy, you will get a very satisfactory assessment? If you were to turn around and say, “Well, I think the scientific evidence does not substantiate the change of policy,” would you get as good an assessment or would you find yourself being roughed up?

Ms Carole Willis: It is very clear in my job description that my role is about advice and challenge. As I said earlier, I think the department would not thank me for not providing that challenge. It is a key part of my role. That is what they look to me, and the wider analytical community, to do. If I was absent in that duty, I think I would get a worse report at the end of the year.

Q41 Lord Crickhowell: You came in to the department via the departments. Have you made any substantial changes within the department in the way it deals with scientific advice, or have you just carried on much as it has always been done?

Ms Carole Willis: I mentioned earlier that I have been building up the skills of the policy teams, their capability and capacity to engage with evidence and analysis, and bringing in the external research centres, which I think has been very positive. I have been a big champion of the bedded out analytical team, so I have strongly promoted that. We have been more

²³ After the session Defra clarified that the CSA would co-chair the College.

closely involved than ever before in the spending review process that took place last autumn, in terms of setting out the evidence, setting out the business case, for example, for investment in early years education. I think I have enabled the analytical community to have greater influence and greater visibility in that policy development process.

Q42 Lord Crickhowell: Just one final question. In a period when Governments are making some quite dramatic changes in policy and in doing so are tending to depend very often on outside advisers, on other bodies of some kind or another, sometimes research based and sometimes not, how do your activities relate to all those other channels of advice that the Minister is getting? Sometimes very powerful, very influential ministers may come to their departments ready with a whole background of such advice. Are you satisfied that you are having sufficient exchanges with those other advisers or are you detached from them?

Ms Carole Willis: No, I have quite a lot of informal contact, particularly with the ministers' special advisers and policy advisers, on the whole range of different research and analytical issues. Sometimes it is the analytical community that bring in those external voices, so we have brought in Andreas Schleicher from the OECD, for example, to talk about the PISA results, international surveys across countries and what is underpinning those different levels of performance, and we have facilitated different seminars and expert discussions with ministers. I hosted a discussion with one of our research centres with one of our ministers looking at vocational qualifications, for example, and the evidence for different vocational qualifications. I feel that I and the analytical community are very actively plugged in to all of that and in to assessing that advice and that external information and evidence and putting that forward to ministers.

Q43 The Chairman: Professor Watson, did you have any response to this question about how your performance is assessed?

Professor Robert Watson: Yes. At the beginning of the year, I agree with the Permanent Secretary what the objectives are, whether it is on policy formula, providing evidence for policy formulation, allocation of budgets,²⁴ my external media presence and so on. My performance is evaluated using a 360, getting comments from people below me, my level, policy people, the other DGs. That all feeds into an evaluation at the end of the year by the Permanent Secretary, where we are graded in the normal way as the rest of the SCS of box 1, box 2, box 3 and box 4, 1 being good, 4 being terrible. Then we also go on a three-by-three matrix, which Gus O'Donnell put together, of performance versus potential. All the DGs, just like all the Directors and Deputy Directors, are in a box structure. We all have both activity managers and development managers. The only exceptions are the DGs, where the development manager is the same as the activity manager, the Permanent Secretary. We have a very rigorous way of looking at performance in Defra, probably the best I have ever seen compared to other places I have worked.

On the issue of science advice, it is absolutely critical to complement what I do. I need to be challenged, so I have a very strong science advisory council to challenge me and then to support me. It was a group of about 12 to 14 scientists; I have just revised that after an external review that Charles Godfrey ran for me. I have brought it down to a chair plus seven. It is there to absolutely challenge me, challenge the rest of Defra, and then to support as appropriate. We have 11 scientific advisory committees, which are much more specific to individual policy areas, but then when I realised we needed more evidence on natural ecosystems and biodiversity, I put together an independent group of 250 scientists to do an

²⁴ After the session Defra clarified that this referred to evidence budgets.

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assessment of the national ecosystems in England, Scotland, Wales and Northern Ireland, with another 250 doing a peer review. We are about to do some follow-up. That immediately played into the policy process—into the new process that we put together.²⁵ We are also planning to put an international process together on biodiversity and ecosystem services. I chaired a meeting of 112 Governments two weeks ago and 50 NGO groups. How would you put together an international assessment process on biodiversity and ecosystem services? That sort of information would help place the UK in what our position should be, not only within our own domestic policies but how they should also play out in the international arena.

Q44 The Chairman: Do you have in the DfE a comparable system where there is a scientific advisory committee and then specialist committees for different areas to support you in your advice?

Ms Carole Willis: No, not at present. We have had two scientific advisory committees in the past and we have badged them as such; we had the Research Liaison Group, which was a group of external academics and practitioners who were responsible for helping us to develop peer review and quality assure the range of research around adoption and safeguarding. That was part of some research on adoption and safeguarding specific Research Initiatives, which were building the evidence base in that area. That has come to a close, so we have closed that Research Liaison Group. We still have the National Evaluation of Sure Start Advisory Group; it is called a scientific advisory committee but I am not sure it would quite fit in the terms under which GO Science classifies scientific advisory committees but again it is an external group of academics who are peer-reviewing the evidence and analysis around Sure Start. Alongside that, as I mentioned, we have these three research centres that are active in debating with us the basis for policies as well as where some of the key evidence gaps are.

Q45 Lord Warner: I do not want you to reveal any confidences in the question I am going to ask, but how many times have either of you asked to see a Minister on your own or been asked by a Minister to have a one-to-one conversation with them? Are you inhibited about doing so if the need arises in the future?

Professor Robert Watson: For example, the Secretary of State asked if I wanted a one-to-one with her yesterday, so I said, “Sure”, so we had a half-hour chat where there was no agenda. Neither of us had briefing papers. We talked about what we saw as some of the key science policy issues in Defra, both national and international, clearly talking about issues such as climate change, biodiversity and ecosystems and so on. We have a new Science Minister, Lord Taylor, so as soon as he came on board I asked if I could see him to brief him on the science, and he has only been there three or four weeks and I have now met him four times in the three weeks, and I plan to have another meeting with him in the next week or two on a particular issue at Kew Gardens. It has not arisen very many times, but when I do feel there is an issue that it would be good to have a conversation about, I feel totally free to put in a request to see the Secretary of State or one of the ministers.

Ms Carole Willis: I do not think I have ever had a one-to-one with a Minister but I have had a number of small group discussions on particular topics. I would feel quite comfortable about joining in meetings with ministers on particular topics that are organised by other people or requesting meetings, which I have done in the past, to talk about particular topic

²⁵ The natural environment white paper for England.

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areas. Probably in the first instance, if I had some major concerns, I would talk to the Permanent Secretary as well as to the special advisers.

Lord Warner: So there is a different regime in these two departments.

Ms Carole Willis: There are different influencing routes and mechanisms for engaging trusted people whom I would raise issues and concerns with, but I would have no hesitation if I had particular concerns about talking to private officers and having meetings with ministers.

Q46 Lord Willis of Knaresborough: Professor Watson, you mentioned your US experience, and I think that what was interesting is that, following the Bush regime, one of the first things that Obama did was not only to put Holdren in charge of scientific advice to Government, but also to give him a significant budget in order to commission research, and he has commissioned research, as you know, across the globe. Could I ask both of you if in fact you have a budget to commission research, and whether you have commissioned specific research that has not been requested first of all by a Minister or a Permanent Secretary?

Professor Robert Watson: The process that we have has evolved. In fact the first time I had real influence on the budget was leading up to the CSR, because up until then all of the evidence budgets were with individual senior responsible officers of the policy programmes. My view was: how could I have a collective view of an evidence budget if I did not have some control over it? So I put together a couple of workshops, each with about 150 scientists, policy-makers and people from the private sector, to come up with an evidence investment strategy that did lead to a prioritisation and to ensuring there was good line of sight between evidence and policy. So I have influence over that budget by macro-allocation, that then I allocate to different policy programmes—working with others of course, not just purely me—and then they effectively manage the process. I used to have to sign off on every single piece of research. That in the end made no sense as long as I knew that they were all strategic within a business plan, so we have 30 business plans, one for each of the areas. I then have a simple £1 million that I can use for whatever I want to challenge—it is small but incredibly valuable. Effectively, when John Beddington was doing some of the GO Science work on the foresight study of food and farming, I said, “Are you sure these models of projected food prices are any good?” I put a couple of workshops together to challenge the international quality of some of those models. I use my £1 million to challenge where I think there are significant uncertainties. One I am about to set up now is on how much it is going to cost to meet the Nagoya targets of trying to reduce the loss of biodiversity and ecosystem degradation. People argue it is a \$100 billion per year. I do not know if it is \$100 billion versus \$50 billion versus \$500 billion, so I am going to put a group of economists together with a few natural scientists to ask the question, “What would it take to meet that?” I have a small amount of money and it will be a small international panel. I have also used it just recently. I am chairing an international panel on the effects of geo-engineering on biodiversity, which is a highly contentious subject. Those sorts of moneys can be small moneys for workshops. Bringing a few experts together can be incredibly powerful.

Ms Carole Willis: I have responsibility for the department’s research budget. I also chair the Research Approvals Committee, which looks at scrutinising all research and evaluation proposals on the basis of methodology, value for money and policy relevance. I also work with the analytical community and with advice from and discussion with external academics in setting out the research priorities at the start of the year. We cannot second-guess

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everything and, of course, new things crop up during the year. By no means are all of those issues or requests directly from the Minister.

Q47 Lord Willis of Knaresborough: Would you have your own small budget like Defra?

Ms Carole Willis: Yes.

Lord Willis of Knaresborough: How much is that?

Ms Carole Willis: Currently it is £9.5 million.

Lord Willis of Knaresborough: That is your own private budget to do what you like with.

Ms Carole Willis: No, that is the research budget for the department.

Lord Willis of Knaresborough: For the Department?

Ms Carole Willis: Yes, so I provide advice to ministers about how that money should be used, but I and the analytical community can put forward proposals and ideas to ministers about what should be covered. It is not just ministerially driven.

Lord Willis of Knaresborough: Could you do something off your own bat?

Ms Carole Willis: Yes, absolutely.

Q48 Earl Selborne: I was impressed by Professor Watson explaining to us a number of international initiatives that are emanating from Defra—indeed, you referred to Nagoya and you referred to the meeting you were holding in Africa a couple of weeks ago on international biodiversity. All these international initiatives that are evidence-based will depend in part on whether departments other than Defra within government deliver. Your colleagues in DECC, your colleagues in the Foreign Office for the overseas territories, which have a considerable implication for biodiversity measures—all these have to buy in ultimately to the propositions that you are putting to your Minister. How effective is the committee that Sir John Beddington chairs at bringing together the chief scientists in order to present a united front to ministers?

Professor Robert Watson: I think it is excellent. What John has done is he has built on what Dave King did, the previous Chief Scientific Adviser, so what John has done is effectively try to push very hard to get a Chief Scientific Adviser in every single department, which we now have since Treasury have finally announced an internal hire. What we do is we get together every Wednesday morning informally for breakfast. We do one of two things. We do a round table where we say what is on everybody's mind that could be relevant to another department. So, for example, one of the big problems we are watching now is Europe trying to go to a hazards-based approach, rather than a risk-based approach, on controlling chemicals and so on, which is really in the wrong direction. We talk about issues such as that or just what is important to a department on, say, greenhouse gas emissions or climate change adaptation. We have the informal meetings every Wednesday morning and probably most times about eight of us show up, whoever is available. We have formal meetings that last typically two to three hours every three months. We have sub-committees of those, especially on issues like food security, climate change and so on.

When there is a big issue, as there was effectively when Dave MacKay was putting together his greenhouse gas calculator, we all met, together with some external people, to do peer

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review. We have a food programme that John brings together, which not only brings relevant CSAs and directors, but also some of the outside community from the food industry. I think that what John has managed to do is really to bring camaraderie for all the CSAs. We have a range of skills, no two of us have the same background, and it allows us to share experiences and think what some of the scientific priorities are. We routinely meet with the chief executives of the research councils, which is very critical, because they actually have more money than us. Some of us are on some of the research council boards—I am on the NERC board with Lord Willis—so I think that bringing us together helps us to glue together. It is very important.

Q49 Lord Broers: How were you recruited? Was the Government Chief Science Adviser on the assessment board, and was this the best way? How should CSAs be appointed?

Ms Carole Willis: I have already mentioned that I was recruited through a cross-Whitehall open competition in both of my roles, so it was an external appointment to the department. There was an external senior social scientist on the panel from within government and that was because my role was in overseeing a range of social science activity within the department.

Lord Broers: So the Government Chief Science Adviser was not on the board.

Ms Carole Willis: No, but a senior social scientist from outside the department was.

Lord Broers: But there was nobody external to Whitehall.

Ms Carole Willis: Not to Whitehall, no.

Professor Robert Watson: The job was advertised. Headhunters got in touch with me. They knew I was coming back to England to have a full professorship at the University of East Anglia. They asked if I wanted to be considered for the position at Defra. I answered, “Yes, because I think the science policy interface is rather intriguing.” The committee effectively was Dave King, the Government’s previous Chief Scientific Adviser, the Permanent Secretary from Defra, another DG from Defra and a commissioner, so it was an external hire with Dave King as part of the selection process.

Q50 Lord Willis of Knaresborough: When you were talking about the CSA groups—and in fact it is not featured in either of your evidence very clearly this morning—there is this issue of social science and the importance of it. The Academy of Social Sciences was very critical of the fact that although we had a very good physical science presence within government—I think you have illustrated that this morning—in fact social science was relatively weak. I wondered whether Ms Willis in particular could comment as to whether in fact the social sciences get due prominence within the policy and whether they ever turn up to your groups, your breakfast meetings.

Ms Carole Willis: I am an economist, although I have led multidisciplinary teams in most of my roles, which is part of the social science framework. As one of those social scientists I do turn up to those breakfast meetings, although they are at 7.30 in the morning.

Lord Willis of Knaresborough: Would you agree with the academy’s view?

Ms Carole Willis: The Heads of Analysis group, which the Committee may be familiar with, includes the heads of each of those social science professions. It includes John Beddington; it includes Dave Ramsden, who is the Head of the Economic Service; it includes the joint

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Heads of Government Social Research that Paul Wiles mentioned; it includes Jil Matheson on the statistics side, and it includes the Head of Operational Research. I think that group is a very strong voice and a strong means to join up the different disciplines across government. We have the Directors of Analysis Network, which brings together the departmental Directors of Analysis. They are jointly in there, and that group has also been working more closely with the Chief Scientific Adviser group.

Q51 Lord Willis of Knaresborough: So when the academy said, “We argue that the Government’s CSA and the departmental CSAs are not adequately equipped to advise on the social science aspects of the science advice given to ministers,” you disagree with them.

Ms Carole Willis: It depends on the department, its remit and the science base on which it draws.

Lord Willis of Knaresborough: Overall, I am talking about.

Ms Carole Willis: Well, no, because in departments where there is a separate Chief Scientific Adviser, such as Professor Watson, who is responsible for the hard sciences or natural sciences, there is in all cases a Director of Analysis sitting alongside that who is responsible for the social science aspect. I think those are both well represented across departments.

Professor Robert Watson: I think it varies from department to department. When I arrived at Defra we had five social researchers, probably 100-plus economists, 100 statisticians and 100 natural scientists. We now have 13, so it has gone up, but I am concerned personally that the highest level social researcher in government is a Deputy Director. You range from the top natural scientist being John Beddington, as a Permanent Secretary, and a series of us at the DG level. You have DG level for economics but you literally go all the way down to a Deputy Director for social research, so I do believe we are underplaying it. This is a problem. It varies from department to department, and the point is that for too many of these issues that we are dealing with on the environment, on development and on the economy, we often argue that if we get the technology right and if we get the policies right we will solve the problem, but the answer is no. If we do not understand behaviour at the individual, community, private sector and government levels, we are not actually going to make maximum use of those technologies and policies. I do believe, especially in some departments, that we do need to up our game on the social research.

The Chairman: Thank you very much indeed. We are drawing to the end of this session, but there is just one point I would like you to come back in writing on, as we have run out of time. In answer to an earlier question about evidence-based policy, Lord Willis asked you to describe examples where you have been successful in policy, and examples where you felt you had been less successful. I think you emphasised the first but we did not hear much about the second. Could you both write to us with cases where you think you were not as successful as you would like to have been?

With that I would like to draw this session to a close and thank both of you for your very helpful contributions. I confirm that a transcript will be sent to you, as you know, for correction. It will then be published as part of the record for the meeting. Thank you very much indeed.

Department for Environment, Food and Rural Affairs, Department for Education, Department of Health, and Department for Business, Innovation and Skills—Oral evidence (QQ 210-233)

Department for Environment, Food and Rural Affairs, Department for Education, Department of Health, and Department for Business, Innovation and Skills—Oral evidence (QQ 210-233)

[Transcript to be found under Department for Education](#)

Department for International Development—Written evidence

Departmental CSA Questionnaire

Department for International Development: Chief Scientific Adviser: Professor Christopher Whitty. Deputy CSA: Professor Tim Wheeler.

Employment arrangements.

Grade: The DFID Chief Scientific Adviser is a G3 Senior Civil Servant, the DCSA a G5 Senior Civil Servant. Prof. Whitty is also Director of the Research and Evidence Division, which includes research, evidence, evaluation, statistics and all the Heads of Profession. Prof Wheeler is Deputy Director.

Tenure: Professor Whitty was appointed as the Chief Scientific Adviser in June 2009 on a three year contract with an option for an extension. Professor Wheeler has the same arrangement but was appointed a year later.

Full time/part time (quantified): The Chief Scientific Adviser is part time (80%) and is seconded in from the London School of Hygiene & Tropical Medicine where he remains research-active, and works in the NHS as a clinician and epidemiologist. The DCSA is part time seconded from the University of Reading (80%) where he is remains research-active.

Qualifications and background:

Prof. Whitty: DSc (Oxon) FRCP FFPH FMedSci (also BMBCCh MA MSc LLM MBA DipEcon DTM&H). His academic background is as a clinical epidemiologist in international health and infectious diseases, although he also has worked in social and economic health research.

Prof. Wheeler: BSc MSc PhD. His academic background is in agriculture, with a focus on tropical agriculture, environment and climate change.

Both have worked extensively in Africa and Asia.

Relationships within the Department.

Reporting line: The Chief Scientific Adviser reports to the Director General, Policy and Global Issues. The DCSA reports to the CSA.

Relationship with policy makers and involvement with policy decisions: The Chief Scientific Adviser is a member of the Development Policy Committee (DPC) and the Investment Committee, the two policy-relevant sub-committees of the Management Board (the others are Security, Audit, and Senior Leadership (SCS appointments)). The DPC is responsible for commissioning, directing, endorsing, and reviewing DFID policy, which meets on a monthly basis, and discusses and endorses (or not) near final versions of all policy papers, and significant practice papers on behalf of the Management Board. The Investment Committee's role is to ensure that DFID investments represent good value for money for UK taxpayers and that clear systems exist to take strategic financial decisions on the basis of evidence. It does this through looking at strategic investment decisions and resource allocation, at the balance of the investment portfolio in aggregate, and at the adequacy and implementation of investment appraisal systems. The scope of the Investment Committee

covers all DFID programme investments whether multilateral, bilateral, or global public goods.

Additionally all the Chief Professional Officers report either to the CSA or the Chief Economist (depending on professional family). The CPOs and Heads of Profession are responsible professionally for all the advisory cadres in DFID both in the UK and overseas, and this gives a line of sight to the quality of analysis behind policy decisions peripherally.

Access to ministers - frequency of meetings: The CSA and DCSA divide Ministerial meetings depending on topic. Over the past year the Chief Scientific Adviser has had seven scheduled meetings with the Secretary of State, one with the Minister of State and eleven with the Parliamentary Under Secretary of State. Over the same period the Deputy Chief Scientific Adviser has had five meetings with the Secretary of State, three meetings with the Minister of State and six meetings with the Parliamentary Under Secretary of State (different meetings with one exception where both were present). This excludes unscheduled interactions.

Relationships with other CSAs, the GCSA and Departmental SACs: The Chief Scientific Adviser meets regularly with the GCSA and other CSAs through the Chief Scientific Advisers Committee (CSAC), the Global Science and Innovation Forum (GSIF) and the UK Collaborative on Development Science, as well as weekly CSA meetings. The CSA has additional bilateral or trilateral meetings with CSAs in relevant Departments, especially DECC, DEFRA, FCO, MOD and DH on topics of mutual interest, and is on the National Security Council Science sub-committee. The DCSA regularly attends thematic cross-Government meetings chaired by the GCSA and attended by other Departmental CSAs.

The Department for International Development does not have a Scientific Advisory Committee although an informal Research Advisory Group has been established to provide independent advice to the Chief Scientific Adviser on the current and future relevance of DFID's research agenda, the strategic direction of, and priorities for, Departmental science, the balance, relevance and adequacy of research activities supporting Departmental objectives and broad strategic development issues, priorities and policies from a research/science perspective. It is chaired by Sir Leszek Borysiewicz FRS FMedSci, Vice-Chancellor of Cambridge University.

Whether on the Departmental Management Board: No, but on the two relevant Management Board sub-committees where scientific advice is relevant (as above), and the Leadership Group for DFID.

October 2011

Department for International Development, Home Office and Department for Climate Change—Oral evidence (QQ52-84)

Evidence Session No. 3.

Heard in Public.

Questions 52 - 84

TUESDAY 25 OCTOBER 2011

Members present

Lord Krebs (Chairman)
Lord Broers
Lord Crickhowell
Baroness Hilton of Eggardon
Lord Patel
Lord Rees of Ludlow
The Earl of Selborne
Lord Wade of Chorlton
Lord Warner
Lord Willis of Knaresborough
Lord Winston

Examination of Witnesses

Witnesses: **Professor Chris Whitty**, Chief Scientific Adviser, DfID, **Professor Bernard Silverman**, Chief Scientific Adviser, Home Office, and **Professor David MacKay**, Chief Scientific Adviser, DECC.

Q52 The Chairman: I would like to welcome our first witness panel. I am sorry we are a few minutes late starting. You will be invited in a moment to introduce yourselves to the Committee for the record. I should remind you that the meeting is being webcast and sotto voce comments will be picked up by the microphones. I should also say for members of the audience that you should find there a note on the purpose of the inquiry and any interests that have been declared by the Members of the Committee. I should also mention there is a photographer, who is photographing the Committee in action for a House of Lords publication. Without further ado, I invite the members of the panel to introduce themselves for the record, starting with Professor Whitty.

Professor Whitty: I am Christopher Whitty, Chief Scientific Adviser at the Department for International Development.

Professor Silverman: I am Bernard Silverman, the Chief Scientific Adviser to the Home Office.

Professor MacKay: I am David MacKay, Chief Scientific Adviser to the Department of Energy and Climate Change.

Q53 The Chairman: Thank you very much. Would any of you wish to make any opening statements or are you happy for us to go straight into the questions? You are happy to go into questions. Thank you.

I would like to kick off with a rather general question and ask each of you in turn how you would describe your role as a departmental Chief Scientific Adviser; whether that has changed during your time in office; how you think you should be positioned in the departmental structure. Maybe you can comment—you are all external appointments—on the pros and cons of being an external appointee as opposed to some departments having an internal appointment as a career civil servant. Professor Whitty, perhaps you could start off with some comments along those lines.

Professor Whitty: Thank you, Lord Chairman. The role of the Chief Scientific Adviser in the Department for International Development has changed quite a lot over the time that I have been there, which is just over two and a half years. When I first arrived, I had a brief overlap with my predecessor Sir Gordon Conway, and at that point the Chief Scientific Adviser was very much one person plus one assistant.²⁶ Our sense, and his sense as well, very strongly, was that it was much more useful to be in a position where you could have access to staff, budget and a much more central place in the organisation, so we have restructured it. We initially brought together the Director of Research and Chief Scientific Adviser roles in one person, which gave control over the research budget. Then we felt we should build up the evidence capacity within the Department, so we built up a group who were there to do synthetic reviews, systematic reviews, and evidence products and reach out to colleagues overseas, and then brought in auditioning the Chief Statistician and the evaluation department, all of whom report to the Chief Scientific Adviser.

The third thing we did was to bring in all the heads and chiefs of profession, so that there is a line of professional sight between either the Chief Scientific Adviser or the Chief Economist and all the advisory staff who make up the professional staff of the Department.

Q54 The Chairman: Thank you. You have described substantial reorganisation, and you now have a large staff and control over the research budget. Others may wish to pick up on how you exercise that control, but what about your position in the departmental structure? Are you a member of the Management Board of the Department?

Professor Whitty: I am not a member of the Management Board, which is extremely small in terms of officials. I am a member of the leadership group, which has the broader strategic advisory role within the Department. I am also on the two relevant Management Board sub-committees, which are the development policy committee, where policy is agreed, and the investment committee, where the major investment decisions are agreed.

²⁶ Professor Whitty later corrected this statement as his predecessor had two assistants.

Q55 The Chairman: You are an external appointee—you came from outside. What is your view about whether that has been a good or a bad thing?

Professor Whitty: I have been fortunate. I think for me it has been a very good thing because it has brought credibility externally, which is an issue. It means there are networks externally that I was already a member of that I could use and still can use. The same is true, I should say, for my Deputy, Professor Tim Wheeler; we have a slightly different structure from other Departments. It is part of the way we made two jobs into two rather than two jobs into one, which would have been a problem. He came at the same time that we merged the roles together; he is also an external appointment and is Professor of Agriculture at Reading. Obviously, I have seen situations elsewhere where occasionally external appointments have been extremely distinguished externally but have got no traction within Government or the Civil Service, so I can certainly see arguments in both directions but certainly for us it has worked well.

Professor Silverman: I see my role as having seven interacting facets: firstly, the provision of independent scientific advice to the Home Secretary and other ministers, and, of course, to policy officials on any topic relevant to Home Office business; secondly, to maintain the external profile of Home Office Science, for example, through direct contacts with learned societies, research councils and universities; thirdly, the leadership and management of Home Office Science, which has somewhat over 400 staff, whom you have details of, and who cover the whole range of physical sciences, statistics, regulation of animal experiments, social research, economics and so on; fourthly, the sponsorship of independent scientific advisory committees, such as the Advisory Council on the Misuse of Drugs—that is about to expand because we are taking on work relating to the Poisons Act; I participate actively in the cross-Government network chaired by Sir John Beddington; I lead international collaborations on scientific matters, and in particular at the moment I have a very active collaboration going with the Department of Homeland Security on biosecurity issues; and finally, I bring my own scientific expertise to particular projects both in the Home Office and elsewhere in Government. I have an open offer for all of my staff that they can come and ask me about statistics or sampling theory or things like that. That has led to some very interesting work.

Has the role changed? Yes, because since I have come, the social research teams which Professor Wiles talked about last week have been brought back under the Chief Scientific Adviser's purview and so now we have consolidated almost the whole of scientific advice and operational advice within the Home Office under the CSA's management, and that has worked very well. I think the external role has grown somewhat, so I suppose the role has increased in scope but not in kind, so there have been some increases.

In terms in my position in the Department, I am not a member of the executive Management Board but I see the papers and I can ask to attend meetings when issues relevant to science are on the agenda, and typically that means when there is discussion on major policy areas. I actually think the most important thing is developing close working relationships with people across the Department, and I have frequent bilateral meetings with directors-general and other important policy officials, and I think being visible is very important. I think having a genuine full-time job, as I have, has made a real difference. Some of my colleagues have four days a week, but I think four or five days a week means that you are around, you are known and you can get more traction that way.

The pros and cons of external appointments? I suspect that being an external appointment gives you more status outside, which can be helpful. I suspect, as in most jobs, it is down to personal qualities not to the way you got the job or your particular qualifications. Certainly, I have found it helpful being an external appointee, though there was something of a learning curve when I started. As Professor Watson said last week, having a very strong internal support team—he has a single deputy and I have two directors who report to me—makes a big difference, so having this mixture of internal and external is important. I think it is not one size fits all and I can see that in some Departments an internal appointment may be more appropriate. I hope I have covered everything that you would like.

Professor MacKay: I have worked for DECC for a little over two years and I have always felt very well integrated into the Department. When I arrived there were five directors-general, of which I was one, leading the smallest group, the Science and Innovation Group, and I was on the Management Board and on other committees in the Department. There have been some changes since March of this year, but I would say only minor changes. The most significant is that the Management Board has been replaced by new committee structures; there is a departmental Board that is smaller and has only four civil servants on it. I am not on the departmental Board but I am still on several other significant committees that are very important in DECC's functioning, in particular the Approvals Committee and the Strategy Board, which oversee all the policy areas and delivery programmes of the Department. I am also on the evaluation Board and the evidence panel, which oversees the acquisition and use of all evidence and analysis in the Department. There are now four groups: the Science and Innovation Group, which I lead, has recently joined with the Economic, Statistics and Strategy Directorates to form a larger group, which we call the Strategy and Evidence Group, and I lead that jointly with Chief Economist and the Director of Strategy.

I see my role as being to help ensure quality assurance of all the evidence and analysis that is being used in DECC. I feel involved in much of the decision-making and much of the argument that goes on in DECC. I feel very valued, as well; I imagine if I had come to be in my position from an internal position I would feel equally valued, but I came externally and I am very happy to be there.

Q56 The Chairman: Thank you very much. Can I just ask, before handing on to Lord Broers, how much did each of you play a role in the comprehensive spending review? When your Departments were reviewing their science research spends, were you involved in the decisions, consulted by ministers or others? Maybe you can go along the row and answer that question.

Professor Whitty: I had two roles: one in my own Department, where I was involved in all the areas in my own division; also I was part of the cross-Government challenge group within the Treasury, so I actually got sight of and commented on all departmental spending.

Professor Silverman: At the time of the spending review, our R&D spend was delegated to individual business areas, but I did successfully advocate to ensure that R&D was not disproportionately cut, and I was successful in doing a little bit better than that. My involvement meant that science did a little bit better than it would have done if it had just had a proportionate cut. Most of our spend is actually internal, and so the discussions were

largely around staff spending internally. But the answer is I was very much involved, and I collate the submission on R&D spend across the Department going forward.

Professor MacKay: I was involved in three ways in the spending review work in DECC. First, as a Director-General, I led our bid for resources for the Science and Innovation Group in DECC. Second, the Management Board had lengthy discussions about the preparation for the spending review and the prioritisation of different programmes within DECC. Third, we had a committee, a sort of Star Chamber, which scrutinised all of the bids of every group in DECC, and I was on that scrutiny committee within DECC.

Q57 Lord Broers: How do you provide independent challenge to ensure that policies are evidence-based? At what stage or stages in the policy process are you consulted? Can you provide us with examples that best demonstrate the positive impact you have been able to make on the use of science and engineering advice in Government, and examples of where you have been less successful?

Professor MacKay: As I mentioned earlier, I am on the Approvals Committee, which scrutinises the work of the Department at key stages when key decisions are being made for particular policy areas. I also sit on the Evidence Panel, which looks at policies hopefully at an earlier stage in their development in the policy cycle. Both of those committees have teeth and I chair the Evidence Panel jointly with the Chief Economist. The Evidence Panel works in a very friendly way, providing constructive challenge and advice to policy teams at early stages in their work, but it has teeth in the sense that the Evidence Panel can recommend that when any particular policy reaches the stage of an impact assessment being signed off by the Chief Economist, that assessment should also have a sign off by the Chief Scientific Adviser if the panel thinks that is appropriate. They can mandate that I have to approve the impact assessment as well as the Chief Economist.

You asked for examples of impact. One example that I am very pleased to have been involved in was a study that was under way when I arrived at DECC on the performance of heat pumps. This was work being done by the Energy Savings Trust. The results were disappointing; the majority of heat pumps in the trial were performing below the expected standard. Because I had a budget and staff, I was able to extend DECC's contribution to this study. I was able to persuade industry to extend their contribution to the study and I was able to devote staff to a forensic examination of the data to try to understand the reason for the underperformance of the heat pumps. I was then able to devote further staff time, once we understood the problems with heat pumps, to defining—with the help of the policy teams and the industry themselves—new standards for heat pump systems. It turned out it was not the heat pumps themselves that were underperforming; it was the system as a whole, which had either been poorly designed or poorly installed in each of the cases of poor performance. After two years we have now got the industry to publish new standards for heat pump installations. I am very optimistic that this action will have saved the heat pump industry, so I hope that they will now succeed and I think it will be very good news for the Department's objectives as well in terms of switching to renewable heating sources and lower carbon sources that use less primary energy. That is a positive impact that I am proud of.

You also asked for examples of less success. Sticking with the theme of heat pumps, the Department is now subsidising the installation of heat pumps through the renewable heat

premium payment. A recommendation I made was that we should ensure that the new standards are actually working, so we should have really thorough monitoring and quantitative automated measurement of all the heat pumps that get supported under the renewable heat premium payment. There were other views on whether this would be a good idea. I suppose it makes things more complicated if you mandate measurement and you have to set up a body that will organise the measurements. Other arguments would include the desire to have a rapid impact and devote money to getting as many heat pumps out as possible because, of course, the monitoring does have an additional cost associated with it. I feel content with the compromise we have arrived at; through the negotiations with the policy teams we have ended up with more measurement than was planned and I have had to devote some of my budget to underwrite some of that measurement work. I feel that was a partial success.

Q58 Lord Broers: I have a follow-up to something Professor MacKay said about the Chief Economist. Do you sit down with him separately to other things? Very often when you are looking at strategic issues it is not easy for an economist trained in accounting to understand the risks and uncertainties of scientific endeavour. So do you have separate meetings with the Chief Economist?

Professor MacKay: Yes, we meet on a weekly basis as the heads of the Strategy and Evidence Group, so we meet with the Director of Strategy also and we have very good discussions of all the issues that are live in DECC.

Q59 Lord Crickhowell: CSAs are not bound by ministerial collective responsibility. Have you publicly expressed your reasons for disagreeing with a policy decision, and if so what is the reaction of ministers and others in your Department?

Professor MacKay: Have I publicly discussed my disagreement with a policy decision? I think the answer is no. I feel I do my job best if I retain the confidence of ministers. In the past, I used to speak very freely in public and I enjoyed giving frank views, but now I hold those views back more and express them very strongly within the Department, where I feel I am listened to and respected.

Q60 Lord Willis of Knaresborough: May I just follow that up? Could I ask you how many times you have met the Secretary of State over the past year?

Professor MacKay: This question is often answered and, as you know—

Lord Willis of Knaresborough: No, it has never been answered. That is why I have asked it.

Professor MacKay: Sorry, it is often asked and it is always answered in a bland fashion, for which I apologise. There has been guidance from the Cabinet Office on how to answer this question and the bland answer that the Secretary of State has frequent meetings with officials is always given out. That is the Secretary of State's decision and I respect that

decision. What I would like to emphasise is that I do feel very well integrated into the Department and I feel valued.

Q61 Lord Willis of Knaresborough: Can I just ask you a simple question then that perhaps you can answer? Have you ever met the Secretary of State to discuss policy issues with him over the past year?

Professor MacKay: Absolutely, I have had several one-to-one meetings with the Secretary of State and with other ministers.

Q62 Lord Willis of Knaresborough: Could I just follow that up then? How then do you influence the Secretary of State in terms of major policy decisions if, in fact, you are not prepared to challenge him on issues that clearly as a scientist you do not accept or believe, unless you do believe some of the stuff that went on at the Royal Society?

Professor MacKay: I do very strongly challenge inside DECC. My earlier answer was that I do not in public describe—

Lord Willis of Knaresborough: We are not in public; we are just in a cosy discussion here.

Professor MacKay: What is your question?

Lord Willis of Knaresborough: My question was: were the sorts of outrageous comments that the Secretary of State made at the Royal Society something you approved of?

Professor MacKay: I believe you are referring to the Secretary of State's words at an event discussing nuclear policy at the Royal Society within the last three weeks or so. I have to apologise, but because of a family matter I have actually not been at work for the last three weeks, so I do not know what he said and I do not know whether I would have agreed with it or not, I am sorry.

Q63 The Chairman: You were not consulted before the speech was presented?

Professor MacKay: My team was consulted on the contents of the Secretary of State's speech.

Q64 The Chairman: They agreed with his statement that the problem with the UK nuclear programme was that it was run by scientists and engineers who promoted their own interests over that of the nation and produced a bunch of fiddly over-engineered reactors. Is that your view about the past British nuclear energy programme? That is what he said. Your team presumably agreed with it.

Professor MacKay: I will have to get back to you on that. I am not sure if those words were approved by my team or not, sorry.

Q65 Lord Winston: I wanted to follow up Lord Willis' point. In a hypothetical situation, if you find the Secretary of State says something that you feel fundamentally is scientifically at odds with what you have from the evidence, how do you tackle that issue with the Secretary of State?

Professor MacKay: There are many ways in which I can have a voice in DECC. One is through direct meetings with ministers, which I do have, and direct meetings with the Permanent Secretary, whom I meet on a regular basis. But perhaps my role is best executed by ensuring that the Department itself has good processes for providing policy advice that is based on good evidence and good analysis. When people ask, "How often do you meet the Minister?" the answer I would really like to give is I feel very well integrated into the Department's processes, and I am trying to ensure that the Department as a whole gives excellent advice, and because I am a DG I am able to meet any officials in the Department who I think need to have a conversation with me.

Q66 The Chairman: I think we will move on to Professor Silverman. Maybe you could answer the same question that Lord Broers put to Professor MacKay.

Professor Silverman: Certainly. First of all I should stress that not all our work is in the advice on policy; a lot of our work is to do with bringing science and engineering and technology to the operations of the Home Office. But your question is about policy, so that is what I will answer. One of the ways in which we provide independent challenge is of course through our Advisory Committees: the Home Office Scientific Advisory Committee, the Advisory Council on the Misuse of Drugs, which I mentioned earlier, and so on, and those provide independent challenge to policies. I have made sure that the protocols under which they work ensure that advice is given independently. Furthermore, if there were an instance, which there has not been in my time, where a piece of advice was not taken, there is a mechanism for ensuring that the whole dialogue is essentially documented and that there is a step where the Minister is expected to speak to the chair of the committee and explain what is happening. That is something that your Committee has already been consulted on. The Home Office Scientific Advisory Committee is very useful in advising on annual science and research plans for the Department.

As far as making sure that the work we do indeed addresses evidence and policy, I see all social research proposals in the Department and I review each one before it commences. That system also makes sure that ministers take note of that work. As far as interaction with the Chief Economist is concerned, the Chief Economist reports directly to me and sits about nine feet away in an open-plan office, and we have constant discussions and also with other economists in the Department.

I am fully embedded in scientific matters, but I must stress that I am not the only person in Home Office Science and I regard work with senior officials as if it was coming from me. We have this system where our social researchers particularly are embedded in the policy groups but they report to me. That way we have a dual system that makes sure that we do provide advice on evidence and policy throughout the process.

If I may anticipate the question about how often I meet the Secretary of State, the answer is that I am at a roundtable meeting with about this many people in it virtually every week with the Secretary of State and I contribute actively to that. I cannot give details here, I am afraid,

about things that are discussed. So I have an immediate personal relationship with the Secretary of State set up that way. In addition I meet very often with ministers bilaterally, not very often with the Secretary of State herself. The way a big department works is that often work is done through junior ministers but I have a standing understanding with the Science Minister that if there is something we need to talk about at any time I should stop him in the margins of our regular meetings and make sure we discuss things. Also my other officials meet very frequently with ministers; in the last month alone I am aware of 11 meetings, at least, between senior members of Home Office Science and ministers, so we have a lot of contact. The answer to the question of whether I could go and see someone if I did not have a prearranged meeting without an agenda is yes, definitely, and I have had meetings at short notice, not because there was something I wanted to complain about but because there is something where they need to know something quite quickly and I am asked my views on it.

I have not quite covered everything—oh yes, specific examples. Successes: well, we had a success yesterday, which was the report that was put together in response to the civil disturbances earlier this year. That has had wide media coverage and I am very pleased to say that my team provided a report on an analysis of the riots and who took part in them and so on, and that has been widely reported. Another success is something I am working on, which I mentioned earlier, on the security side, the work we are doing with the United States on biology, which will feed into discussions at high levels.

I honestly cannot point to specific failures and therefore there is nothing to say on that side. What I would say is that the sorts of things that the Home Office does are to do with highly controversial matters where thinking develops over time and where there is inevitably in many areas a combination of, if you like, decisions made on political or principled grounds informed by evidence, and I think we should not regard evidence as an algorithm to determine policy but something that feeds in to the way policy is made. I am satisfied that all policies we make are appropriately informed by the evidence.

Q67 Lord Willis of Knaresborough: I merely asked the question about how many times you meet the ministers because I think it is quite important to see at what level departmental scientific advisors actually function within the whole policy formulation process. It was nothing personal; it was certainly not personal to Professor MacKay, though yours is the only Department that did not give me the answer, even after freedom of information requests.

Specifically to you, Professor Silverman, you talk about being able to access independent evidence. When the Forensic Science Service, the last of it, was going to be disbanded, did you support that view? If so, why did you think that would improve the service to the Government, and if you did not support it, how did you express those views?

Professor Silverman: I have said previously that my understanding is and continues to be that the Home Office needed to find a commercial and legal solution for the serious financial difficulties facing the Forensic Science Service. It is not my role to provide commercial or legal advice, and I was very glad to be commissioned to conduct a review of research and development in forensic science, which I am sure you are familiar with; my review has now been published. It would not have been possible to conduct this review before the announcement of a managed wind down of the FSS. It is very important there should be a

strong research base for forensic science; my report gives a number of recommendations. Most of the recommendations are not for the Home Office but for the forensic science community and for other bodies such as HEFCE, research councils and the Technology Strategy Board. We have already made some very positive progress. For instance, last week I chaired a meeting held at the National Policing Improvement Agency, bringing together the learned societies, the NPIA itself, academia, industry, the research councils and the Technology Strategy Board. Later on, we are having a meeting; the Forensic Science Society has an education industry forum, and my understanding is that the Minister, if he can, is going to come and discuss things with them there. All I would say is that this Committee's encouragement and support for the recommendations would be very helpful. I will come back to what I said at the beginning, which is that it was a commercial and legal issue and it therefore was not one on which it was my role to provide commercial or legal advice.

Q68 Lord Willis of Knaresborough: I did not ask you that. I asked you specifically, as the departmental Chief Scientific Adviser, whether you felt personally that it was in the best interest of scientific advice to the Department that the FSS was in fact put into the private sector?

Professor Silverman: The FSS was a Government-owned company and the Department had to decide whether it was going to continue to provide financial support for that. I am not a lawyer and I am not a constitutional expert. I will have to correct this later if I have got the wrong answer here, but my understanding is that under competition law it would not be possible to continue to subsidise this company given that it was already in competition with other private sector companies. But you are asking me now to talk about things that I really do not think are within my remit.

Q69 The Chairman: But the science is. I think Lord Willis did ask you whether it was in your view, as the scientific adviser to the Department, beneficial for the provision of forensic science advice? Disregard the legal and constitutional issues.

Professor Silverman: The Forensic Science Service does not provide forensic science advice to the Home Office²⁷.

Q70 The Chairman: So it was neutral.

Professor Silverman: Exactly. I felt my role was to say, "Given that this happened, where do we go from here and how do we ensure we have the best possible research and development base for forensic science going forward?" That is what I have tried to do to the best of my ability, and I hope it will work out.

Q71 Lord Warner: Professor Silverman, I must own up to being, in a previous incarnation, the Home Secretary's Special Policy Adviser, so I have an insight into how

²⁷ The Home Office later clarified that the Forensic Science Service has provided some limited scientific advice to the Home Office but arrangements have already been made for the transfer of this work to other providers.

perfect in every way the Home Office is in its functioning. I was a bit surprised when you said you could not think of any failures, and I would just like you to reflect a little on the subject of the police and whether you feel you have been able to use the scientific skills available to you and your colleagues to actually bring some of that to bear on the operational functioning of the police? Can you tell us a bit more about whether you have had any involvement in that and whether or not they have been successful involvements?

Professor Silverman: The main way in which we support the police operationally is through what we now call the Centre for Applied Science and Technology, formerly Home Office Scientific Development Branch. There are many different ways in which that group supports the police in contraband detection, crime investigation, crime prevention, community safety, protective security, public order, surveillance and so on. So the answer to that question is that we provide scientific support for the police in all sorts of ways. The way in which individual police forces operate is, and will be more in the future, up to them, but we do provide that and we work closely with the police to provide that support.

Q72 Lord Warner: My question, really, was do they take any notice of it? That is the point. I am sure your staff are very hard working in what they do for the police, but do you work, for example, in conjunction with the Inspectorate of Constabulary?

Professor Silverman: I work closely with the Serious Organised Crime Agency, but individually HMIC is some distance away from me, so I do not work directly with it.

Q73 Lord Warner: So you have no idea whether any of your scientific advice or your colleagues' scientific advice has any operational impact on policing in this country?

Professor Silverman: If I may, I would like to write in more detail on that question.

Q74 Lord Rees of Ludlow: This is a question to Professor Silverman, or to the others: you obviously have an informal network of contacts in academia and so on. I would like to ask specifically about your interaction with the various quangos and ad hoc committees set up by the Department, which are in a sense more independent than you and your independent staff are. Is there any tension at that level?

Professor Silverman: You mean for example the ACMD? No, there is no tension at all. What is important though is to leave them space to make entirely their own independent decisions. I meet frequently with the chairs of those committees; I attend some but not all of their meetings; I keep a very close eye on what they are doing in the sense of being informed about it. No tension at all. I am delighted to sponsor them, and to sponsor them and give them encouragement is a really important part of the role.

Q75 The Chairman: If the ACMD, as has happened in the past, were to recommend changes in the classification of drugs—as we know in previous times the Home Secretary rejected the advice even before it had been given—would you be consulted and would you offer an opinion independently of the ACMD?

Professor Silverman: This is a hypothetical question but I might say that the ACMD has made several recommendations about the classifications of drugs in the last few months. In fact, this meeting coincides with a press conference about the ACMD's work on new psychoactive substances so it is very much in the role. But things like mephrodone and other new psychoactive substances have been classified recently. So now if we get to the point where there was a clash of view, the first thing is that the protocols that we put in place now say that, if the ACMD makes a recommendation and the Minister sees fit to say no to that recommendation, the Minister has to explain to the chair of the ACMD the reasons for doing so. So there is a mechanism for some discussion.

The question I think you are getting at is: would I be asked whether I agreed with the ACMD's advice? What would I do if the Minister said, "The ACMD have recommended this; I am minded to turn down the recommendation. What is your view?" As I say, this is a completely hypothetical situation. If the Minister asks me to give advice I would do so, but I think clearly in the case of an independent committee of experts like the ACMD, I would wish to take very strong note of what the ACMD were saying. I would be very surprised if I would disagree with something that had come up from a serious scientific advisory committee that was run under proper procedures. I cannot say categorically that I would never give advice contrary, but I would be very, very surprised indeed. I might say, I would also be surprised, given the discussions that we have had, if we had a disagreement about the classification of drugs anyway. I do not think the situation you described is likely to occur and, if it did, I would also explain that the scientific case is that provided by the ACMD, so "If you, Minister, decide to do something else it will be because you have taken a political decision, and you should be clear to people that there is a political decision here."

Q76 Baroness Hilton of Eggardon: I wish to come back to the Forensic Science Service. Clearly certain aspects of the decision, like the analysis of blood samples and DNA and so on, could be done more cheaply in other labs, but what about the unique databases that are being held on fibre samples, paint samples and so on, which cannot be located in the commercial world? I would have thought that is specifically a scientific matter for you to give strong advice on to ministers?

Professor Silverman: The Forensic Transition Board going forward is very aware of this issue around the database. The Forensic Science Regulator sits on that Board; he is actually independent of me but he works as part of Home Office Science. He sits on that Board and that is the way we will feed in advice on that. I should also add that the Home Office itself does work in forensic science areas where there is no market support, so there is work within the Centre of Applied Science and Technology on some areas of forensic science but not including the databases you have specifically asked about.

Q77 Baroness Hilton of Eggardon: But you have not given advice to ministers on this particular aspect?

Professor Silverman: Have I given advice on the issue of the archive? The ministers are very well aware of the issues of the archive, and they are being considered by the Forensic Transition Board.

Q78 Baroness Hilton of Eggardon: They do not seem to have been in the first place before the decision was made.

Professor Silverman: They are clearly looking at it now. The other thing is that one of my recommendations in my review, and that is a piece of public advice I suppose, is that the Forensic Transition Board needs to take particular care going forward of the duty of providers to do research, and implicitly that also means taking into account the scientific assets.

Q79 The Chairman: Professor Whitty I would like to invite you to respond to the question that Lord Broers put to the other two witnesses.

Professor Whitty: Thank you. On the first one in terms of how to get into the policy system, ministers have consistently been really clear that they will follow what the evidence shows. They have said that repeatedly in multiple different environments. The big worry therefore is actually not spotting that the evidence that is being presented is weak or not there at all. We have tried to construct a sort of defence in depth so the research and evidence teams in particular areas sit with their policy colleagues throughout the entire area of them. Obviously, I sit on some of the relevant committees as does Tim Wheeler, my deputy.

Probably more importantly, because DfID is a very decentralised organisation, every project now has to have a statement of evidence of need, which is generally fairly easy, and then evidence of impact, which is often a lot more difficult. For high value things, that is policed by a quality assurance unit that answers to the Chief Economist but actually sits in my division. So our hope is that we will pick up issues at various points. I am also on the submissions list for ministers; I see all submissions that go to ministers in case something slips through, and I would expect to be involved either formally in ministerial meetings or generally, actually often more usefully, informally in earlier meetings—either Tim Wheeler or I—on anything where science is likely to have a significant impact on what the policy should be.

In terms of things that have gone well and gone badly, starting with the well, I will just give two examples; I am aware that time is short. In areas where we have enough time, and that is a very big problem in Government, we have been able to do some really quite serious analysis. As an example, and I am very happy to leave this with the Committee, when ministers said they wanted to do something on malaria, we produced this externally peer-reviewed review, with over a thousand references, of all the evidence relevant to DfID's decisions in this area, and that is being used to guide decisions. So given enough time, we managed to do that.²⁸

²⁸ After the session Professor Whitty provided additional details. “The evidence paper, undertaken by DFID staff, aimed to review the literature relevant to practical decisions on malaria in DFID (ie not the basic science, but all other), and come to a view on the consensus position on knowledge at this point in time. It was externally peer reviewed by leaders in the field such as Prof. Sir Brian Greenwood FRS, Prof. Janet Hemingway FRS and Dr. Rob Newman head of malaria in WHO.

It is available to view at: www.dfid.gov.uk/Documents/prd/malaria-evidence-paper.pdf

The evidence paper was used in the formulation of DFID's strategic case and policy decisions in response to the Secretary of State's intention to increase funding to this area, and subsequently in the development of DFID country plans for malaria. Additionally it informed DFID decisions on gaps for research funding decisions in malaria. It is made available on our external website for other agencies to use if they want a summary of DFID's view of current knowledge. The DFID policy, which flowed from this, is available at: <http://www.dfid.gov.uk/what-we-do/key-issues/health/malaria/>”.

As a quick example, last week I was in Seattle with the Secretary of State and one of the issues that came up was how long it was going to be before we could possibly eradicate polio; i.e., how long do we have to budget for? My view was substantially more gloomy than that of the people who were talking to the Secretary of State, and I am glad to say the debate swung our way on that. That is an example of being in the right place at the right time.

In terms of things going less well, I think they go less well under four circumstances, only one of which we have a huge amount of control over. The first is the speed of decision is so fast that getting the evidence together seriously is quite difficult. I think probably my most consistent battle with my colleagues in my area is trying to stop false urgency; some things are urgent, some things appear to be urgent, and we try to reduce that because that inevitably leads to less good evidence outcomes. The second in our area is there are clearly large areas of our work, like for example governance, where the evidence base is extremely weak or is mixed; therefore, we cannot say, “This is what you should do,” based on the evidence. All we can say is, “This is what the evidence gap is, and we now need to try to fill that.” The third area is where there is evidence but it is scattered all over the place and trying to bring it together in time is difficult. A lot of that has to do with trying to spot what questions ministers will be grappling with in three or six months and then trying to assemble the evidence in advance, because trying to do it in real time is very difficult.

Very occasionally I have come across situations where the evidence if we are viewing the UK’s international development priorities and the evidence if we are concerned with the UK’s domestic priorities were leading in slightly different directions. An example would have been pandemic influenza: what we would do with our stockpiles of drugs and vaccines. In those situations, the problem is not that the evidence is wrong but that you are trying to answer slightly different things. So there are quite a lot of failures, I could point to several individually, but they almost all stem from one of those. What they definitely do not stem from, at least in my Department, is ministers refusing to listen to the evidence or simply ignoring it.

Q80 The Earl of Selborne: Could each of you tell us how your performance is assessed within the Department? Do you have set objectives to meet and, if so, who sets them?

Professor Whitty: Formally, my performance is actually assessed by my academic seconding institution and my Department simply forwards on its views about what I have done. I am assessed twice a year by the Director-General to whom I report. We agree objectives at the beginning of the year, and they largely fall under making sure that the evidence base is stronger and evidence gets through the entire organisation, professionalising the professional cadres, and strengthening our use of research so that we are actually using much more peer review and those proper mechanisms for commissioning research rather than a slightly ad hoc process. There is a very long list of budgetary things I am supposed to tick off. Generally speaking I rely on my excellent officials team, who help me to achieve those as well.

Q81 The Earl of Selborne: Could I just ask specifically about the Government Office for Science review, I think last month, of the use of evidence within the Department and

scientific and engineering advice? Have you been able to implement those recommendations? Or what is your timescale on that?

Professor Whitty: We were asked to respond to the Government Office for Science by mid-December. We have already worked out our answers to about half of them, and we are debating what the best response is for the other half. It was, for those who wish to read it, on the whole a very supportive document. It highlighted some useful areas for us to improve on and we will address all of them. We will be able to address directly probably two-thirds of the recommendations, and another third we will be able to address in part, is my guess.

Professor Silverman: I have a dual reporting line now, both direct to the Permanent Secretary on scientific matters and I have a sort of dotted line to the Director General of Strategy on financial management issues. The Permanent Secretary reviews my performance in the standard senior civil service way where objectives are agreed and then I am assessed against those at the end of the period and mid-year as well. We have a 360 review system and I make sure that among my 360 reviewers are Sir John Beddington, for example, policy colleagues across the Department, quite junior people within the Home Office science network and so on. So I make sure we have a genuine 360 that involves looking outside. The other way in which, I suppose, I am assessed is through the Home Office Scientific Advisory Committee, who would also look at the work that we do.

Q82 The Earl of Selborne: Could you also just tell us whether you have been able to implement the earlier recommendations of the Government Office for Science?

Professor Silverman: I think they were made some time before I came, and so they are part of an ongoing process of work, but I believe we have, yes.

Professor MacKay: My line manager is the Permanent Secretary. I meet her regularly, my objectives are set annually and my performance is assessed in the normal way. I do have a Science Advisory Group who play the role of challenging and supporting me in my work as well, and they are a very valuable source of informal feedback and advice.

Q83 The Earl of Selborne: Professor Silverman mentioned a liaison with Sir John Beddington; did Sir John Beddington have a hand in your appointments in each case?

Professor Silverman: Yes,

Professor MacKay: Yes, he was on the interview panel.

Professor Whitty: Indirectly, yes.

Q84 The Chairman: Can I just pick up with Professor Silverman on the GO-Science review? Although you said that happened before your time, one particular recommendation was the need for encouraging the supply of scientific expertise in areas such as forensic science and migration research. You must have, coming into the role, observed whether that had actually happened?

Professor Silverman: In migration research, this is something Paul Wiles talked about last week. We have a very strong Migration and Border Analysis group, and bringing that under my management but leaving it connected with the migration policy people has been very good. Also the Chief Economist has taken a very close particular relationship with that. I believe we have built up, even in difficult times, a very good group who give advice there. In addition, we have a thing called the Migration Advisory Committee, the MAC, which provides independent advice on migration and which commissions research through Home Office Science. So that is another committee, but that Committee also provides and commissions some research in conjunction with us on important issues to do with migration. It is a highly controversial subject but we definitely have good support for exploring policy options in that area.

The Chairman: Thank you. That draws this session to a close. I would like to thank all three witnesses for their evidence. You will receive in due course a draft of the transcript to make comments on. Just finally to Professor MacKay, you did say you would come back to us in writing on whether your team agreed with the comments the Secretary of State made in his speech to the Royal Society on 13 October.

Professor MacKay: Yes, I will look into that. Thank you.

Department for Transport—Written evidence

The House of Lords Science and Technology Committee is currently undertaking an inquiry into the role and function of departmental Chief Scientific Advisers (CSA). In order to understand the CSA landscape, the Committee requests the following information from each departmental CSA

Name of department	Department for Transport
Name of CSA	Professor Rod Smith NB Professor Smith took up his position in the Department on 16 th January 2012. Detailed methods of working will be developed over the coming weeks.
Employment arrangements	
Grade	SCS PB2
Tenure (<i>and, if on a fixed-term contract which is due to end in the near future, arrangements for appointing a successor</i>)	3 year fixed term contract
Whether full or part time (and, if part time, other work commitments)	Part time – 0.6FTE. Other work commitments include academic activities at Imperial College.
Qualifications and background	Professor Roderick Smith, ScD, FEng., is currently Royal Academy of Engineering Network Rail Research Professor of Railway Engineering, Imperial College and Chair of the Future Railway Research Centre. He is an Honorary Visiting Professor at Central Queensland University, Australia & of the Academy of Railway Science of China and York and City universities in the UK. He is President of the Institution of Mechanical Engineers.
The CSA's reporting line	Through the Director-General, International, Strategy and Environment Group.
Whether he or she is on the departmental Management Board	He will participate, if required, in the Management Board of the Department. He/she will attend the Department's Strategy Committee.

<p>Relationship with policy makers and involvement with policy decisions</p>	<p>He will draw on his independent professional expertise and work with all analytical professions across the Department to provide advice to ministers and senior officials in priority areas that require science and engineering input. In particular, he will proactively identify areas where such input is needed, provide scrutiny, peer review and challenge on the science, engineering and technology evidence base and methodologies, and advise on their future development. He is appointed under the Civil Service Code.</p> <p>As a senior adviser, he will attend the Department’s Strategy Committee and lead on strategic engagements with external bodies such as Research Councils, the Technology Strategy Board and others to communicate DfT’s science, engineering and technology priorities and work to align the strategies of external bodies with DfT objectives where their actions are critical to DfT objectives. He will work with external bodies to provide additional challenge, resource and capability as needed, e.g. learned institutes and universities.</p>
<p>Whether the CSA is involved in the development of departmental research strategies and decisions on research spend and, if so, to what extent</p>	<p>The CSA can identify research needs in relation to strategy, policy or delivery areas, and provides advice both in relation to research investment in support of specific projects, programmes or policies (including the development of future technology and capabilities) and in relation to the wider scope and prioritisation of research spending. The latter aspect is likely to be of increasing importance going forward and this will be an important feature of the CSA’s contribution to the Strategy Committee.</p>
<p>Frequency of meetings with ministers</p>	<p>Meetings with ministers take place as and when required rather than on a pre set basis.</p>
<p>How access to ministers is controlled</p>	<p>As mentioned above, the CSA would request or be asked to meet with ministers as and when required.</p>
<p>The CSA’s relationship with the departmental scientific advisory committee</p>	<p>The CSA and the Science & Research unit provide support for SACs and ensure that they function effectively. DfT does not currently have a single overarching Scientific Advisory Committee but has a number of Medical Advisory Panels which act as SACs.</p>

<p>Relationships across the departments: The Committee would also like to understand how departmental CSAs interact with each other and the nature of their relationship with the Government Chief Scientific Adviser.</p> <p>All Departmental CSAs work together under the leadership of the Government Chief Scientific Adviser (GCSA) to support each other and to address and advise on cross-cutting issues. They do this primarily through the Chief Scientific Advisers Committee (CSAC), which meets regularly under the leadership of the GCSA to consider and advise on issues of relevance to Government.</p>	

Updated 24 Jan 2012

Department for Work and Pensions—Written evidence

Questionnaire to departmental Chief Scientific Advisers

Response

1. **Name of department:** Department for Work and Pensions
2. **Name of CSA:** Dr W J (Bill) Gunneyon

Employment arrangements

3. **Grade:** Director; SCS Pay Band 2
4. **Tenure:** Permanent appointment
5. **Full or Part time:** Full-time civil servant

Qualifications and background: An accredited specialist in Occupational Medicine, Dr Gunneyon is a Fellow of the Faculty of Occupational Medicine and holds Fellowships of the Royal College of Physicians of London, the Royal College of Physicians of Edinburgh and the Royal College of General Practitioners. He is a Past President of the Faculty of Occupational Medicine, the standard setting body for the training of Occupational Physicians in the UK. He has been Honorary Senior Lecturer in Occupational Medicine at Aberdeen University.

Relationships within the department

6. **The CSA's reporting line:** As CSA, currently to the Director-General for Work Welfare and Wellbeing; from October to the Director-General for Professional Services.
7. **Whether he or she is on the departmental Management Board:** No
8. **How his or her relationship with policy makers and involvement with policy decisions can be characterised:** Close in matters falling within his responsibilities as Chief Medical Adviser. After October, he will join a management team with the Chief Analyst and the Director of Strategic Communications whilst also retaining links to the Director-General for Strategy and Directors within her team.
9. **Whether the CSA is involved in the development of departmental research strategies and decisions on research spend and, if so, to what extent:** The Departmental research budget is ultimately set by ministers. The Department does not support 'blue skies' research projects, but it has supported a number of cross-sectional and longitudinal surveys such as the English Longitudinal Survey of Ageing, Understanding Society and the British Social Attitudes Survey. Data from them regularly feed into both immediate and longer term research needs, providing research analyses relevant to on-going policy development. Such funding crosses the budget-setting process with ongoing commitments to cross-government initiatives through outside delivery and outside funders. The need for research projects, whether to provide evidence for policy formulation or to assess programme impact, will reflect the policy agenda, which in turn arises during business planning. Research planning and the budget setting process become an iterative process of defining research questions and aligning them to the overall available budget in a process described at <http://research.dwp.gov.uk/asd/asd5/>. Despite sometimes making tough choices, the outcome has always been a programme which provides the evidence base which the Department needs and prizes. There is no

suggestion that this will change or that research which is an essential underpinning of policy will not be commissioned so that an intervention by the CSA would be required.

10. Frequency of meetings with ministers (and specifically, how many meetings has the CSA had with the relevant minister in the period from beginning of September 2010 until end of August 2011): He had 56 meetings with ministers in the stated period, and supported ministers on a further 21 occasions, making 77 sessions in all.

11. How access to ministers is controlled: Primarily by ministers themselves.

12. The CSA's relationship with the departmental scientific advisory committee:
Not applicable as the Department has no such committee.

Relationships across the departments

To be covered in other submissions of evidence.

8th August 2011

Department of Health—Written evidence

Questionnaire return: Prof. Dame Sally Davies (Department of Health)

1. Employment arrangements

- a) Grade: Permanent Secretary
- b) Tenure: Dame Sally has been CSA since 2004. The CSA post is not a fixed-term contract. Dame Sally was appointed Chief Medical Officer for England and Chief Medical Adviser to the UK Government on 1 March 2011.
- c) Dame Sally is a full time Civil Servant.
- d) Qualifications

1972 MB, ChB (Manchester)
1978 MRCP (UK)
1981 MSc (London) (Immunology, with distinction)
1982 MRCPATH
1983 JCHMT Accreditation in Haematology
1992 FRCP
1997 FRCPATH
1997 FRCPC
1999 FFPH
2002 FMedSci

- e) Background

Dame Sally has been responsible for Research and Development at the Department of Health since 2004. Dame Sally's background is in haematology, being a Consultant Haematologist at Central Middlesex Hospital (1985 – 2011), Professor of Haemoglobinopathies at Imperial College Faculty of Medicine (1997 – 2011) and since 2011 an Emeritus Professor.

2. Relationships within the department

- a) CSA's reporting line

As Chief Medical Officer, Dame Sally reports to the Permanent Secretary.

- b) Dame Sally is a member of the departmental Board.
- c) How the CSAs relationship with policy makers and involvement with policy decisions can be characterised

As Chief Medical Officer and with responsibility for Research and Development, Dame Sally has an integral role in policy decisions and a close working relationship with policy makers.

- d) Whether the CSA is involved in the development of departmental research strategies and decisions on research spends and, if so, to what extent

As lead for Research and Development in the Department of Health, Dame Sally is responsible for the Department's Policy Research Programme (PRP – with an annual budget of around £50 million) and the National Institute for Health Research (NIHR – with an annual budget of around £1 billion).

- e) Frequency of meetings with ministers

Dame Sally meets with ministers and the Secretary of State on a weekly, potentially daily, basis. As Chief Medical Officer, Dame Sally attends meetings of the Cabinet Sub-Committee on Public Health.

- f) How access to ministers is controlled

Dame Sally has access on request to ministers.

- g) The CSAs relationship with the departmental scientific advisory committee

As lead for Research and Development, Dame Sally is advised on research by external advisory boards that include independent academic experts. As Chief Medical Officer, Dame Sally (and the Department) can call upon the advice of a large number of independent scientific advisory committees e.g. the Joint Committee on Vaccination and Immunisation (JCVI).

3. Relationships across the departments

Dame Sally is a member of the Cross Government Chief Scientific Advisers Group and has regular meetings (weekly) with other CSAs.

Dame Sally works closely with Other Government Departments as necessary e.g. Ministry of Defence and Department for Education. Dame Sally attends SAGE (Scientific Advisory Group for Emergencies) and COBR meetings when relevant health issues are discussed.

Relationship with the Government Chief Scientific Adviser is detailed the GCSA's overarching memorandum.

September 2011

Department of Health, Department for Education, Department for Business, Innovation and Skills and Department for Environment, Food and Rural Affairs—Oral evidence (QQ210-233)

Department of Health, Department for Education, Department for Business, Innovation and Skills and Department for Environment, Food and Rural Affairs—Oral evidence (QQ210-233)

[Transcript to be found under Department for Education](#)

Dr Robert Doubleday and Dr Chris Tyler—Written evidence

Dr Robert Doubleday and Dr Chris Tyler—Written evidence

[Submission to found under Dr Chris Tyler](#)

EDF Energy—Written evidence

Many thanks for the opportunity to make a submission to your Committee on the inquiry into the Chief Scientific Advisers.

EDF Energy is one of the UK's largest energy companies with activities throughout the energy chain. We provide 50% of the UK's low carbon electricity generation. Our interests include nuclear, coal and gas-fired generation, renewables, combined heat and power plants, and energy supply to end users. We have over five million electricity and gas customer accounts in the UK, including both residential and business users.

The importance of engineering and scientific competence in Government thinking to reinforce the technical basis for policy cannot not be overlooked.

The independent technical advice provided by the previous Chief Scientific Adviser to the Government, Sir David King, proved instrumental when the then Government reintroduced plans for new nuclear build. Prior to this, a White Paper on Energy by the then DTI had concluded that nuclear's economics made new build an unattractive option.

The importance of that intervention has subsequently been underpinned by recent Government figures showing nuclear to be the cheapest low carbon source of electricity. This was further underlined by the Department for Energy and Climate Change's 2050 Pathways analysis showing that the low nuclear scenario would be the most expensive method of achieving our emissions reduction targets.

DECC's current Chief Scientific Adviser, David Mackay, is currently playing an important role in the department, particularly with regard to the long term energy policy requirements of the UK.

Indeed, in a previous report by the House of Lords Science and Technology Committee, the need for more long term thinking in energy policy was a key conclusion. Related to that report, it is our belief that the links to academia provided by Chief Scientific Advisers are particularly important for reinforcement of the need to focus on R&D investment.

Chief Scientific Advisers have the added advantage of being independent voices able to inform Government policy from a balanced but well grounded perspective. This can be an indispensable source of information in a crisis.

The independence of Dr Mike Weightman, the Chief Nuclear Inspector, was key in helping the Government to form their response to the accident at Fukushima. That independence was essential in reassuring the public of their safety in the immediate aftermath of the disaster.

His subsequent report into the safety of nuclear power, in which he concluded that existing stations were safe and that plans for new build could go ahead, was widely respected because he is an experienced and independent scientist.

EDF Energy—Written evidence

Dr Mike Weightman's credentials were further enhanced by his appointment as the head of the International Atomic Energy Agency's fact finding mission to Fukushima.

23 December 2011

Engineering Council—Written evidence

Engineering Council—Written evidence

[Submission to be found under Engineering the Future](#)

Engineering the Future—Written evidence

Response from the engineering profession (Engineering the Future) which includes:

- The Royal Academy of Engineering
- The Institution of Engineering and Technology
- The Institution of Civil Engineers
- The Institution of Mechanical Engineers
- The Institution of Chemical Engineers
- The Engineering Council
- Engineering UK

The Engineering the Future alliance is pleased to have the opportunity to input into the House of Lords Select Committee on Science and Technology inquiry into the role and function of departmental Chief Scientific Advisers. As representatives of the engineering profession, with access to some of the best engineering skills and experiences, the Engineering the Future partners have a key role in supporting the work of the departmental Chief Scientific Advisers as well as Professor Sir John Beddington CMG FRS, the Government Chief Scientific Adviser.

This response has been coordinated by The Royal Academy of Engineering on behalf of Engineering the Future.

Introduction

The engineering community has long held the view that government policy has too often failed to take proper account of good scientific and, particularly, engineering advice at the policy formulation stage. This has often been evident when policies have not been implemented successfully and in the inability of government to be an ‘intelligent customer’ for scientific and engineering advice when it is available or offered.

More recently, since the establishment of the network of departmental Chief Scientific Advisers (DCSAs), this situation has markedly improved. The reviews of the use of science within government departments instigated by Sir David King during his tenure as CSA has focused minds across government on how scientific and engineering advice is obtained and used, leading to much improved access for the engineering community to offer advice.

The ability of CSAs to provide independent advice to ministers and policy makers within their departments

The ability of the CSA and the DCSAs to provide independent advice to ministers and policy makers relies to a large extent to the quality of their wider networks of experts. Engineering the Future partners have access to substantial expertise in both industry and academia through the profession and are therefore an important component. The expertise available through academia is able to provide evidence and facts to inform policy making, and expertise from industry and business is able to inform the deliverability of policies. Industrial and business expertise can be, and is now often, used by DCSAs to provide a project management understanding of policy implementation and delivery. Moreover, the route into

that expertise is made simple through the expedient use of the Royal Academy of Engineering. Through a well-established agreement, the Academy uses both its own expert Fellows and the many professional engineers who can be accessed through its Engineering the Future partners.

Departmental CSAs are generally part-time posts and currently post-holders (apart from the new DCSA in the Treasury) are predominantly academics from scientific and engineering backgrounds. The part-time nature of the posts ensures that DCSAs maintain their useful external networks for the period of the appointment, but, at the same time, limit the amount of time available for DCSAs to influence the wide variety of policy development within their departments. The role of the DCSAs' staff and deputies therefore becomes important in liaising between DCSAs and the rest of the department. Where such relationships have become established, they provide useful mechanisms for exchanging ideas and advice. The tendency to appoint DCSAs with an academic rather than industrial background limits their ability to provide independent advice to ministers on project management type issues associated with successful policy.

Influence over research spend

The research budgets of different departments and their agencies vary considerably, so generalised comments on DCSAs' influence is not possible. It is, however, worth noting that, in terms of engineering advice, much of the requirement for external advice is for project planning or implementation rather than academic research or data collection. This type of advice can generally be obtained at a very little cost through networks such as Engineering the Future (which includes professional engineering bodies) and the National Academies.

Role in providing independent challenge

The ability of DCSAs to provide an independent challenge function to policy makers within their departments relies, to some extent, on the policy makers being able to be 'intelligent customers' for the advice offered.

The strategic capacity within government departments to be an 'intelligent customer' requires engineering skills to be embedded, recognised and deployed within departments.

The establishment of the Science and Engineering Profession group within the Civil Service by the Government Office of Science and led by Professor Sir John Beddington CMG FRS, is improving this ability. The group is still growing within the Civil Service and is much younger than other comparable professional groupings. It is most important that this Group is supported and helped to prosper such that the position and importance of scientists and engineers in government is properly recognised and their skills used.

Recent moves to actively recruit engineers into DECC are welcome and are likely to further benefit the department in terms of its ability to understand and use the engineering advice offered.

Range of expertise provided by the network of CSAs

Engineering the Future has argued on a number of occasions for the establishment of Chief Engineering Adviser posts. This has been on the basis that good engineering advice can be of

a different nature from good scientific advice in terms of its relevance to deliverability and implementation as opposed to the facts and evidence that policy is based upon. Currently, the network of DCSAs includes a number of professional engineers who understand and make use of this distinction in the advice they seek externally and offer to their departments.

Recent, high-profile examples of major government policy projects that have failed point to the need for high level advice on the deliverability and implementation of policy, as well as the scientific and technical aspects. The skills, experience and understanding of major project delivery found within business and industry are generally more substantial because success and, indeed survival, depend on it. This suggests that CSAs should have greater breadth of experience than is normal in those who have an exclusively academic background so they can properly advise on policy deliverability and delivery. Consideration of widening the recruitment criteria in some departments to include major project delivery experience should be seriously considered.

While the engineering profession would like to see a Chief Engineering Adviser post established, the significant improvement in interactions between DCSAs and the engineering world brought about by the current CSA have already made a real difference in the use of engineering advice.

In some government departments, the need is for a Chief Engineering Adviser rather than a Chief Scientific Adviser and this should be explored further. At the time of writing, there are gaps in BIS and DfT and MOD is recruiting. It is really important that departments such as these where engineering is so central have CSAs who have a strong appreciation of the engineering (and science) involved.

It is worthy of note that the Council for Science and Technology (CST) should also continue to have broad range of engineering expertise on it.

Extent to which CSAs have authoritative standing within relevant academic, industrial or business communities

The standing of CSAs within academic networks is good. The Engineering the Future partners work hard to make advice from the engineering business and industry available to the network of CSAs, but it is clear that their standing within the communities from which they have been recruited varies. As explored above, the widening of the recruitment pool for CSAs to include those from business and industrial as well as academic backgrounds could improve this situation considerably.

September 2011

Engineering UK—Written evidence

Engineering UK—Written evidence

[Submission to be found under Engineering the Future](#)

Mr Iain Ferguson—Written evidence

1. *What is the role of the Supervisory Board? What is the purpose of the Non-Executive Board Members?*

The Corporate Governance in central Government Departments code of good practice 2011, requires central government departments to have in place an effective Board which provides leadership for the department's business. The remit of the Board, operating collectively, is to advise on strategic and operational issues affecting the department's performance as well as scrutinising and challenging departmental policies and performance with a view to the long term health and success of the department.

Defra established the Supervisory Board (SB) in December 2010. The SB is the main departmental decision making Board and provides collective strategic and corporate leadership of the department. Its remit includes appropriate oversight of Defra's sponsored bodies (the Network). The (SB) meets 6 times per year and is chaired by the Secretary of State. The (SB) membership comprises the Secretary of State, three ministers, the Permanent Secretary, five Director Generals and four non-executives (NEDs).

The SB has three sub-committees.

The **Management Committee(MC)**. The MC is chaired by the Permanent Secretary and meets 6 times per year, alternating with the SB. The membership of the MC is the SB without government ministers. The distinct role of the MC is to set and oversee the department's strategy for delivery and implementation. The MC also works closely with the SB to ensure proper oversight of key delivery and performance metrics.

The **Audit and Risk Committee (ARC)**. The ARC is chaired by a NED and has the remit to support and advise on issues of risk, control and governance. The ARC also oversees compliance with the corporate governance code.

The **Nominations Committee (NC)**. The NC is chaired by the Lead NED and is responsible for ensuring that there are satisfactory talent development and succession planning systems in place for the senior leadership of the department. The NC is also responsible for scrutinising the incentive and reward processes within the department.

The SB is currently carrying out a departmental capability review across the Defra network and will undertake a first Board effectiveness review during 2012, both of these activities have strong NED input and participation.

The **key responsibilities of NEDs** are :

-To give independent advice on the operational and delivery implications of policy proposals.

-To provide independent support, guidance and challenge on the progress and implementation of the department's business plan. This includes sponsored bodies.

-To provide management advice to the Permanent Secretary and to be available to advise ministers on operational issues and performance.

-To ensure that Board and committee effectiveness reviews are undertaken and acted upon as necessary.

The **Lead- NED** has some additional responsibilities :

-To support the Secretary of State in her role as Chairman of the SB , to ensure that she is aware of any concerns from the NEDs and that she meets with them regularly.

-To support the Permanent Secretary in her role as Chairman of the MC .

-To chair the Nomination Committee.

-To ensure that the NEDs meet together regularly to share issues and that they are receiving the necessary information and briefings required to perform their role.

-To liaise with the government lead NED (Lord Browne).

2. *Where within the departmental organisational structure should CSAs be positioned in order to fulfil their roles successfully ? Should CSAs sit on the Management or Supervisory Boards, or have the right to attend?*

Ideally the CSA should be a member of the SB. (In Defra this means being a member of the MC as well). I have formed this view over several years of contact with Defra and it has been reinforced by my experience as Lead-NED over the last year. I would cite the following in support of this view:

-Many of the SB and MC discussions within Defra involve reviewing evidence which is often science based and which requires expert interpretation within the context of the departmental strategy. I have seen several instances in the last year where SB discussions have been greatly facilitated by having a strong scientific input and challenge at the right point in the process. This has not always been within set or proscribed agenda items and indeed some of the most important inputs from the CSA have been to bring his strong science/evidence approach to bear on a diverse range of issues.

-Membership of the SB stresses the importance of the CSA role both within the department and more importantly in the external world. A significant part of the CSA role requires the ability to convene groups of independent experts to look at specific issues. This use of the CSA's network is positively helped by the 'status' of the CSA role. Interestingly, membership of the SB is also emerging as a significant point in the recruitment process for the new Defra CSA.

-Current experience shows that the departmental peer group benefits from having the CSA as a member of the SB and having his input readily available on a wide range of topics. There is also significant value in the department being able to access the CSA's external network, the breadth of the agenda within Defra requires numerous areas of disciplinary expertise.

3. *What are the advantages and disadvantages of a CSA being (i) an internal appointment and (ii) an external appointment ?*

The CSA role in Defra encompasses a very wide range of subjects and scientific disciplines. The CSA has the responsibility to ensure that appropriate resources are brought to bear on key issues and that the process for assembling evidence is robust, auditable and fit for purpose. The CSA will also become strongly involved as an expert spokesperson in communicating the scientific rationale and evidence which supports policy decisions. Key attributes required include:

-Strong scientific credibility across a range of stakeholders with an International reputation and preferably with experience of more than 1 sector (government, academic, private sector etc).

-The ability to take an independent view of processes and evidence, and to bring challenge and new thinking to long running issues.

-Well developed communication skills and the clear ability to bring scientific evidence into relevant policy decisions.

-The credibility to bring his/her network and reputation to Defra and to convene expert groups and panels as required.

In this situation **my view is that an external appointment is more likely to deliver the desired attributes.** It is unlikely that a wholly internal candidate will have had the opportunity to build the desired experience, network or reputation.

4. *What employment arrangements do you think most appropriate for CSA's? Should they be permanent or fixed-term appointments or secondments?*

My preference would be for a fixed term contract of 4-5 years. I feel that this is likely to be the most attractive option for potential CSAs , given that I believe that an external appointment is preferable, and also mindful of the key attributes desired , particularly independence and peer group credibility. I also feel that experience indicates that the ideal tenure for the CSA role is within the 4-6 year window.

6th January 2011

Finmeccanica UK, LGC Science and Technology, ITS UK and Serco Science—Oral evidence (QQ234-246)

Evidence Session No. 10.

Heard in Public.

Questions 234 - 246

TUESDAY 29 NOVEMBER 2011

Members present

Lord Krebs (Chairman)
Lord Broers
Lord Crickhowell
Lord Cunningham of Felling
Baroness Hilton of Eggardon
Baroness Neuberger
Baroness Perry of Southwark
Lord Rees of Ludlow
Earl of Selborne
Lord Wade of Chorlton
Lord Willis of Knaresborough
Lord Winston

Examination of Witnesses

Sir Kevin Tebbit, Chairman, Finmeccanica UK, **Dr Julian Braybrook**, Director, Measurement Research Strategy, LGC Science and Technology, **Jeremy Evans**, Chairman, Intelligent Transport Systems UK, and **Ian Downie**, Managing Director, Serco Science

Q234 The Chairman: I would like to welcome the four witnesses for our first evidence session this morning. Thank you all very much indeed for making time to come and give oral evidence. As you know, this is an inquiry into the role of departmental Chief Scientific Advisers and we are interested very much in your perspective on their roles in the different departments that you interact with and we will be trying to tease that out in the questions that we ask in the next hour or so. I wonder whether, before we start, you would be prepared just to introduce yourselves for the record and if you wish to say anything by way of an opening statement, please feel free to do so.

Finmeccanica UK, LGC Science and Technology, ITS UK and Serco Science—Oral evidence (QQ234-246)

I should also remind you and members of the audience behind you that the session is being webcast; you can see the broadcasting sign lit up. So anything you say will be captured by the microphones for posterity and the wider world. Members of the audience, you should find a sheet that describes the purpose of the inquiry and any interests that the Members of the Committee have declared in relation to the inquiry.

So, without further ado, perhaps I could start with Mr Downie and invite you to introduce yourselves.

Ian Downie: Thank you. Ian Downie. I am the Managing Director of Serco Science. We operate a few GOCOs that operate in the science field, so the National Physical Laboratory, the National Nuclear Laboratory and the Atomic Weapons Establishment—that covers about £1 billion turnover between those—as well as being involved in other areas within Serco within the scientific area.

Jeremy Evans: My name is Jeremy Evans. I am head of CCTV and Telecommunications Strategy for Transport for London in the Traffic Directorate and I am also the Chairman of Intelligent Transport Society for the United Kingdom.

Sir Kevin Tebbit: Kevin Tebbit, former Permanent Secretary at the Ministry of Defence for seven years and making great use of CSAs during that period and, now on the other side of the fence: chairman and on the board of technology and science companies.

Dr Braybrook: Julian Braybrook. I am Director of Strategy for Measurement Research at LGC. As part of its portfolio activities for the public and private sector, LGC supplies scientific, regulatory and programme management services to a number of the Government departments. In particular, we have some national roles relating to the Government Chemist, to the designated National Measurement Institute function for chemistry and bio-analytical measurement and we also hold a national reference laboratory function as well for a number of the areas.

Q235 The Chairman: Thank you all very much indeed. Perhaps I could kick off with a very general question for each of you in turn to respond to. Perhaps you could describe, in your roles, what your relationship with departmental Chief Scientific Advisers is and what you see as the purpose of that relationship. Do you give them advice, can you give us specific examples of advice if you do give them advice, and do you think that your relationship with them could be further developed? Do you see an opportunity to do more with them? So perhaps, Mr Downie, you can kick off.

Ian Downie: Among those three establishments, as regards AWE, it is a very close working relationship with the CSA there, Sir Mark Welland. That is providing advice both in terms of the weapons system itself, but also in terms of national security and also receiving advice. He is the primary link with the 1958 agreement with the USA and so we have a strong interaction there and with the treaty that was signed last year with France, we have a strong interaction there.

If you look at the National Physical Laboratory, BIS is currently gapping the post, which I think is going to be filled very soon. We have a strong link with Adrian Smith and, again, he gives us a good proportion of his time and he sits in a very privileged position there in terms of his breadth of view and the links with academic establishments. So we have a very strong

interaction in there. With the National Nuclear Laboratory, strong links there into DECC, Professor MacKay, and also into ShEx.²⁹

An example of advice being offered was around Fukushima, where we provided substantial advice across Serco Assurance, NNL, NPL and AWE; all offered advice into the Government Chief Scientific Adviser on that, which enabled him to offer independent advice into the Government, which I think was very well received.

The Chairman: Thank you. Mr Evans?

Jeremy Evans: Yes. Both in my role in Transport for London and in ITS UK, we have had a very close working relationship with Professor Brian Collins when he was the CSA for both the Department for Transport and for BIS. I served on the Technology Strategy Board's Intelligent Transport Systems and Services Innovation Platform Strategy Group with Professor Collins and we were overseeing a number of development projects there that were being funded both by the Department for Transport, the Technology Strategy Board and EPSRC.

Then in the transport field, Brian Collins used to come to conferences that ITS organised in the UK, in Europe and globally as well and he spoke on behalf of the department from a strategic point of view. We had a very close relationship with him over things like wireless spectrum, over the technology for road user charging as well. I was personally responsible for development and research of road user-charging technology for use in London streets, and we had a very close relationship there with the Department for Transport over that technology development.

The Chairman: Sir Kevin?

Sir Kevin Tebbit: Well, I am a bit of a “Saul on the road to Damascus” person. I was a generalist historian who came to science and technology later in my career and came to see the value and importance of it and engineering from the outside. The Ministry of Defence, is clearly the “department par excellence” that uses science and technology in a major way and where one needs to distinguish between the role of a Chief Scientific Adviser and the departmental scientific community, which in the MoD when I was there until 2005 was vast, managing a budget of over half a billion pounds, sadly depleted by 20% since.

In that circumstance, clearly one needed scientific advice about threats, about opportunities, about technology vectors; in other words, what areas were important, long-term, to sustain knowledge of and possibly indigenous capability in, as distinct from those which were less important and possibly ephemeral or subsidiary. The distinctions between the two are absolutely critical for long-term security. The whole of the scientific establishment was designed to provide advice on that as a fundamental issue; and also of course to provide challenge against the prejudices of a military establishment that, as you can imagine, has very strong views about the individual service interest. Therefore, scientific, evidential and factual challenge is very important.

For both of those reasons, the scientific establishment in the MoD is and certainly was vital. I would distinguish of the Chief Scientific Adviser from the role of the scientific establishment because the CSA adds that level of external independent challenge and global knowledge of what is happening in science, which is not necessarily available to people within the department.

²⁹ Shareholder Executive.

Increasingly, that is true, much more so today even than it was when I was Permanent Secretary. That is because the governmental knowledge has reduced and the importance of what is available there outside, whether in universities or in industry, becomes much more important. Today, I see it very much like that; that much of the information, knowledge, the key understanding of where technology is going, resides outside departments rather than inside, hence the increased importance, I would argue, of being able to tap into the sort of knowledge available through Chief Scientific Advisers.

The Chairman: Thank you. Dr Braybrook?

Dr Braybrook: Yes, we have a number of close day-to-day relationships through, effectively, a customer/contractor relationship; so particularly with FSA, with the Department of Health and, significantly, with BIS and Brian Collins, when he was in post. I suppose to the others, we are trying to develop a relationship with them, because whilst it is fine having close relationships with a few departments, for provision of the advisory functions, we would like to grow that across all departments.

So I suppose the purpose of the relationship is probably threefold related to LGC. The first is to make sure that CSAs as a whole are aware of the advisory function related to measurement science and its application to policy and regulation, and that is through the Designated Government Chemist role. There is also a very useful mechanism through a dialogue with the CSAs to make sure that our measurement research programmes are relevant to national needs and so the dialogue is certainly, from the CSAs to ourselves, to help direct and inform our prioritisation.

I guess largely because LGC originated from a Civil Service laboratory, it is very much around our experience now as a privatised laboratory and the success that we have had with that. Clearly in the current climate, that is of interest to a number of the Chief Scientific Advisers, as to how science can be provided in a national function back to a public sector body.³⁰

Q236 Lord Cunningham of Felling: I would like to ask each of our witnesses about their perceptions of the standing, the reputation if you like, of the current group of Chief Scientific Advisers within industry. Are they widely respected? Are they properly integrated with industry? Do they have effective networks for keeping abreast of appropriate industrial initiatives in their departmental responsibilities?

The Chairman: Who would like to start on that? I will go back to Mr Downie.

Ian Downie: I think that CSAs need to have a very strong network across government, not just outside of government as you were describing there. So Sir John Beddington has instigated this weekly meeting of CSAs—

Lord Cunningham of Felling: Forgive me, but I am asking specifically about their relationship with industry. We know about the internal one.

Ian Downie: That facilitates CSAs in one department access into industrial areas in other areas. We have had that in the past, for example at AWE, where Sir Mark Welland has brought in other people to help and to look at things within AWE, and to provide and receive advice and help. So it is not just the links with industry. It is also the links inside. Do I

³⁰ LGC clarified after the session that Dr Braybrook meant “how science can be provided by a private organisation back to a public sector body”.

think they have good links at the moment? They certainly do within the areas that I operate, yes. Could they be better? Yes, they can always be better. It is very difficult to focus on the key technologies that are going to make a difference in five or in 20 years' time.

Advisory committees from industry can help along those lines and we would recommend those and their expansion. There is a middle ground as well between the research establishments and industry, which is where a lot of the government laboratories sit. For example, NPL sits in the middle and then it is a function of combining, if you like, or transmitting the knowledge from one to the other and adapting pure research into applied research, which is more accessible than to the likes of Rolls Royce, BP and others. So there is a multitude of roles, functions and links in there. The networking is critical.

Jeremy Evans: ITS UK has, within its membership, a number of industry suppliers and service providers, as well as the client side in terms of local authorities—even government departments, consultancies that are doing research or advice and project management—and we believe we had a relationship with Professors Collins as a trusted partner. The dialogue that we had with him was enabling the access from our own members across the field of intelligent transport. It was also on how we could feed to the CSA within the department the advice from experienced people who were doing research in academia and people who were suppliers. That was a very good, close working relationship, I believe, with him. It enabled government issues and government policy to be explained to the supplier industries and to enable them to look at where they needed to innovate in order to deal with future problems.

That is some of the experience that I have had; working with industries to examine what they are able to do, what their products are capable of doing and comparing them, advising them where their products are deficient. Also, they have been encouraged to innovate to solve some of the problems that, say, Transport for London has as a client, and what government needs as a client as well. I think that the working relationship we had was very good and I would hope that we could build a similar relationship with the new Chief Scientific Adviser to the Department for Transport, for instance, that has just been appointed.

Sir Kevin Tebbit: Again, I think I would make the distinction that I did earlier about the established networks that are there, certainly in defence and security—more so in defence; security is a developing area. There are very detailed, thorough networks already in place between industry and the Ministry of Defence. They exist through the in-house organisation within the MoD and also through DSTL, which operates at various levels looking into various technologies. In a sense, they are trying to put across clearly to decision-makers the reality that defence capability it is not simply about platforms anymore—it is about sensors, systems, software, those types of technologies that are driving improvements. In that, the role of the Chief Scientific Adviser obviously is very important in sustaining, at the high level, the relevance and credibility of those activities.

So I do not think it can be underestimated how important a powerful CSA is, both in terms of signalling to the industry where to go; and these are issues at the top of the decision-makers' agendas and also within the community in general. This is not about personalities but I do sense a decline in the area that I am talking about in the Ministry of Defence. I came back to the MoD after 19 years away, and I remembered what it was like when I had been there first in the 1970s.

I remembered Sir Hermann Bondi and the contribution he made to science and technology in the Ministry of Defence, not just in his specialised area but across the board, and to

decision-making in general. I felt that that needed to be restored and I was told by my department, “Don’t worry. It is too difficult to get a world-class Chief Scientific Adviser. Just appoint the next guy from the internal system. We have a very good guy who is running it”. He was and is very good, and I have absolutely nothing against him, but he did not know what was going in the wider world of science. He did not have the international network. He did not have the black book from which he could assemble 10 great minds to tell us about nanotechnology, for example, with a week’s notice if we wanted it.

So I had a gap of about nine months and, with Lord May’s help, I managed to get Professor Sir Keith O’Nions as a Chief Scientific Adviser, against all the people telling me I could not get somebody of that quality. He made a huge difference both to the quality of the scientific advice within the department, to the relationship with industry and also to some vital decisions; for example, on maintaining the effectiveness of the nuclear stockpile, a vital role that the Chief Scientific Adviser has. I rather regret that the Ministry of Defence is now downgrading the level of the Chief Scientific Adviser from a four-star to a three-star.

I regret it because it will not bring that sense of leadership to the whole scientific and technology community, including industry, that has been there so far. Also, in the MoD, if you are dealing with four-star Chiefs of Staff with very clear views about what their service needs are—you know, “you don’t need an indirect fire system; you need another tank; it just needs a modern version”, is the sort of attitude one had to contend with. In these circumstances, you need people with real authority who can not only, as it were, give scientific advice, but can chair very important committees with an independent, objective, fact-based approach, which may not otherwise be there, given all the fighting that has gone on over the years about the nature of the defence programme.

So the short answer is that the standing and authority of the CSA is very important. It is vital. Within industry and towards industry and towards departmental decision-making, I fear that it is declining in importance and I think that is an issue that should be considered by the Committee carefully.

The Chairman: Independent?

Sir Kevin Tebbit: Independent.

Q237 Lord Cunningham of Felling: Two questions following that up. First, is there also an issue of the clout and credibility of this person with the Americans and the French and so on?

Sir Kevin Tebbit: The US relationship in particular, and obviously growing the French relationship is absolutely vital. On the latter, I might say when one is dealing with a country that has already made a very clear decision about the vital technologies that it is determined to sustain long term, while we have a policy of buying off the shelf almost as if it is an international supermarket where one goes along with one’s trolley, one is not in a fair, balanced, relationship.

Q238 Lord Cunningham of Felling: The question has come up in other departments. I ask you as a former senior civil servant the question of whether it is important for the CSAs to be in the departmental Boards.

Sir Kevin Tebbit: Absolutely vital, in my view.

Lord Cunningham of Felling: Would you regard that as being important?

Sir Kevin Tebbit: I would regard that as vital. In my day, the CSA also chaired the Investment Approvals Board because he had the best insight into whether the technologies were mature enough to go to the next stage or whether we needed to wait. That responsibility is changing. I mean, there is no right or wrong way here, but it is an illustration of the changing role of the Chief Scientific Adviser. Also, I would have always regarded the Chief Scientific Adviser as answerable directly to the Permanent Secretary and the Secretary of State and not to anybody else.

Q239 The Chairman: Do you have any feeling why MoD has downgraded the post from four-star to three-star? Do you think that is part of a general reflection of the importance of science or is it another reorganisational issue?

Sir Kevin Tebbit: I cannot answer that question. Nobody has shown me the answer. One can only speculate. You know, a reduced and reducing R&D budget, a smaller role globally for the Ministry of Defence, I hope it reflects that sort of view, rather than a loss of the CSA's authority in relation to military decision-makers or, indeed, the procurement organisation.

It may be that there is a feeling that, with the budget so constrained, the opportunities for new developments are so few that the role of a Chief Scientific Adviser is less. If that is the view that led to this decision, I think it is a misplaced one because it remains vital to understand technologies fundamentally, even if one is not producing or developing them oneself, otherwise you cannot be a smart customer.³¹

The Chairman: Did anybody else want to come in on this particular point before I turn to Lord Crickhowell? Mr Downie, do you want to add anything?

Ian Downie: I would agree totally with the requirement to have a CSA that has an international respect. As regards relationships, you mentioned Sir Keith O'Nions. Back in 2000, between the US and the UK, we were seen as a one-way street. That was because of the quality of the science in the UK and the investment in science in the UK was not there. Sir Keith O'Nions in 2002 and 2003 asked some very testing questions of AWE and was able to justify an increased level of spend, especially in the research area. That won friends and influence with the US, which gained power over the next five or six years to the point where now they see us as peers and we do peer reviews. That was not happening in 2000. So a strong CSA was able to carry the Government at the time, not just the MoD. It is critical to be able to take a long-term view, which is what a CSA should do.

The Chairman: Mr Evans?

Jeremy Evans: I fully concur with what has just been said. It is important that the CSA has access to ministers and is directly accountable to the Permanent Secretary—at least at the level of the Director General in departments. It is also very important that they have that international credibility and context, particularly in the field of transport. Standards are being developed for co-operative vehicles that have been set by the United States, and now the Department of Transport, with which UK and Europe needs to be very closely involved.³²

³¹ Sir Kevin clarified after the session that this comment referred to being a smart customer with foreign suppliers.

³² ITS clarified after the session that this statement referred to the US Federal Department of Transport that has set standards for vehicle to vehicle and vehicle to infrastructure communications.

Brian Collins certainly was involved with it and went to the US and had a lot of contacts there over those issues. We need to be involved in that in order to protect UK industry; otherwise we will be left out by standards being developed outside, either in the US or in Japan.

The Chairman: Okay. Now, Lord Crickhowell and Lord Willis would like to come in, I hope on the same points.

Q240 Lord Crickhowell: Sir Kevin, you have spoken persuasively about the local challenges and the international level and those sorts of issues, but you also used the words “smart customer” in rather an interesting phrase about supermarkets and buying with trolleys off the shelf and so on. I hope you will not think I am being too critical when I say perhaps one of the things that the Ministry of Defence has not distinguished itself so well at is delivering these very important projects on budget and on time. Therefore, I want to just ask you a bit about whether you are satisfied with the connections with industry at the practical delivery level; the way in which projects are put together and delivered on time. It is one thing to have the great overview about what is terribly important, but equally important is getting the thing delivered in a practical way, hopefully on budget. Are the Chief Scientific Advisers, with all their great international expertise, equally well-equipped to deal with the practical construction and delivery aspects of the task?

Sir Kevin Tebbit: I think that is a very fair criticism. I think it goes rather beyond the role of the Chief Scientific Adviser and is a very fundamental point. First, let me say today that virtually all projects, certainly that my company is involved in, are green, on time, on budget. There has been a big change in industry as well as in government procurement over the past few years.

It is true that, certainly as a result of the arm’s-length relationship that was the policy in the late 1980s and early 1990s, the Ministry of Defence tended to go for projects without understanding the technical risk and started them too early, before the technology was mature and the R&D was completed. That changed. Hard lessons were learnt in early 2002 after the particularly damaging experiences of Nimrod aircraft and Astute submarines, both of which were cases where the department simply did not understand, neither did industry understand, the technological challenges and the amount of time it would need to get these mature. There are two different issues about these two programmes but, broadly speaking, there was a common failing. The role of the Chief Scientific Adviser in that was helpful, but he could not be decisive. The programmes had been started and wrong-coursed well before that period.

But I take the criticism entirely. It is certainly not my view that Chief Scientific Advisers are sort of “blue skies” people dealing with the ground issues and not looking at the very practical ones. I think they have a very important role at the practical level. In my experience, I found the CSA acting as a drag,³³ trying to delay decisions when technology was not mature, rather than in any way on the side of those who wanted to leap into getting the money in the budget on that basis that, once you start, it is going to happen anyway; the thin end of the wedge and that sort of thing. Chief Scientific Advisers are on the other side of the argument. Let me put it that way round.

³³ Sir Kevin clarified that it might be more accurate to call CSAs “a prudent drag” after the session.

Q241 Lord Willis of Knaresborough: I was keen to get a response, going back to Lord Rees' question that Sir Kevin answered. You basically said that you believe that departmental Chief Scientific Advisers should be, first, independent. You also said that they should be working at Board level and I would like to have the view of the other three members as to whether in fact your relationship with a departmental Chief Scientific Adviser requires them to be working at that level, rather than lower down the food chain. I would like to ask all four of you, just very briefly, whether in fact you think that, if they are at Board level, they are part of the policy making process rather than simply, as Sir Kevin indicated there, the policy delivery process.

Dr Braybrook: Yes. My view probably differs a little bit from my colleague. I think undoubtedly the scientific standing of the CSAs has to be paramount. To act in an advisory function, I do not—

Lord Willis of Knaresborough: Excuse me, does that mean that, if they are an internal civil servant working at sort of third- or fourth-tier level, they would not have that?

Dr Braybrook: It is possible they may not, but then I think it is a question, going back to the previous question, about access to that information. I can come back to that in a minute, if you like, but I think that acting in an advisory role does not necessitate them sitting on the departmental Boards. I think the Boards have a different function, as far as I am aware, and perhaps it is more day-to-day and operational. Therefore, I think the independence, in some respects, and certainly the ability to stand back and deliver policy making decisions could well be clouded if they do sit on defence committees.³⁴

Lord Willis of Knaresborough: So the decision, for instance, to put all the forensic science into LGC's lap rather than, in fact, have a series of competitors, do you think that the Scientific Adviser should implement that policy rather than, in fact, challenge it before it is made?

Dr Braybrook: Well, I think it is up to every CSA to challenge where they see fit. I cannot particularly comment because it is not from my area, but I know my colleagues have given advice to the Select Committee in other House on this matter and so I would direct you to that.

The Chairman: Mr Evans and Mr Downie, do you wish to comment in response to Lord Willis' question?

Jeremy Evans: I think I already mentioned some of these points. My view is the CSA should be at Board level. If they are attending the Board, they are not necessarily part of the policy making decision, but they are in a position to challenge and to offer contrary advice, looking particularly at the evidence-base that is leading to those policy debates and decisions. They are also in a position effectively to record a different point of view, if they disagree, and to make sure that the relevant ministers have heard it and that it is on the record.

Clearly, they have a difficult role in terms of being part of the Civil Service system. They clearly cannot publicly give that contrary advice, unless it came maybe to a Select Committee and they were asked to explain what their advice was. I have seen some of the previous evidence that you have heard in this inquiry and those CSAs have said that they would tell the truth about what advice they had given. I think that is a very important role for the CSAs. So they are not part of the policy making decision as such, but they are certainly there

³⁴ LGC clarified after the session that Dr Braybrook was referring more generally to Boards.

challenging that the policy making is being done on the basis of evidence and proper research and analysis.

Ian Downie: I tend to agree with that. It is all about independent advice. The department can sometimes have quite short-term views and having somebody there giving independent advice, as you say, in a constructive manner, is absolutely critical. Whether it needs to be at Board level is another matter, but the advice needs to go up to the Permanent Secretary level in order to have power and influence within that structure.

Q242 The Chairman: Dr Braybrook, you did not get a chance to answer Lord Cunningham's initial question, which is your perception of the standing of the current CSAs from, in your case, LGC's perspective. Are the ones that you interact with well-respected and do they have effective networks into different industry sectors, including your own?

Dr Braybrook: Yes, certainly. Thank you, Mr Chairman. I think there is, for the ones that we deal with on a day-to-day basis, no question about their scientific standing. I think it can always be viewed as to where you put the emphasis with any individual, but I think with the people we deal with, I certainly do not have any problems.

Across the 20 or so CSAs, there are clearly a number of different backgrounds and my feeling is that a number of them are probably far more linked into academic networks and associated networks with that process than perhaps into industry. There are some notable exceptions, of course. I think, from our view, we would like to see the CSAs able to deliver this independence and to have their own series of networks, not just rely upon the advisory committees and not just rely on what they are being fed by the departments.

So I think it is important that those individuals are not necessarily part of the departmental Boards. I agree with all the comments about the way in which they need to interact with those Boards to give their opinion, and it is essential that a process happens there that is clear and above board.

Q243 Lord Broers: We have been in and around this question. I will ask it anyway and then try to focus it a bit. Where should CSAs be recruited from? What skills and experience should be essential criteria to the recruitment process and why? Is there a satisfactory range of expertise among CSAs? I would like you perhaps to focus on non-military industry. The economy in this country is in a lot of trouble. We are not going to recover it by the defence industry, I am afraid. It is one of the drains, not the springs and resources. So perhaps you would comment on whether CSAs might come from industry some of the time. Perhaps they might have the skills to know when technologies are mature, which was accurately pointed out by Sir Kevin as one of the very important things—a skill perhaps not gained in academia.

The Chairman: Who would like to kick off with that one?

Dr Braybrook: I am happy to take that one to start with. Clearly there are benefits from both sides. If you come from within the department, you have a clear understanding of the workings of that department. It may take to somebody coming from outside some time to get used to. That said, if you think about the independence side of things, clearly there should be the ability to source externally where possible. It is very interesting, as suggested in your questions, as to whether some more senior directors from industry would be very useful as CSAs, even if they are on a rolling sort of basis. Certainly we would give some

support to that, but I think it is very difficult to give an absolute *carte blanche* and say, “This is precisely what a CSA should be”. It will depend on the department. It will depend on the support systems that department has and, therefore, the type of individual that you require within the CSA, not just technically but in terms of the personal skills that they may need. The networking and the influencing skills that they need may well vary within departments.

Jeremy Evans: I do agree that the source of CSA should not simply be restricted to academia or prior experience in the Civil Service. I think it is very valuable to have experience from industry, delivering projects and delivering the science, if you like, rather than the theory of the science. So I think that is quite crucial.

I just happened to glance there at the requirements for the DfT's CSA that was published a little while ago and it does seem to focus very much on the current issues of the day rather than a more general point of view. It is concentrating on high-speed rail, for instance, and the railway industry as particular topics, which perhaps is a little bit restrictive in how that was recruited. No comment at all on the person that has now been appointed, but the actual person specification did seem to be pointing in a particular direction rather than in a more general role for a CSA.

My particular view is, yes, they should have experience in industry and delivering projects—a director of development and research maybe, or even managing director in industry—and have the experience in the private sector as well as in academia in the public sector.

Sir Kevin Tebbit: Whether defence is a drain or a plus, I suspect it depends rather on how successful we will be on generating defence exports where we are still, with aerospace, a global leader, next only to the United States. But let me say, first, it certainly was not and is not my view that Chief Scientific Advisers should have a narrow expertise in the particular department that they are asked to serve in. I mean, Keith O’Nions and Roy Anderson were not defence scientists by any means and I think they brought a level of external challenge strongly as a result of that.

So I do not see it in that narrow sense. I think there are horses for courses. There is no one-size-fits-all there. In all sorts of areas—in the Ministry of Defence, for example—I think it is not just a question of advice; it is also a question of decision-making. I mean, at the very highest level, we are all advisers to ministers; but if you have to advise on, say, the integrity of the nuclear stockpile, nobody is going to challenge a Chief Scientific Adviser’s judgement. That is the view that goes to ministers. So there are differences here.

I also think that a successful Chief Scientific Adviser needs to be able to chair meetings effectively, be a very good manager. This is not about being a scientist. It is a quality that some scientists have and some do not, but it seems to me a very important criterion in deciding who to appoint. Can they run meetings? Can they network well? Have they the ability to bring issues to the table that matter and get good conclusions out of them? General qualities of leadership are very important in a Chief Scientific Adviser. Are they to be found from people in industry as well as academia? Absolutely. I do not see any obvious bar, other than possibly problems about conflicted interests, which can be tricky.

You know this better than I, but the barriers between these various walks of life are reducing all the time. More university research is linked to start-up companies—incubators—these days. I come across people in academia who have much more savvy knowledge of how innovations can come to market than used to be the case. Similarly, I think moving between government and industry is also helpful. So the short answer is that one needs to take a broad view about where recruitment should come from. One needs to look at world-class science defined as respected by peers with an international position, able

to draw views from all sorts of people in order to offer good judgement on a range of issues, but by no means restricted to narrow fields, whether it is from academia or indeed from the particular sector that the Department covers.

Ian Downie: I will keep this very short, because I agree with what Sir Kevin has just said. I think there is enough scope within the network of CSAs to have a very wide range of individuals within it. At the moment, it is a fairly narrow scope, in that it is very much academically focused. Therefore, it would probably be beneficial to have a few more who have an industrial or an applied science background, but it is about the quality of science in government. It is not about project management.

Q244 The Chairman: There is another way in which industrial expertise is brought to bear—namely, through the membership of scientific advisory committees. In my experience, when I was head of the Food Standards Agency, our advisory committees were populated by a mixture of academics and industry people. Do you feel that that route to feeding an industry perspective into the scientific advisory system in government is helpful or effective? Maybe it is something that, if not an alternative to, is also supportive of your suggestion that perhaps CSAs could come from industry. Do you have experience of members of advisory committees?

Ian Downie: I do not have experience of the members of an advisory committee personally. However, I do think they are part of the overall equation and add to that, but it does not detract from—

Sir Kevin Tebbit: At the risk of getting myself in a difficult position, I have tended to find them more intelligent talking shops rather than having a real influence on departmental decision-making. I hope I am wrong. It is just the impression I had from my time in government.

Can I just make one other observation while it is on my mind and then I will shut up? I found rather an interesting dilemma between the Chief Scientific Adviser advising his department and operating within the department on very practical issues, and the community of Chief Scientific Advisers within government. I found that the more my Chief Scientific Adviser was invited to become part of a general group of governmental advisers the more my own department—maybe it was just the way the MoD was—tended to be slightly suspicious that their person was not necessarily focusing on them entirely. I found that quite positive because it meant the department was getting value from that individual and did not want that diluted or his concentration taken away. I thought that was a rather interesting insight where a Chief Scientific Adviser was adding value.

Q245 Lord Willis of Knaresborough: That is exactly the point I wanted to raise because we are starting to have a theme coming through here, that individual departments appoint their Scientific Advisers—we have mentioned BIS and of course the DfT—but in fact there is a requirement across government that you have a range of people. You have mentioned that there is a narrowing of that range at the moment and I just wondered how you feel that we could, in our report, perhaps suggest that it is possible to do both. In other words, how can we have a range and yet have that departmental ownership; so they are part of the team, but they are also centred in any particular department, because that has never been the way we operate? Have you some clever thoughts for us?

Dr Braybrook: I am not sure about clever thoughts. I think my one criticism perhaps, and having dealt with a number of departments, is that they are not terribly good on the whole at talking to each other. Therefore, I think that, while I fully accept that you clearly want to get benefit out of the individual you appoint, there is a lot of benefit in that individual, in the right roles and responsibilities, operating on a wider remit.

It probably comes down to how you set the tasks of the job at both levels and how you monitor those, and perhaps some of the monitoring aspects are not particularly well-established at the moment. Clearly there is an advisory function and I am wondering how often these individuals give advice and how often is that advice taken up. Those are some practical measures, if you like, but things that will challenge the individuals to participate in both roles in the right way. I think there are distinct advantages, though, of being cross-government.

Q246 Baroness Perry of Southwark: There has been almost, I think, a total agreement among the four of you that the key thing about a CSA is their scientific reputation with not only national but international science. Does that not, almost by definition, rule out an internal appointment of somebody who has been quite a while as a civil servant doing other jobs? Where is their little black book, to take Sir Kevin's example?

Jeremy Evans: I think it probably does. When you have the chance to renew an appointment, it is important that some fresh ideas come in. That must involve someone who has been involved in that networking, that research, for themselves. Maybe in their own organisation or indeed in industry, they were delivering particular innovations there. In order to gain that international reputation, that is almost certainly not going to be someone that was internal to the department.

The Chairman: Any other views? Do others agree with that?

Ian Downie: I tend to agree with you. I think that one of the things that can be done is secondment from government into industry for periods to specific roles and that can happen in places like AWE and NPL where I think valuable experience can be gained. I think if somebody in the MoD, for example, goes through DSTL and goes through AWE and perhaps some other areas, they can gain a network. It will not be of the international stature necessarily or as wide as you might be able to gain on that side, but if the right individual is appointed to the post, they will grow into that quickly. Therefore, I do not think it will alter that, but it is a hindrance, I agree with you.

The Chairman: Any other views for the Committee on that?

Dr Braybrook: Yes, I would tend to agree and I would go a little bit further in that I think it probably comes down to the amount of time that is given to that individual as well. I think you have to challenge them, give them the remit to grow in the sense of developing perhaps some other experience, and I think secondment is a very good way of doing that. But you clearly have to provide the time for that individual, not only to grow in a particular skillset but also to be able to provide the policy advice and separate that from their day-to-day activities. I think it can be done. It probably is more limiting, but that does not mean that there is not a value to have one or two of those individuals in a wider committee—a wider range of CSAs.

The Chairman: I would like to draw this session to a conclusion now and thank all four of you very much for your evidence. If there are any points that you feel you would like to have made that we have not asked you about or did not give you time to respond to, please feel free to send in a written submission. Of course, within the next couple of weeks or so you will receive a draft of the transcript, which you will have an opportunity then to correct. Thank you very much indeed for your time.

Professor David Fisk—Written evidence

Chief Scientists and Europe

Introduction

I was Chief Scientist Department of the Environment from 1988 -1997, and subsequently Chief Scientist DETR, DTLR and ODPM. I was a career Civil Servant having entered the Civil Service in 1972 in the now defunct Scientific Civil Service. I took up a Chair at Imperial College in 2002 and performed the Chief Scientist function part time until 2008. I would not now venture to answer the questions posed by the Committee directly as it is some while since I have been working in Government. Many factors have changed. More technical decisions are taken by Executive Agencies not by Central Departments. Many issues of substance are now handled by Devolved Administrations in their own right. Scientific *analysis* that would once have been conducted in house is more frequently outsourced to consultants (though not necessarily with a professional contract manager). The internet has become a powerful information tool for both good and ill accessible to almost every citizen. The purpose of this brief note is simply to propose that science in broader European context is not left out of the Committee's consideration of the CSA function.

EU and Regulatory Science

The majority of technical legislation (e.g. vehicle emission standards) has Internal Market dimensions and so is either in the direct purview of a Commission regulatory committee or is in Directives approved by the Council of ministers and the European Parliament. This expatriation of the scientific dimensions of policy has been true for many years in areas like agriculture, fisheries and chemicals. Government Chief Scientists might be professionally involved in a few high profile EU topics (I was involved in climate change negotiations in the 1990's) , but in general they have little direct connection with the Commission or indeed 'Working Group' negotiations. One difficulty in facilitating high level contact is that neither the Commission nor the Presidency have the analogue of a 'Chief Scientist' and so there is no link on matters of pure substance (rather than politics) between the UK Chief Scientist net and most of the Commissioners or their Technical Services. This situation contrasts with UK CSA relations with the US Federal Administration. The most recent Adviser to the President on Science and Technology was appointed in 2009. Many other parts of the US Administration have (e.g. EPA) have a Chief Scientist function.

A significant Commission institution in the regulatory science field is the Joint Research Centre located in five centres across the EU. I was on its Board of Governors until 2010. But although it is a Directorate General in its own right, its Directors have in the past been reluctant to take on a 'Chief Scientist' role' below the 'science and technology' Commissioner. To some extent that is understandable as DG JRC involves a very substantial day-to-day managerial role much larger than that typical of a UK CSA. Thus while the DG JRC is in many ways closer to the heart of the Commission than, say, the Director of the US National Institute of Standards and Technology (NIST) is to the core of the Federal Administration, the JRC is largely a research contractor with only a small proactive programme. Where JRC research highlights issues within policies relationships with the Commission can get strained, a point regarded as a constructive tension by Sir David King's Review of the JRC though probably not by everyone in the Commission.

An EU Chief Scientist?

There has been pressure from several quarters for the President of the Commission to appoint a Chief Scientist to the Commission. President Barroso's announcement to appoint a CSA in September 2009 was widely welcomed, but nothing has yet materialised. Action was again promised by the EU Research Innovation and Science Commissioner this February. Whether or not the best has become the enemy of the good, a belated appointment would be surely better than the current embarrassing vacuum. The post could no doubt develop some variable geometry as the Commission learned to work with 'science at the heart of government'. But unfortunately there is a lack of clarity in the European scientific community as to what should be the locus of the Scientific Adviser with respect to the President of the Commission. The Select Committee's own deliberations on the effectiveness of the current UK system could no doubt help move matters forward.

The difference in views is not helped by the absence of such a post *inside* the machinery of most European Governments. The voice of science can be influential in the debates within other European States but it is articulated from *outside*. The issue has unhelpfully been framed as an 'Anglo-Saxon' vs Continental model when neither has been ever sharply defined (was Galileo 'Continental?') and probably both kinds of model can be found even within the UK. Thus a Scientific Adviser can be seen like a Special Adviser in a UK Government: a confidant of the Minister (or at least the Private Office) able to offer challenge to assertions as to scientific fact from the Executive and assist with judgements in the presence of uncertainty. Or at the other extreme the Chief Scientist can be seen as part of the check and balance within the Executive (analogous to legal advice or internal audit) to ensure that political expediency does not, Canute-style, try to breach the Second Law of Thermodynamics. I personally favour the model of the 'truth auditor' since economy with the truth and the distortions of policy based evidence associated with an adversarial political process seem more of a clear and present danger. Others may have a different view. In the European Union the immediate need is to do something.

Conclusion

If the function of the UK CSA net is to be more than worrying about the science of geriatrics and badgers it will inevitably engage in issues that are dealt with in primarily in European Union fora. Innovation now seems to be a policy thrust at the heart of EU thinking. However, inappropriate or unsound technical legislation proposed by the Commission, and agreed by Council and Parliament just for an attractive sound bite, would be no way to deliver the economic growth from innovation so badly needed. Yet mechanisms to block effective misdirection of the debate by the self-interest of lobbyists are at best ad hoc in the EU. If there are lessons to be learnt from the UK (now that even Treasury has a Chief Scientist!) it would be to the great advantage of all for them to be dawn to the attention of the Commission.

August 2011

Food Standards Agency—Written evidence

Response to questionnaire to all departmental Chief Scientific Advisers

Department: Food Standards Agency
Name of CSA: Dr Andrew Wadge

Employment arrangements

Grade: Senior Civil Service Grade 2 (SCS 2)

Tenure: Appointed September 2006. This is a permanent appointment.

Whether full or part time (and, if part time, other work commitments)

Part-time post rated at 0.6 FTE. However, the Chief Scientist (CS) is available on a round-the-clock basis to advise as needed on FSA use of science – for example in food safety incidents – and is supported by a large in-house team of scientists.

Qualifications and background

Andrew Wadge holds a PhD and BSc in Environmental Science from Kings College, London and Leicester Polytechnic respectively.

Andrew Wadge was appointed FSA CS in 2006 having previously been acting Chief Scientist. He was the FSA's Director of Food Safety and prior to that served as head of FSA's Chemical Safety and Toxicology Division, working on issues including toxicology of food chemicals, allergy and food intolerance, food additives, contact materials, pesticides and veterinary medicine residues. Originally working in academic research laboratories and Westminster Medical School, he has been a Government scientist since 1986, holding posts in the Department of Health, including work on the health effects of environmental pollution, and then leading the Food Chemical Safety Unit with responsibility for the secretariat to the independent expert Committee on Toxicity.

Relationships within the department

The CSA's reporting line

The FSA CS reports to the FSA Chief Executive. He is accountable to the FSA Board for the overall assurance and quality of the FSA science and its use by the FSA executive.

Whether he or she is on the departmental Management Board

Yes. The CS is an FSA Director and a member of the FSA Executive Management Board. The CS also has a seat at all meetings of the FSA's Board of Governance to ensure FSA policies are science and evidence based (see below).

How his or her relationship with policy makers and involvement with policy decisions can be characterised

The FSA CS has a close and fully-engaged relationship with policy makers and policy decisions across the FSA. (Note, the FSA's structure ensures that policy makers and scientists work together in the same teams, rather than in different parts of the organisation.) The CS provides scientific advice and challenge on the evidence base informing policies and advice. He is involved in the FSA's response to food safety incidents, with a

specific role in ensuring that FSA's response and its advice are properly informed by the evidence and by robust risk assessment.

Whether the CSA is involved in the development of departmental research strategies and decisions on research spend and, if so, to what extent

Overseeing prioritisation of FSA's science and evidence spend is part of the CS role. The CS chairs the FSA's internal Evidence Prioritisation Board, which considers all bids for new evidence projects across the FSA and recommends priorities for funding, using a common prioritisation framework. Part of the CS role in this process is to ensure research spend is aligned with strategic priorities and to challenge the level and the balance of funding, not only across different policy areas but also across different types of evidence (for example secondary research, review and use of existing data, and evaluation as well as new research projects). The CS also takes part in decisions by the Executive Management Board on overall FSA spend, helping to ensure evidence needs are reflected appropriately within overall expenditure plans

Frequency of meetings with ministers (and, specifically, how many meetings has the CSA had with the relevant minister in the period from beginning of September 2010 until end of August 2011)

The FSA is a non-Ministerial government department and its Chair and Board are responsible for agreeing FSA policy and advice, which is done in open Board meetings. The CS attends all Board meetings with the specific role of providing independent advice and where necessary challenge on the quality of the evidence base and how it has been used to inform proposals. The CS provides an Annual Report to the Board showing how the FSA has used science and highlighting any areas for development. The CS is consulted on all policy papers for the Board and on all submissions to ministers, where these have a scientific element.

The FSA CS has not held any meetings with ministers in the period specified.

How access to ministers is controlled

As noted above, the FSA is a non-Ministerial government department and its Chair and Board are responsible for agreeing FSA policy and advice. As such the key relationship for the CS in providing advice and challenge on FSA policy is with the Chair and Board rather than with ministers, and this relationship is described above. The FSA CS takes part in engagement with ministers where this has a significant science element, for example in briefing ministers on risk assessments and underpinning scientific evidence during significant food safety incidents.

The CSA's relationship with the departmental scientific advisory committee

Nine Scientific Advisory Committees (SACs) advise the FSA, and provide independent risk assessments that underpin policy. The General Advisory Committee on Science (GACS), established in 2007, has the specific role of providing independent challenge and advice to the CS and the FSA Board on how the FSA uses science. The GACS includes the Chairs of the other 8 SACs. The CS attends all meetings of the GACS and attends at least one meeting each year of the other SACs. He holds an annual feedback meeting with each SAC Chair, where they discuss work of the Committee, the FSA's support to the Committee, and how the FSA has used the Committee's advice. The CS advises on all appointments to SACs and is responsible for a programme of independent reviews of the SACs.

Relationships across the departments

How departmental CSAs interact with each other and the nature of their relationship with the Government Chief Scientific Adviser.

We have provided comments on this in our contribution to the Government's memorandum to the Committee on this inquiry.

September 2011

Foreign and Commonwealth Office—Written evidence

Questionnaire to all departmental Chief Scientific advisers

The House of Lords Science and Technology Committee is currently undertaking an inquiry into the role and function of departmental Chief Scientific Advisers (CSA). In order to understand the CSA landscape, the Committee requests the following information from each departmental CSA.

- **Name of department:** Foreign and Commonwealth Office
- **Name of CSA:** Professor David Clary FRS

Employment arrangements

- **Grade:** SCS PB3
- **Tenure:** 3 year fixed term contract from August 2009 with possibility for renewal.
- **Full or part time** (and other work commitments): Part-time 0.4 FTE. Prof. Clary is also President of Magdalen College Oxford and Professor of Chemistry at the University of Oxford.
- **Qualifications and background:** Professor Clary is an international expert on physical and computational chemistry. As a previous Head of the Mathematical and Physical Sciences Division at the University of Oxford (eight departments: Mathematics, Statistics, Engineering, Computer Science, Physics, Chemistry, Earth Sciences and Materials Science) he has very broad experience and scientific knowledge. As one of the principals of the Oxford Science Park Prof. Clary is well connected with entrepreneurial networks in the UK. He also has held Visiting Fellowships in Laboratories round the world (including Singapore, Jerusalem, Paris, Sydney, Boulder and Berkeley). Professor Clary has excellent national and international connections also through his election to Fellowships of distinguished national and international academies. These include the Royal Society, Royal Society of Chemistry, Institute of Physics, American Physical Society, American Association for the Advancement of Science and the American Academy of Arts and Sciences.

Relationships within the department

The Committee would like to understand how each departmental CSA develops and maintains influence within the department. To this end, the Committee requests information about the following:

- **The CSA's reporting line:** CSA reports to the PUS.
- **Whether he or she is on the departmental Management Board:** No
- **How his or her relationship with policy makers and involvement with policy decisions can be characterised**

The CSA and his unit work across the FCO to strengthen understanding of the relevance of science, technology and innovation to foreign policy and ensure the

FCO's work on key science and technology issues, such as climate change, energy, food security and counter-proliferation, is informed by best available scientific evidence. More detailed information on the role and activities of the FCO CSA can be found in the [Government Response to the FAC 2009-10 report](#).

Professor Clary is directly consulted by the Principal Private Secretaries to the Foreign Secretary and ministers, FCO Director Generals, Directors and Departments on major policy papers, projects and decisions where there is a possible science underpinning or interest. He is included on broader consultations on other policy issues which may require scientific challenge and has the opportunity to comment or input as necessary.

- **Whether the CSA is involved in the development of departmental research strategies and decisions on research spend**

The FCO does not have a dedicated FCO research budget. Professor Clary regularly contributes FCO views and interests to GCSA exercises to identify cross-cutting research needs and challenges across government (e.g. counter-proliferation, polar science and climate science).

- **Frequency of meetings with ministers** (and, specifically, how many meetings has the CSA had with the relevant minister in the period from beginning of September 2010 until end of August 2011)

Foreign and Commonwealth Office ministers meet regularly with officials during the normal course of business. The FCO CSA has had two scheduled meetings with the Foreign Secretary during this period. He has also had several meetings with other FCO ministers and has participated in numerous Whitehall and Parliamentary events with FCO ministers and ministers from other departments. He has provided written advice to the Foreign Secretary and FCO ministers on policy issues and correspondence on a number of occasions.

- **How access to ministers is controlled**

Normal access to ministers is through their Private Offices via regular boxes or their Private Secretaries. Meetings with ministers are requested and arranged through Private Offices.

- **The CSA's relationship with the departmental scientific advisory committee**

The FCO does not have a formal Scientific Advisory Committee. Prof. Clary has a strong relationship with advisory committees relevant to FCO agencies. He has also established a new Scientific Advisory Group for the British Indian Ocean Territory.

Relationships across the departments

The Committee would also like to understand how departmental CSAs interact with each other and the nature of their relationship with the Government Chief Scientific Adviser.

We refer to John Beddington's covering memorandum to the Committee on this issue.

October 2011

Forestry Commission—Written evidence

Forestry Commission
Peter Freer-Smith

Grade *Employment arrangements*
SSGI

Tenure Full time/part time
Full time permanent post within the Forestry Commission (FC).

Qualifications and background
BSc., PhD., DSc. Honorary Professor University of Southampton.
Background: Peter Freer-Smith has worked as a postdoctoral research assistant (on EU funding), as a university lecturer and as a Head of research unit and Chief Research Officer within the Forestry Commission. He has experience of working with international organizations and has a strong publication record reflecting personal research and international review work on forestry and associated environmental science.

Relationship within the department
Reporting line
To the Head of Corporate and Forestry Support in FC for the CSA role and to the CEO of the FC research agency – Forest Research for other responsibilities.

Whether on the Deptl Management Board
On Forest Research Agency Executive Board and Forestry Commission Departmental Research Strategy Management Board

Relationship with policy makers and involvement with policy decisions
Key interactions are with the Heads of policy and programmes for FC Scotland, FC England and FC Wales and with the FC's Head of Specialist Advisors. The FC CSA and these staff are on the FC's Research Strategy Management Board.

Involvement in departmental research strategy and decisions on research spend
The FC Research Strategy Management Board, on which Professor Freer-Smith is one of seven members, is responsible for the Forestry Commission's departmental research strategy. This board which is chaired by a non-executive Forestry Commissioner, determines the allocation of spend to research programmes according to priority. The total research budget is determined by the FC Executive Board.

Frequency of meetings with ministers
Frequency of meetings with ministers is determined by issues, and until very recently forestry advice has not tended to be high profile. Between September 2010 and the end of August 2011 there were six non-bilateral meetings with ministers

Forestry Commission—Written evidence

Relationships across the departments

The response to this is covered in the overarching memorandum from BIS.

October 2011

Getstats—Written evidence

1. The Royal Statistical Society (RSS) is a learned society and the professional body for statisticians (www.rss.org.uk).
2. **Getstats** is the RSS campaign, supported by the Nuffield Foundation, to improve public understanding of numbers, risk and probability, with the long-term aim of ensuring that they are better equipped to make life's choices (www.getstats.org.uk). This submission draws on insights from the professional world of statistics. The RSS, however, has not formally debated these issues so these remarks are not an expression of its corporate view
3. The government favours a more open economy of data and information produced by and for government; a consultation on 'making open data real' is now taking place.³⁵ ministers say a freer and richer flow of data will allow the public to hold power better to account and perhaps lead to innovations in the delivery of public services. They have not said whether this open model should affect those professionally concerned with the collection and analysis of data – among them scientists and statisticians.
4. So, we might ask: do 'armchair auditors' mean downgrading or even the end of qualified auditors? Or, if the Meteorological Office makes climate data more readily available (both directly to the public and for repackaging by commercial firms), should the public's interpretations compete with those offered by scientists and professional data analysts? What place remains in this new economy for professional appraisal of data quality?
5. Such questions prompt wider observations. Is the public equipped to make use of this new material? **Getstats** was launched to improve public capacity: our premise is that public understanding of risk, probability and quantity stands improvement. Better evidence for policy could be nugatory if public discussion were under-informed or error-strewn. A consequent question, which we return to below, is whether professional gatherers of evidence (among them Chief Scientific Advisers and statisticians) should try to reach out more energetically to the public, to educate, lead thinking, inform and even – on occasion, think of the great opportunities in data visualization – to entertain. Is the Chief Scientific Adviser required to face and 'engage' the public more obviously than other senior civil servants?
6. Another general observation is that the Cameron government, like its predecessors, lacks an overarching strategy for collecting and dissemination knowledge, that is to say the facts and analysis government needs to make policy and deliver public services. Governments have plans (notably spending plans) for science and, separately, for the finance and structure of higher education, though not necessarily for its content. Research councils have strategic priorities for funding, which are signed off by Whitehall and ministers. Departments plan and commission their own research. The NHS supports a vast edifice of information gathering and analysis. The Office for National Statistics debates the future of the decennial census. Local authorities and public bodies do research and purchase data. And so on. But, despite the volume of fact and analysis generated, it is hard to discern a *policy for knowledge*³⁶.

³⁵ <http://www.cabinetoffice.gov.uk/resource-library/making-open-data-real-public-consultation>

³⁶ Wilson, A (2010) *Knowledge power: interdisciplinary education for a complex world*, Routledge

7. This observation applies especially to quantitative knowledge, and data. The UK has rich data sources: the census, surveys, and longitudinal studies. But despite gatherings of data collectors and users, such as the UK Data Forum, the UK has no *data strategy*, that is to say a coherent account present and future of what government needs to know, what data it should be collecting. Important debates take place – for example about linking data sets and the application of data collected for administrative purposes but they are rarely joined into a wider assessment of the cognitive ‘needs’ of modern government. Where, in Whitehall, might one look for such a data strategy – to the Cabinet Office, the Treasury, the Department of Business, Innovation and Skills? Who, to use a current example, plots the knowledge needs of Big Society? There’s intermittent debate about Haldane, Rothschild and the balance between categories of knowledge but the active commissioning of knowledge by government is often hesitant ³⁷.

8. In the absence of strategy, the apparatus for providing scientific advice to decision makers in Westminster is disjointed; arrangements appear more coherent in the devolved administrations. We are governed in ‘silos’ and scientific advice is provided ditto. We see occasional bursts of coordination. An enterprise such as the Local Authorities Research Council Initiative, which brought together the research councils and the Chief Scientific Adviser at Communities and Local Government, is rare.

9. This is not to belittle the networks of analysts and advisers. But joining up is usually ad hoc while departments’ autarkic way of operating is permanent and engrained – as successive Capability Reviews showed. Chief Scientific Advisers answer to permanent secretaries and departmental ministers. The Government Chief Scientific Adviser is *primus inter pares*; the potency of the role will depend on the concatenation of political forces, personality, the standing of Number Ten relative to other departments and so on.

10. So ‘joining up’ is voluntary or effected by opaque and often informal networks, including the professional networks linking economists, scientists, operational researchers, statisticians and social researchers. These vary in their density – and their visibility. The rest of this submission focuses on the differences between the role of the National Statistician in the Government Statistical Service and those of other Chief Scientific Advisers.

11. The integrity of specialist advisers in UK central government may be buttressed by the existence of an external reference group with *voice* – the capacity to make a fuss. The statistics map positions the National Statistician, the UK Statistics Authority (UKSA), the Office for National Statistics (ONS) Government Statistical Service (GSS) and the RSS. The Statistics and Registration Act 2007 – itself the product of long years of lobbying, leadership, reflection and practical experience – provides a statutory underpinning for statistician independence. But to the formal responsibilities of the National Statistician and the UKSA should be added the ‘cultural’ authority of the profession, expressed by the RSS. The RSS is an informal peer reviewer for professionals employed by government. They know they are under the observation of peers and can call upon professional and external support, of both an intellectual and – to be used sparingly – ‘political’ kind. As long as the RSS is perceived by public and media as disinterested and authoritative, it offers professionals in government what might be called existential security – the better to assert their intellectual independence.

³⁷ Walker, D (2011) ‘Society, socialism, sociology’, *Public Money & Management*, Vol 37, Issue 4

12. This does not require the RSS to be permanently happy with the provision of statistical advice within the GSS, with the operations of the ONS or the UKSA; nor is the National Statistician immune from criticism from professional colleagues. Issues about the integrity of official statistics abound. The point, however, is that the integrity of advice to civil servants and ministers is bolstered by both statutory independence (symbolized by the UKSA) and external cross-referencing (through the RSS). The RSS even offers its 'vision' for national statistics³⁸.

13. The Government Chief Scientific Adviser may possess, through the Royal Society and analogous learned bodies, another external 'peer review' scheme, which supports and sustains integrity and independence. This needs to be entrenched for all departmental Chief Scientific Advisers especially in social policy departments where the clash of science and ideology is heard more often and the battle of integrity and expediency closer fought than, say, in departments where scientific consensus is firmly established. John Pullinger, Librarian of the House of Commons and president-elect of the RSS characterizes 'the special relationship between the wise politician who wants to know what is really going on out there before deciding what to do and the effective expert who is able to explain what is known and what is not in a way that helps good decisions be made'³⁹.

14. So the role of Chief Scientific Advisers in educating the public – bringing fact and analysis to the public's attention – needs to be made explicit and made real. In turn, the public's capacity to take an informed part in policy debate may be raised, and the risk of panics and unreflective interjections at least to some extent mitigated.

September 2011

³⁸ <http://membership.rss.org.uk/main.asp?page=3188>

³⁹ Pullinger, J (2010) 'Parliament, Government and the future of evidence', keynote presentation at Analysts Network Conference, February 2010

Government Office for Science (Sir John Beddington, GCSA)—Oral evidence (QQ107-127)

Evidence Session No. 5 Heard in Public.

Questions 107-127

TUESDAY 8 NOVEMBER 2011

Members present

Lord Krebs (Chairman)
Lord Broers
Lord Crickhowell
Lord Cunningham of Felling
Baroness Hilton of Eggardon
Baroness Neuberger
Baroness Perry of Southwark
Lord Rees of Ludlow
Earl of Selborne
Lord Wade of Chorlton
Lord Warner
Lord Willis of Knaresborough
Lord Winston

Examination of Witness

Professor Sir John Beddington, Government Chief Scientific Adviser, Government Office for Science.

Q107 The Chairman: Good morning and welcome to Sir John Beddington, Government Chief Scientific Adviser. Thank you very much for making time to come and give us some evidence into this inquiry into the role of departmental Chief Scientific Advisers. In a moment, I would like to ask you to introduce yourself for the record. You are very familiar with the proceedings here so you know that we are being webcast and sotto voce comments will be picked up by the microphones. You also know that if you wish to make any opening statement, you have an opportunity to do so, if not then we will lead off straight into the questions. Perhaps I could invite you to introduce yourself for the record.

Sir John Beddington: Thank you Lord Krebs. I do appreciate the situation we are in and I have no intention of making an opening statement.

The Chairman: Yes, and could you just say who you are for the record?

Sir John Beddington: I am John Beddington, I am UK Government Chief Scientific Adviser.

Q108 The Chairman: If I could kick off by asking a general question about how you see the role of the departmental Chief Scientific Advisers and whether or not that role has changed during the period of your service as the Government's Chief Scientific Adviser?

Sir John Beddington: Yes, I think the basic role probably has not changed in the sense that my own role has not changed; one has responsibility for the quality of science and engineering, and science in the wider sense including social science. I think that is still the role of the Chief Scientific Advisers, albeit quite clearly there has been an expansion in the number of departments that now have Chief Scientific Advisers. I think that the spread of expertise, which is obviously an issue, is really quite wide. I suppose the point that I occasionally make facetiously is that my job is arguably impossible because it expects one to have a knowledge and an expertise across all aspects of science and engineering in government. It is fair to say that when I first came to this job, apart from being somewhat daunted, it did seem to me that it was essential that one had a wide range of expertise among the Chief Scientific Advisers and indeed that the penetration of Chief Scientific Advisers into the community needed to be widened. To an extent, I think that has been pretty successful. There is still work in progress. I am pleased with the way that things have developed. The direction of travel has been good in the sense that there is now an appreciation that departments need to function with a Chief Scientific Adviser. That appreciation varies within departments and it varies probably properly within departments because of very different roles and so on.

I think that one of the things that I have been concerned about, and we may expand on in a moment, is there has been, in terms of the Departments of Business, Innovation and Skills and the Department for Transport, a hiatus in recruitment. To some extent I can be reassuring to the Committee about that: we interviewed for the position in the Department of Transport yesterday and I am interviewing for the position in BIS tomorrow. This is a final interview with the appropriate panel to decide on that.

There are some other issues that have been good in terms of direction of travel. I think that the Chief Scientific Advisers are very collaborative. When I took the job, there were mainly formal meetings; there was the occasional dinner but there was nothing in terms of actually meeting very regularly. One of the things that I think this Committee is aware of, because I think others have touched on it in their evidence, is that I now have regular meetings of the Chief Scientific Advisers network—on a drop-in basis; not everybody attends on each occasion obviously—on Wednesday mornings for breakfast. In response to requests from a couple of Chief Scientific Advisers who have young children, we are actually extending that. We are actually going to effectively have three breakfast meetings a month and one lunchtime meeting a month. That will be instituted in the new year. I think that is right. It was a perfectly reasonable request and we probably should have anticipated it, but we had actually people who were making their arrangements and even though they had young children, still came. It has not been too bad.

The other area that is really important is that we have tried to extend our engagement with the key academies. I meet regularly with Sir John Bell and his successor Sir John Tooke at the Academy of Medical Sciences. We meet regularly with The Royal Society; Paul Nurse in fact attends these breakfast meetings and we have agreement with Sir John Parker that he will be attending a breakfast meeting early next year. In terms of the British Academy, I will perhaps get on to that because I suspect you want to talk to me about social sciences more generally but there are two things I would say in terms of that arrangement. We have

engaged in a number of informal meetings with the academy to get that input. In particular, one thing I would highlight with the role of the academies, which extends to one of my other jobs, as the Chairman of the Council for Science and Technology, is that we now have ex officio, as members of the Council for Science and Technology, the presidents of the four academies. So we now have the presidents of the Royal Society, Royal Academy of Engineering, Royal Academy of Medical Sciences and the British Academy attending as ex officio for that.

The other area that I would like to focus on that I think has been a moderate success following a problem is dealing with the science advisory committees that advise government. As we are all aware, there was a problem in the Home Office on the chair of one of those committees and that was unfortunate, but in fact prior to that and indeed subsequent to that I have enhanced it by having regular meetings with the chairs of all the science advisory committees in government. The development of *The Principles* that followed on from the problems that we faced was adopted by the previous Government and has subsequently been adopted by the current Government and is indeed part of the *Ministerial Code*. Those principles have a very central role for the Chief Scientific Advisers: namely, that if there is a problem between an advisory committee, or individuals in the advisory committee, the first port of call to try to mitigate that is very much the Chief Scientific Adviser of the department. I and the Science Minister are there if that has not been working. That is all I would say other than the fact that I think there is a genuine camaraderie among the Chief Scientific Advisers; there are regular bilateral and trilateral discussions between them which do not involve me in issues across government.

The final point which I would seek to make in terms of how it has changed is our relationship between the Chief Scientific Advisers, the Research Councils and the Research Councils' Chief Executives. The first thing I would say is Adrian Smith is considered a member of the Chief Scientific Advisers; he comes to the breakfast meetings. He is not formally there but he clearly is somebody who should be attending and should be part of it, which he is content to do. We meet the Chief Executives of the Research Councils very regularly. There was an initial formal relationship that we met within the confines of the committee of Science Advisers and what we have done is move that to a much more informal arrangement. We meet regularly with them; in fact, there is a dinner planned with them for next week. That is extraordinarily helpful in terms of taking forward issues that go across the Research Councils but also go into different parts of government.

Finally—I do assure you, Mr Chairman, this is finally—it has occurred to me that one of the areas that we needed to enhance was our linking in with the main research-based universities. In discussion with Adrian Smith, who obviously has the responsibility for higher education, we have invited the Vice-Chancellors of the key research-active universities to a meeting with the Chief Scientific Advisers. I have indicated that an appropriate person may be the Pro-Vice-Chancellor for Research or something. That meeting is scheduled for March where the Chief Scientific Advisers and the heads of the key universities will be able to talk because I think there is a lot of mutual help that could actually be done there. Having said I will not give an opening statement, I now have given a very long one but it was at least in answer to your question, Lord Chairman.

Q109 Lord Warner: Sir John, as you know the whole issue of understanding public attitudes and how people change behaviour, is becoming a major feature for all Governments. Therefore the role of social sciences in this area is important. Do you feel that we have got enough consistency across departments in this particular area? Do you feel that it is actually asking quite a lot of Chief Scientific Advisers or even, dare I say,

Government Chief Scientific Advisers to try to spread themselves over social sciences as well as what we might call the harder sciences? Or do we need to actually return to this issue of a Government Chief Social Scientist and more consistency across the departments in the way social sciences advice is available to ministers and policy makers?

Sir John Beddington: I see this as pretty much a work in progress. When we had a Chief Scientific Adviser in the Home Office who had actually come from a social research background, in Paul Wiles, he had to play two roles. He was head of the social research in government as well as being the most senior social scientist in government. That worked extremely well and that was the early days of my tenure as chief scientist. Following his departure, as head of the Government Social Research Service, an appointment of two people was made—Jenny Dibden and Richard Bartholomew—and they are actually working pretty well, in a sense, as Heads of Profession. They link in through the rest of the Government Heads of Profession through the Heads of Analysis group that is chaired by Nick Macpherson who is, as you will know, Permanent Secretary to the Treasury. I attend that as Chief Scientific Adviser, and Head of the Science and Engineering profession in government, the Chief Economist attends, the Government Actuary now attends, the Chief Statistician attends. In a sense, all the analytical disciplines, including legal, are present at those meetings⁴⁰. There is a fair bit of work that has been done. That being said, I do believe that there is a case for very carefully considering whether we should have a Chief Social Scientist in government. Quite where they would sit, my own preference would be that they would sit within my office. In fact, by geography that would be about 50 metres from Sir Adrian Smith's office. This would work quite well, but in response to another inquiry the Government have indicated that they are going to be considering this and will weigh pros and cons.

From my own perspective, I think that within individual departments obviously issues of social research will come up in a variable way. In a sense, do we feel an absence? I probably do not; I do not feel there is any sort of desperate problem. In a sense, all Chief Scientific Advisers are expected to cover all the science and engineering in their department. I have to do it for the Government as a whole. In a sense, my query is: do we need a Chief Chemist? Chemistry, not everyone is familiar with it. It is a substantial branch of a rather hard science. Is there any difference between not having a Chief Chemist or not having a Chief Social Science Adviser? I think there is a case to be made both ways but I pose this as an issue. We have got to try to ensure that social research and social science more generally plays directly into scientific advice. It is important to make a distinction regarding social science, because the economists think themselves social scientists and I do not think anyone would query whether in fact there was a lack of economists providing advice to Government. They might but I do not think so. In terms of social researchers, we are thinking about subjects like demography, social anthropology, sociology and social research generally.

One of the things that I think, and we may touch on it later, is that I was very keen when we had reviews of the quality of evidence in government departments that that review would extend much wider than science and engineering, which had hitherto been the case but went into analysis and evidence base generally. For example, we have had reviews of DfID and the Department for Education, where we have actually had individuals who have been helping us on the review panel who came from a social research or a statistical background. That is one way to deal with it. If I were to say what would be ideal, I do think a Government Chief Social Researcher would be helpful. I think it would improve things, not just as a figurehead

⁴⁰ GO Science clarified after the evidence session that these meetings do not include representatives of the legal profession.

but actually to be able to be involved. What I have done in the interim is I have very much engaged with the ESRC, initially with Ian Diamond, as the Chief Executive, and subsequently with Paul Boyle, so we actually do get a fairly coherent input in from social research in from that level of expertise. In addition, as I mentioned, we are trying to involve the British Academy. Perhaps a little later I might indicate quite how we are engaging at these levels.

If I could just refer to my notes for a second, we had a sponsored event with Paul Boyle and Sir Adam Roberts in June that involved Jennifer Dibden who is the joint Head of Social Research. We had about 100 academic social scientists attending and essentially the subject area of it was to work out how social research could better help in government. It was well attended and it was a good meeting. Most of the Chief Scientific Advisers have social research in their departments and engage with them. Professor Watson was before you and I did read the transcript of that, indicating that he did engage fairly regularly with it. It is a very long answer but it is a long question. In summary, I would say it is a work in progress and I do believe that it would be better to enhance the social research in government and having a Chief Social Researcher I think would be one way of doing that.

Q110 Lord Winston: It is a long answer, John, but I feel there is stuff missing there. How do the Government assess the impact of issues that are presented to the public: for example if you take the case of MMR and the failure of the uptake of vaccine? I think regarding our failure of understanding of what really caused the anxiety among mothers and our response to that, if we do not have a social scientist really clearly in post, how do we deal with those issues in different departments?

Sir John Beddington: There is some work in the Cabinet Office, through David Halpern, who was actually providing input along these lines, and there are issues. I have an inability to understand why the public as a whole and as individuals reject the potential utility of GM organisms. I think social research would help one understand that in a better way. I agree with you and there is definitely an issue here; we need to be enhancing it and improving our game. There is an increasing understanding that this is important and I think that departments do understand this but there is obviously a variation between them. The worry that I have would be, suppose I was mandated and said, “Look, the next Chief Scientific Adviser really ought to be a social researcher”. I do not think that is the appropriate way to behave because I think we should get the best person for the job and I would expect their job description to mean that they understand and are able to communicate and have an appropriate network of social researchers.

Q111 Lord Cunningham of Felling Sir John, the Committee has learnt in the course of this inquiry that there are wide variations between how Chief Scientists interface with their departments. For example, we had one who had very, very frequent meetings with the Secretary of State and one who could not remember having a meeting with the Secretary of State or not, which was quite extraordinary. Is there any set of guidance, principles or best practice? Where should a Chief Scientist be placed in the organisational structure of a department to ensure they are given the best opportunity to work successfully?

Sir John Beddington: I do not think it is one-size-fits-all, in the sense that there are big variations in departments’ use of science, engineering and analysis more generally. I have never had a Chief Scientific Adviser say to me, “I have a major problem here”. My preference is that they are able to engage at the highest level.

Lord Cunningham of Felling Excuse me, if the person had a major problem, they might not want you to know that.

Sir John Beddington: That is an interesting thought and indeed how would I answer that? I would not be able to prove the negative. I know you talked to Carole Willis and she was the person, I believe, who could not remember whether she met her Secretary of State. I read the transcript. I think one of the things that is important is really the science and engineering analysis reviews more generally. If I may, because I know this is a concern to you, there was a science and engineering analysis review of the Department for Education—it was I think DCSF in those days—and it was very, very positive. Let me just read, if I may with your permission Mr Chairman, briefly. It said, “DCSF’s focus on the need for an analytical and evidence-based approach has been a strong priority over a decade. This focus has been further strengthened by the Department’s current Director of Research and Analysis (also DCSF’s Chief Scientific Adviser) and her direct engagement of the Permanent Secretary, Directors General and other Directors in the evidence-based, analytical approach”. That was in independent review; I can give you the names of the reviewers, and it was extremely positive both about the way the department dealt with it and in fact the engagement of Carole Willis at high levels, not to the Secretary of State but to the Permanent Secretary. This was a very strong, very positive review both of the department’s evidence-base and of her role.

Q112 Lord Cunningham of Felling Forgive me if I just follow that very briefly: I did not say there should be a one-size-fits-all method but presumably there must be some best-practice thinking about how this works, or is it just left to each department to make its mind up how it is going to work?

Sir John Beddington: No, I think best practice, I would say, is to consider whether it is working. That is why I brought in the evidence-base there. I can quote you another practice where it was less successful but access was there. I do not think there is a one-size-fits-all solution. I do not think it is a necessary or indeed a sufficient condition for good science and analytical advice in general but in terms of how I would see it, I would think that in terms of the major science-using departments, I would hope that there would be access at the very, very least to the Permanent Secretary and in ones that have a very significant analytical component I think they should have access to Secretary of State or ministers. That would be my preference. To an extent, that has been achieved over the last three or four years but it is not complete. You do raise a good point: they would not tell me if there was a problem, but if there are issues we would address them. The reviews that we do are completely independent. They are panels from outside government doing that review. If there was a problem, I think those reviews would reveal it. Indeed, some of those reviews have revealed quite significant failures within departments but I do not think those failures are entirely dependent on, for example, access. I think that it is complicated; you can have good practice and my preference would be for access. All of the current departmental Chief Scientific Advisers with major components tend to report either to the Director General or the Permanent Secretary level; there are some anomalies that I need to ponder.

Q113 Lord Willis of Knaresborough: I asked the series of questions about how many times departmental advisers had actually met Secretaries of State and the responsible Minister not to try to cause any problems but just to illicit an answer that gave an indication as to where in fact was the interface between departmental Chief Scientific Advisers and the ministerial team. It worries me, I have to say, that twice in your last answer to Lord Cunningham you have indicated that interfacing with the Permanent Secretary is adequate. I would like to know why you feel that an interface with the Permanent Secretary, who is the gatekeeper to the Minister and to the Secretary of State, is adequate for the sorts of

challenge function and the evidence-base function that is necessary for a departmental Chief Scientific Adviser.

Sir John Beddington: I refer to the reporting line rather than gatekeeping role, Lord Willis, and it was the reporting line I was quoting. In terms of the access, I consider access to the Permanent Secretary to be absolutely necessary. Whether in fact that Permanent Secretary in a sense stops advice going further, I am not aware of that—again the point that Lord Cunningham made is maybe I would not be—but I think I would rely further on the fact that when you have done reviews this has not been revealed as a particular problem, though there are definite problems. For example, in the review that was done at BIS, where the panel was extremely critical of the culture within the department, I have taken that up and BIS is in the process of recruiting, we are interviewing tomorrow. What that effectively said was we have an excellent Chief Scientific Adviser but there was little enough motivation with some policy officials to actually ensure that what was potentially excellent advice from the then incumbent Brian Collins went through.

Q114 Lord Willis of Knaresborough: Can I just interrupt there? I have read the reports, too, and not one of those reports has made any criticism, including the BIS report, of the Permanent Secretary. Surely this was a failure of the Permanent Secretary, about the culture in BIS.

Sir John Beddington: These reports are actually shared between myself and the Permanent Secretary. The way that we developed these things was following practice that I do not think was very efficient, which was essentially having reviews that lasted a couple of years that were criticism from outside and that did not involve the Permanent Secretary in dealing with the issue. We took that practice to the Heads of Analysis meetings and said, “Look, this is a problem because in a sense you are getting criticism from outside and defensive responses, which we know are very straightforward to be done within the Civil Service”. Actually, these reviews are an agreed text between the Permanent Secretary and myself, so I note your point, but I think the fact that the Permanent Secretary is a joint author of those reviews indicates that they would take them on—they take on the points because the points that come under review are indeed endorsed by themselves—and the practice is that after four months there would be a response from the department to the recommendations and a further year after that there would be a review about how recommendations from the review have actually been adopted by the department. Therefore, to an extent, the Permanent Secretary is saying, “Yes, I agree”.

Q115 Lord Wade of Chorlton: You mentioned the issue of whether it was working. Surely it is working when the Minister and legislation, ministerial decisions, are based upon a scientific understanding of the issue. Are you satisfied that that happens?

Sir John Beddington: I thought about this because you questioned some of the Chief Scientists about whether there have been failures. I have actually thought about that. In my case, I think one failure that I would absolutely point to is the fact that the Department of Health and the NHS still fund homeopathy, which is crazy. I have spoken on many occasions to say this is completely crazy. Despite that, the Department of Health and the NHS still fund it. I do not understand quite what the reasons are. The information that came back to us was to do with patient choice or some such. I do not accept it. I have spoken out both in fora like this and publically to say that this is completely unacceptable and that there is no scientific basis for this. That is a failure I have acknowledged in terms of science advice.

In other areas there have been other failures but they tend not to be about science and evidence but about process. I regret that we do not have a Chief Social Researcher; this is a proposal I made several years ago as soon as Paul Wiles left his job. That has not been accepted. I regret, for example, that there was a hiatus in the Department for Transport and BIS in appointing a Chief Scientific Adviser after the incumbent moved on. We will be lucky to have somebody in for the new year but there has been effectively eight or nine months of hiatus. That is a failure for me to convince the departments how important that is. In terms of these areas where evidence has been really taken up, there are lots of examples within government departments where scientific evidence I think has been taken in developing policy. I do not believe there are issues that I have encountered anyway where policy is driving the evidence-base. That might be queried and I would be happy to explore that on an individual case.

The area where I have found it most pleasing because it can be inconvenient is to do with how we deal with emergencies. I think that the latest emergency that I dealt with via the SAGE mechanism was the one dealing with the earthquake and subsequent tsunami in north-eastern Japan and the problems with the nuclear power station there. There was a real rush to remove personnel and move embassies from Tokyo. The question that we were posed was: should we do it? Should we move our Embassy personnel, should we evacuate our personnel? France was doing it; Germany was doing it, and many other countries were doing it. To an extent, the advice we gave out was absolutely not. No necessity whatever and government took that on. We did not move our Embassy, we did not evacuate our personnel and that was actually quite difficult when France, who is a well-known nuclear power, was doing it. That is encouraging, although it does not mean to say it will always happen in terms of national emergencies where this occurs.

I am sure that there will be occasions where scientific evidence has been presented and different policy decisions are taken on it. There were some occasions with the previous Home Secretary, in the previous Government, where I was very concerned about how she was dealing with drugs and the classification of drugs. She had essentially been quoted in the *Guardian* saying that, irrespective of the evidence, she would be taking the decision not to reclassify. I wrote to her and she clarified that. I would not say that scientific evidence entirely is taken into account there; I think that it is really important that it is. I think that we all recognise in this room that science evidence is not the only evidence; there will be financial, and indeed political, considerations.

Q116 Lord Rees of Ludlow: To be effective, these advisers themselves need some support in terms of staff and resources. Are you confident they are getting that especially in the light of evidence that in one or two departments the posts are being downgraded?

Sir John Beddington: There is a real issue here. I think the issue is exacerbated of course by the cutbacks that followed the comprehensive spending review. The evidence we got from the review of BIS was there were completely insufficient resources to support the Chief Scientific Adviser and that needed to be enhanced. That, I believe, is a work in progress and we will just have to see. In terms of the downgrading from the Permanent Secretary level in the Ministry of Defence—from Permanent Secretary to Secretary General—I do have concerns. I think there are real issues about that downgrading, which may in fact be almost to do with appearance. The role has changed and I believe you have Sir Mark Welland in front of you at some stage and you should explore with him in more detail how the role has changed. My understanding is that there are very substantial financial responsibilities that the current role has and that the new role will change. You probably should explore that in more detail with him. My concern was: would you be able to get somebody of the right

quality, who would command the right respect, in the external community? Also, it is arguable, and I believe Lord Oxburgh made this point on an occasion, whether in fact you would command sufficient respect within the MoD itself, which is almost by definition a fairly hierarchical organisation.

Q117 Lord Rees of Ludlow: With the Americans is also important.

Sir John Beddington: Yes, indeed. I cannot comment on that in a sense that I am sitting on a panel to appoint a new Chief Scientific Adviser to the Ministry of Defence at this stage so I prefer not to comment on it, other than to say this is a thing that we need to be looking at. We need to be looking at it in a way that we pose the sort of questions you are posing: is that penetration good? I do not want to comment on the candidates but once the candidates have been appointed the hope is that that candidate will be good. I think I would have failed in my duty if we do not have somebody who can command respect outside and would command respect, particularly in terms of nuclear discussions with the USA and, I would add, France. I think that that is a work in progress. We need to do it. The good thing the MoD has done is actually they did persuade Sir Mark Welland to stay on until they had someone new through in the post and I think that was a very good process. He is working currently three days a week to ensure things continue.

Q118 Lord Warner: You described in some detail, Sir John, the way these departmental reviews work. Do they ever have contact with ministerial teams—not just the Secretary of State but ministerial teams—to ask them about their ability to access scientific advice, including social science advice and what their preferences would be? Is there a ministerial dimension to it?

Sir John Beddington: It is a perfectly good question and when you asked it, I thought, “No, we do not and we probably should”. To the extent that I am there, and whether in fact there is sufficient scientific advice, if ministers are unhappy with it, I suspect their first port of call is their own Permanent Secretary, which may have problems, but it also should be their Chief Scientific Adviser or me. I think it is fair to say that, for example, following last year’s very severe winter the Department for Transport approached me and asked me to produce a review on whether or not we could actually predict this. That is one example of where a Minister was essentially saying that they were not getting enough within the department so they had to go outside. There are obviously reasons that there is expertise from outside that you would not pull in. Your point is a good one. If I may, I will reflect on it and I think that we would need to do it. In a sense, it may be a bit late because we conducted these reviews for the last two years. We just started on the one on the Foreign Office and the final one is going to be the Treasury at the tail end of this financial year. It is a good question and I had not thought about it.

Q119 Lord Crickhowell: Sir John, you referred to a critical review of the department and concerns about delays in appointments both being referred to the Permanent Secretary. If there is a very critical review of the department, oughtn’t that report automatically go to ministers and not just to a Permanent Secretary?

Sir John Beddington: Let me focus on that, because the particularly critical one was at BIS. It was an odd time in a sense that Simon Fraser, who was then Permanent Secretary, moved off to run the Foreign Office just after this review was presented. There was an interim Permanent Secretary in Philip Rutnam, and Martin Donnelly only took over the job as Permanent Secretary some months later so there were circumstances that meant the action

was not working too well. In terms of the review report, obviously that also was straddling change of government. I, certainly, have talked about the report to the Science Minister, David Willetts, though I have not talked about it to the Secretary of State, Vince Cable. I certainly raised that within BIS. Because it is a shared issue, it is public knowledge; the reviews are published on the website. Newspapers and media people more generally have commented on it. I have not actually been involved with briefing a Secretary of State following a review, whether critical or laudatory, other than an occasional meeting saying, “That was a good review”, or, “There is a problem”. Again, I think it is arguable. It is slightly difficult in my position because, as I explained in my answer to Lord Willis, I do share this review with the Permanent Secretary and if the Permanent Secretary is worried, and they have a critical review and they are aware of it and they have endorsed it, I would have thought that they would choose to actually tell the Secretary of State, but I cannot confirm that.

Lord Crickhowell: I have to say that if I was Secretary of State and there was a very critical report about something in my department and it was going to be published on the website, I would be furiously angry if it had not been said to me first.

Sir John Beddington: Yes, that is a thing not for me but for the Permanent Secretary.

Q120 Baroness Perry of Southwark: Sir John, my question is about the role you, as the Government Chief Scientific Adviser, play in ensuring that the CSAs in their departments are performing their roles effectively. That is obviously a two-way question, involving both your role with the CSAs themselves and helping them be effective but also the intervention you are able to make with the department to ensure that they are using their CSAs effectively, not only with the department, as others have said, but with ministers as well.

Sir John Beddington: First, in terms of formal reporting, none of the Chief Scientific Advisers report to me, I have no line-management responsibilities for any of them. Those line responsibilities lie within their departments, either as I said to Permanent Secretaries or Director Generals, so to that extent, that is it. I do have meetings pretty regularly with the Chief Scientific Advisers and what you might call fireside chats or critical-friend discussions and so on; they goes on pretty regularly. If I was really worried that a Chief Scientific Adviser was really not getting it or was essentially failing to operate, I would act to meet with them. I had such an occasion, and for obvious reasons I do not want to name the individual, but I did actually have to say to an individual, “You are not doing your job properly, you are failing. You need to turn it around”.

Baroness Perry of Southwark: That would be through the review you would know that.

Sir John Beddington: It was not, in fact; a Permanent Secretary called me and said, “I am very worried about X”.

Q121 Baroness Perry of Southwark: How would you know if someone did not jog your arm, so to speak: in this case, the Permanent Secretary saying, “Things are not going well”? How would you know if things were not going well?

Sir John Beddington: You would see that in terms of the sort of evidence and the sort of activities that were coming out. For example, if there was a real problem that scientific advice was shown to be wrong or completely ignored, I would hear about it. I think that if there is a situation where, for example, the Chief Scientific Adviser was lacking credibility within their department, either because they were not good at their job or they exaggerated or they claimed that there was certainty when there was uncertainty, those sorts of things would just come to me. I have a staff that I would expect to be monitoring that. I think you

would also see because very few departments actually have policy areas that are completely independent of all other aspects of government, so I would be expecting other Chief Scientific Advisers saying, “I am a bit worried about X because what is happening in that department is odd”.

Q122 The Earl of Selborne Sir John, it is clearly important that Chief Scientific Advisers not only perform well within their department but they collaborate effectively among themselves, and you referred to your breakfast meetings. Now perhaps I should declare an interest because I chair one of the collaborative research programmes dealing with environmental change; we have 22 partners including Research Councils and government departments. It is a clear that a good Chief Scientific Adviser can enhance a collaborative cross-cutting programme that provides excellent value for money and a lot of ownership of the research results. Other departments—I do not wish to name any such departments—are clearly less inclined and have it less in their culture to collaborate and to see the advantages. When you are assessing and assisting your Chief Scientific Advisers, do you give particular importance to the need to get this cross-departmental collaboration on the research programmes going?

Sir John Beddington: Yes, you make a good point, Lord Selborne. In terms of environmental change you have support from a whole number of departments and the Chief Scientific Advisers involved in them. The other one I would highlight is food security, where essentially a number of departments have come and work closely together with the relevant Research Councils that are also operating. I think that there are clearly going to be issues where you cross departmental boundaries on issues where some degree of dialogue is essential. For example, following the recommendations of the Committee on Climate Change on the fourth cycle—I cannot remember the exact word of it—there was quite detailed discussion by the Chief Scientific Advisers on what the evidence base was and what the implications were, and we do that fairly regularly.

There are sort of clusters of Chief Scientific Advisers; you would expect DfID, DECC and Defra to be working fairly often together, that they would not often overlap with work on MoD but they might overlap from time to time with DCLG. Those groups have—and I mentioned it in my earlier remarks—quite regular bilateral and trilateral discussions with Chief Scientific Advisers, which I have nothing to do with but I am aware continue. One of the ones, for example, that has involved a fair number of our Chief Scientific Advisers has been the discussions on how we would meet our emissions targets: a reduction of 80% of greenhouse gasses by 2050. Extensive and critical-friend reviews of the work that was done by DECC. In fact, only last Wednesday we had a reiteration of some of the work from the DECC people with Chief Scientific Advisers all around the table commenting. Not necessary commenting on the basis of departmental interest but I know, for example, Bernard Silverman from the Home Office was raising some serious issues about the way some of the estimation was done. It is not perfect, of course it is not, but I have not been alarmed. There has been no public falling-out or indeed private falling-out—to the extent that I am aware—between the Chief Scientific Advisers on any of the evidence base. There may be different decisions that taken by different departments but on the evidence-base I think we had a real consensus. It would be very odd if we did not.

Q123 Lord Broers: We have discussed a lot of this already but my specific question is: how do CSAs provide independent challenge and ensure that policies are evidence-based? At what stage or stages in the policy process should they be consulted? It has been my observation at times that policies that depend heavily on science and engineering just appear

from somewhere. I would like to know whether you have a formal role with your CSAs in reviewing policies that have a heavy science-and-engineering content. My supplementary question is: should CSAs express their reasons for disagreeing with a policy decision publically and should the relevant Minister explain their reasons for the public policy?

Sir John Beddington: I think we should get scientific advice in as early as possible in the policy cycle. One thinks about the antithesis of developing policy and only then getting science and analytical advice; that would manifestly be inappropriate. There will be some issues, for example, where there has been a political commitment to a particular policy, one for which scientific evidence is relevant. I think that Bob Watson raised this in the context of bovine tuberculosis with this Committee. I think that scientific advice is absolutely relevant to that but in a sense there was a commitment prior to the election that there would be a badger cull. In that situation, scientific advice should be saying, “This is the likely result of that”. Another one where I think there was a problem was the proposal for a third runway at a London airport. As far as I was aware, in the Department for Transport, the Chief Scientific Adviser was not involved in those discussions. I raised that with the Permanent Secretary and I think that is inappropriate.

I cannot say in the plethora of all government policy how in fact the evidence has been brought in and whether it has been brought in early enough in all cases; I am afraid I just cannot give you that complete assurance. I would say that I am not aware of really big, problematic issues where scientific advice has been ignored or indeed where scientific advice thoroughly undermines a particular policy. What I point out is that if you move away from the CSA’s role, which I would see actually included, in terms of the principles that were developed for scientific advice in government where Science Advisory Committees were providing advice and the Government did not accept it, there is the provision in that the reason for that rejection would actually be explained.

Q124 Lord Broers: We heard evidence from Brian Collins that he felt, when asked about successes and failures, that he had failed to communicate, I think, some of what might have been his advice on off-shore wind, for example, and that that policy had appeared and was established without consultation.

Sir John Beddington: I am not sure from his evidence whether it was when he was in Transport or whether he was in BERR which he was for a short time before its reorganisation into BIS. If he believes that to be the case then I have no reason to contradict him. The issue of the balance of our development of energy has been subject to very detailed critical scrutiny because obviously there is an infinite number of potential solutions and what the trajectory is that will lead us to the 2050 80% reduction. That has actually been developed by DECC; it has been subject to critical review not just by the Chief Scientific Advisers but also by experts I brought in from the community. I think that the question that people posed is whether it is feasible to actually see the level of development of off-shore wind in terms of the practicality of the engineering. Those issues have been raised and the policy has been revised to reflect that. That may well have been the case at some stage when Brian was involved and I cannot comment on that. He did not raise it with me, but I think that if we take the actual point of asking whether we are concerned about off-shore wind, that has had a lot of critical scrutiny in terms of its technical feasibility and the investment profiles that are required. I think the good thing about the way that DECC is operating here is that its basic calculation algorithm is publically available so people can actually check it and query the calculation.

Q125 The Chairman: Could I ask a related question? We have heard quite a bit of evidence about the pros and cons of internal versus external appointees to the role of departmental Chief Scientific Advisers. I wonder if you could give us your view on whether or not, for example, all Chief Scientific Advisers should be external appointees who are more likely to be able to make independent challenge statements because their future careers do not depend on pleasing their masters in the Civil Service.

Sir John Beddington: I would have real concerns if the vast majority of Chief Scientific Advisers were not being appointed independently, from the external community. I would have real concerns, in particular, if the Chief Scientific Advisers had a significant role, as it were, in the subject matter of their department involving science in its broadest sense. I would have real worries there. In terms of the three departments where there has been no external appointment—Education, the Treasury and the Ministry of Justice—they have rather different views. For example, James Richardson is going to be coming in front of you. I was not involved in the recruitment of James but I did talk in some detail at senior levels in the Treasury and said that I thought they needed to have someone who was completely credible as an economist and who was able to access at high levels within the Treasury, and I think James met that criteria.

I cannot say I would be unhappy if all Chief Scientific Advisers were appointed externally. I think that arguably might be an ideal. I do not think that is feasible in the near future and in a sense I think the question is: is this second best and, if it is second best, how second best is it? Am I really concerned? On that, in answer to earlier questioning I said I rely to an extent on the science reviews to tell me that there is a problem. There are a couple of things worth saying. One is that science and engineering move so fast that if you have a significant role with science and engineering, and I do include social science in that, it would be quite difficult to retain expertise within government in these areas so that an internal appointment would be adequate. I just do not think it would. In some areas, for example the economics of policy, it is arguable; I would not say it is necessarily ideal but it is arguable that you do have a continued level of expertise there.

Q126 Lord Willis of Knaresborough: We heard very different evidence from some of the departmental Chief Scientific Advisers about their budget. Bob Watson talked about having £1 million in his back pocket that he spends on whatever programme he wants. We were impressed with that and very excited. Others have absolutely nothing. In order for them to be able to carry out that challenge function so that they are able to actually commission research, should they have a budget and if so, how should that be arrived at?

Sir John Beddington: Some of them have massive budgets. The MoD has something in the order of £400 million in the control of the Chief Scientific Adviser. DfID has a massive budget, David MacKay in DECC has a substantial budget, Sally Davies in the Department of Health has an enormous budget. Bernard Silverman, in the Home Office, has changed. The direction of change is interesting. Both in DfID and the Home Office, the Chief Scientific Advisers have been asked to essentially control the budget, which was not the case with their predecessors. That is interesting; that is the direction of travel that seems to be occurring. Absolutely, of course, one should have some discretionary spending. In terms of the sums, a number of them sit on research committees that actually decide how the money is allocated but an ad hoc system—whether it is £1 million for Bob and £30,000 for somebody else—might be attractive but I think that is very much within the Permanent Secretaries' decisions on how that is operated.

There is an issue: if you control the research budget of your department, who is challenging whether that research is any good? I am not certain whether there is an ideal answer to that. In a sense, my instinct is that I would like to see the Chief Scientific Advisers with a science advisory committee, controlling budget and taking criticism from outside but I think not all departments have that, so in a sense the Chief Scientific Adviser provides a challenge function because they do not control the budget. That is an odd one; I do not think it is an ideal answer.

Q127 The Chairman: We are running out of time, Sir John. There was a fifth question that we were going to ask you about the measurement of CSAs' performance. I wonder if you could send us your thoughts in writing about that because we have run out of time right now. How do you think that the performance of CSAs should be assessed? What sort of assessment criteria there should be? I know some government departments, such as Defra, have a scientific advisory council that works with CSA and Bob Watson in Defra; do you think that model is a model that should be rolled out across all departments?

Sir John Beddington: Yes, I have already said that in other fora. In fact most of the recommendations from the reviews that we have had indicate that the independent panels also feel things would help. I will write it.

The Chairman: I would like to draw the session to a close and thank you very much indeed for your responses to our questions. As you know, you will receive a copy of the transcript for you to make any amendments or corrections that you wish to make. That draws this session to a close and thank you very much indeed.

Government Office for Science—Supplementary written evidence

Professor Sir John Beddington

The Chairman: We are running out of time, Sir John. There was a fifth question that we were going to ask you about the measurement of CSAs' performance. I wonder if you could send us your thoughts in writing about that because we have run out of time right now. How do you think that the performance of CSAs should be assessed? What sort of assessment criteria there should be? I know some government departments, such as Defra, have a scientific advisory council that works with CSA and Bob Watson in Defra; do you think that model is a model that should be rolled out across all departments?

CSAs line management is rightly within their department. It is therefore ultimately for the Department to evaluate the performance of CSAs, following the usual senior civil service arrangements. Assessment criteria should reflect the requirements of the specific role in each Department and there is therefore no single model that could be adopted universally.

CSAs oversee the departmental systems for ensuring the evidence base for policy making is robust. All the major science using government departments have now also had a Science and Engineering Assurance (SEA) Review. These reviews provide departments an assessment of the effectiveness of their science advisory processes and consider the position and influence of the CSA over the review period. The current programme will finish next year following the review of HM Treasury. I am keen to take the opportunity to take stock of lessons learned from the SEA programme and to consider the most appropriate mechanism for future review of science and engineering capability in government.

There are currently 5 main departments with a Science Advisory Council. They are DCMS, DECC, Defra, Home Office and MOD. DfID has an informal Research Advisory Group which brings together experts from across the analytical disciplines. GO-Science encourages all Departments to consider having a Science Advisory Council to enable challenge and input to complex and important policy areas. Such committees allow the expertise of the CSA to be supplemented by a wider range of expert input and can offer a further useful external challenge to departmental policies. Ultimately it is for each Department to determine how best to ensure the cost-effective provision of the necessary science advice. Given that Department's generally want to maximise their contact with high quality advice, SA Councils are frequently one of the most efficient ways to engage with such advice and the wider networks that they can bring. *[N.B Forestry Commission and FSA also have SA Councils]*

Many departments also have Scientific Advisory Committees that offer advice on specific issues. The need for these depends on local requirements. We don't want committees for the sake of it, but they can serve a crucial role in providing specialist advice and challenging the department's use of that advice.

November 2011

Government Office for Science—Further supplementary written evidence

Professor Sir John Beddington

Thank you for your letter of 29 November in which you requested supplementary evidence following up a point we made in the Government Memorandum to your ongoing inquiry on Chief Scientific Advisers. The memorandum states that "a current objective of the GCSA and the Government Office for Science is to further improve engagement with the science and engineering communities both in academia and in industry". You asked how this objective was identified and what plans GO-Science has to further improve industry engagement.

The objective of improving engagement with the wider scientific community in both academia and industry emerged from the action plan that we put in place in 2009 in response to the Council for Science and Technology's 2008 report 'How academia and government can work together'. That report highlighted the important role that external advice plays in ensuring that government has access to the best science and engineering evidence, and reinforced the importance of the GCSA and GO-Science working with departments to ensure that relationships with the wider community encourage interaction with government wherever appropriate.

To date, the majority of our effort has been on developing the relationships with academia (which was the focus of the CST report). We recently published an update of progress against our 2009 action plan on the GO-Science website⁴¹. In the longer term, we aspire to ensure that we include scientists and engineers in the private sector (with hindsight, perhaps a better term than industry in this context) where they might be best placed to offer advice of value to those in government. There is already a lot of positive engagement to report.

Academia and industry engagement in civil contingencies

In major UK emergencies Cabinet will activate COBR. In some circumstances I will Chair a Scientific Advice Group in Emergencies (SAGE) to provide COBR scientific and technical advice. A key requirement of SAGE is that it contains independent expert advice, provided by academia and industry. For example, there was substantial academic involvement in the SAGE's I chaired for the swine flu outbreak in 2009, the volcanic ash emergency in May 2010 and the Fukushima emergency in 2011.

I have recently completed a review of the way government approaches high impact, low probability risks. The review group contained internationally regarded experts from both academia and industry to present up-to-date and leading edge thinking on the best ways to approach identifying, assessing and managing high impact, low probability risk. The report, which will soon be published, identifies several recommendations for further strengthening UK government's approaches to addressing these types of risk. It will also be of value to the wider Risk Management community.

⁴¹ <http://www.bis.gov.uk/go-science/publications#anchor1>

Academia and industry engagement in science assurance reviews

Academia and industry engagement in science assurance reviews

We have engaged with senior business representatives during Science and Engineering Assurance reviews⁴², both as review panel members and as departmental stakeholders. In the MoD review, for example, this led to a recommendation in the review on more systematic engagement with industry. In the BIS review, recommendations were made on the need for an improved "intelligent customer" capability to better engage with the full range of stakeholders, including those from industry.

Academia and industry engagement in Grand Challenges

Collaboration between policy-makers, academia and industry will be critical to addressing issues of food, water and energy security over the coming years. The Food Research Partnership and the Water Research and Innovation Partnership, both of which I founded and chair, were established to identify and take forward a strategic approach to food and water research and innovation respectively. Comprised of representatives from Government, academia, non-governmental organisations, professional associations, and industry, these partnerships led to the UK Cross-Government Strategy for Food Research and Innovation⁴³, and the UK Water Research and Innovation Framework. The UK Water Research and Innovation Framework in particular has involved extensive consultation with academia and industry to agree a list of, and justification for, prioritised research areas together with an indication of desired outcomes and impacts, based on the direction of existing research capability, partnerships and initiatives, and how their existing or planned work could address shared interests.⁴⁴

In terms of addressing the challenge of energy security, the Energy Technology Institute is relevant.⁴⁵ This is a partnership between global industries and the UK Government that brings together projects and partnerships that accelerate the development of affordable, clean and secure technologies that will help the UK meet its legally binding 2050 climate change targets.

Academia and industry engagement in the Foresight Programme

The Government's Foresight Programme⁴⁶ helps policy makers take evidence-based decisions that incorporate future uncertainties. It brings together government departments, academics, industry and many other people and organisations to tackle complex policy issues, deliver new perspectives and provide a rigorous evidence base for informing integrated policy and decision-making. Examples are:

⁴² <http://www.bis.gov.uk/go-science/publications>

⁴³ <http://www.bis.gov.uk/assets/bispartners/goscience/docs/u/11-975-uk-cross-government-strategy-for-food-research-and-innovation-progress-report-2011>

⁴⁴ <http://www.bis.gov.uk/assets/bispartners/goscience/docs/t/11-1416-taking-responsibility-for-water-summary.pdf>

⁴⁵ <http://www.eti.co.uk/>

⁴⁶ <http://www.bis.gov.uk/foresight>

- The Global Food and Farming Futures⁴⁷ project engaged senior representatives of several private sector organisations; for example, Tate & Lyle, Cargill and the UK Food and Drink Federation to contribute to the project through its High-level Stakeholder Group. These organisations' input helped ensure that the project considered all major aspects of the global food system and provided a balanced report on the challenges of delivering food security. Foresight continues to work with these and other organisations in the follow up to the report to explore how the report might catalyse action. For example, I gave a keynote speech at a British Chamber of Commerce workshop in Belgium on 7 December 2010. This considered the development of metrics to inform the standardisation of best practice in creating sustainable food products and processes.
- Foresight routinely works with the Technology Strategy Board to explore how report findings might be used to facilitate knowledge transfer, innovation and commercial exploitation. For example Foresight worked closely with the TSB to develop one of its flagship vehicles -the Detection and Identification of Infectious Agents Innovation Platform⁴⁸ (IP). Uniquely, the IP brings together government and the business and research communities and will see investment of up to £55 million over five years in innovative research and development of novel technologies that will help to reduce the number of deaths and cases of illness caused by infectious diseases, while also reducing NHS expenditure on treating such diseases; currently £6 billion every year
- The Future of Computer Trading in Financial Markets project⁴⁹ is exploring how computer trading in financial markets will evolve in the next ten years and affect financial stability. The rapid uptake of new technologies and continuously evolving computer algorithms has already caused problems in the US, where 2/3 of equity trades are executed through computer algorithms with no human involvement. The project has involved a group of leading academic and industry practitioners in this field including Dame Clara Furse a non-executive director at Nomura and Professor Charles Goodhart from the London School of Economics. A high level stakeholder group chaired by the Financial Secretary to the Treasury provides strategic oversight. This group is comprised of senior individuals from relevant institutions including the Deputy Governor of the Bank of England and Chairman and CEO of the London Stock Exchange.
- The Future of Manufacturing project will call on industry and academic expertise from the UK and abroad to look at the long-term picture for the manufacturing sector to 2050, investigating global trends and drivers of change. It will explore how the UK can maximise opportunities and will provide an evidence base to help policy decisions be resilient to an uncertain future. The project recently held a scoping workshop with senior industry and academic experts (including CBI, TUC, Burberry, JLR, BAE Systems and Rolls Royce). We are currently appointing a Lead Expert Group to ensure a high-quality evidence base, world-class expertise and a multi-disciplinary approach. We plan to announce members in early 2012.

⁴⁷ <http://www.bis.gov.uk/foresight/our-work/projects/published-projects/global-food-and-farming-futures>

⁴⁸ <http://www.bis.gov.uk/foresight/our-work/projects/published-projects/infectious-diseases>

⁴⁹ <http://www.bis.gov.uk/foresight/our-work/projects/current-projects/computer-trading>

Academia and industry advice to the Prime Minister

I am also Chair of the Council for Science and Technology, the Prime Minister's advisory body on science and technology matters. The membership of the Council was expanded earlier this year, and now includes a broad spectrum of members from business and academia. A full list of Council members is published on the CST website.⁵⁰

In June 2011 my office organised a seminar on genomics for the Prime Minister, at No 10. This discussed the latest science underpinning the medical potential, the strength of the UK sector, and the potential to aid growth as this field becomes a bigger part of the economy. The seminar included representatives from Department of Health, the British Academy of Medical Sciences, top academics, large scale pharmaceuticals (eg GSK and AstraZeneca) and a number of SMEs.

Academia and industry engagement by the GCSA

I have made personal efforts to engage with industry, for instance by undertaking visits to influential organisations, or by giving speeches at a wide variety of events hosted by industry or with industry-oriented audiences both domestically and abroad. Visits to Rolls Royce and Qinetiq stand out as highlights, and recent speeches I have given include at the NFU Conference, British Chamber of Commerce and CropWorld Global.

Acknowledging that government can learn valuable lessons from cutting edge organisations in the private sector, I have also invited key industry figures to meet and give presentations to the Government Science & Engineering community, for instance Alex Burns, the CEO of Williams FI, and Colin Smith, the Chief Engineer from Rolls Royce.

Thank you again for the opportunity to give evidence last month. I look forward to reading your report in the New Year.

15 December 2011

⁵⁰ <http://www.bis.gov.uk/cst/about-cst/members>

HM Government—Written evidence

HOUSE OF LORDS SCIENCE AND TECHNOLOGY COMMITTEE INQUIRY: THE ROLE AND FUNCTION OF DEPARTMENTAL CSAs

This memorandum has been prepared by the Government Office for Science with contributions from Government Departments.

Introduction

The Government is committed to making well-informed decisions and sees departmental Chief Scientific Advisers as a key component in doing so.

1. The Government is committed to making well-informed decisions that will stand the test of time. Ensuring policy makers have access to the best science and engineering advice is critical to this.
2. The Government is also committed to transparency; being open about the evidence on which decisions are based is an important aspect of this.
3. The Government Chief Scientific Adviser (GCSA) and departmental Chief Scientific Advisers (CSAs) have key roles to play in both of these, alongside other professional analysts in Government. They provide advice directly to ministers and senior colleagues. And they are guardians both of the systems and processes for ensuring the highest quality science and engineering advice is used effectively by departments and of ensuring that this happens in a transparent way.
4. The Government's commitment to the importance of the CSAs role is demonstrated by the fact that there is now a CSA position in every government department⁵¹.
5. The CSAs are working increasingly effectively as a network under the leadership of the Government Chief Scientific Adviser, Professor Sir John Beddington, and play an important role in the business of government.
6. However it is always possible to make improvements. The Government therefore welcomes this Inquiry and looks forward to hearing the Committee's views in due course.

⁵¹ At September 2011, three departments do not have CSAs in post. BIS and DfT have jointly advertised for their CSAs. As both are part time posts, they invite applications for either or both positions (the previous occupant holding both). Appointment is expected in late 2011. DCMS are considering how best to fulfil the CSA role given very significant pressure on resources.

The role of departmental CSAs

The core role of CSAs is to ensure that departmental policies and decisions are informed by the best science and engineering evidence. How this is delivered necessarily varies from department to department.

7. The core role of departmental CSAs is to ensure that departmental decisions are informed by the best science and engineering advice. They do this both through offering advice directly to ministers and official colleagues and by oversight of processes for ensuring that departments take account of, and commission where appropriate, relevant scientific and engineering evidence.
8. As set out in the departmental contributions, the precise role and responsibilities of the CSA necessarily varies from department to department. In all cases, the CSA is a senior official in a position to influence departmental decision making.
9. The specific roles of CSAs include some or all of the following:
 - Provision of advice directly to the Secretary of State, other ministers and policy makers in the department.
 - Independent challenge of the evidence base for departmental policies.
 - Oversight of departmental systems for ensuring that policy makers consider relevant science and engineering evidence.
 - Oversight of the effective operation of any departmental Scientific Advisory Committees.
 - Management of departmental research budgets.
 - Responsibility for departmental science and engineering quality and capability
 - Role of Head of Profession role for departmental science and engineering staff.
10. It is for each department to specify requirements in terms of the grade and hours of the post and how they report to the senior management structure of the department. Information on the current CSAs is being provided in responses to a questionnaire requested by the Committee, and in the departmental contributions at Annex A.
11. How departmental CSAs are recruited also depends on the nature of the position within departments. The majority are external academics on fixed-term appointment to the civil service, while a number are senior analytical professionals from within the civil service. Which model is chosen will depend on a variety of issues including:
 - whether departments are more dependent on the social sciences rather than the natural sciences;
 - whether research and evidence gathering is centrally managed or devolved to policy programmes; and
 - the degree to which the post holder will be providing advice for operational delivery as well as policy development.Both types of appointment bring benefits, and the cross-Government CSA network is stronger for the range of knowledge, skills and perspectives that individual CSAs bring to the GCSA's Chief Scientific Advisers Committee (CSAC).

- I2. CSAs are generally supported in their roles by a small team. In a number of departments there are also Deputy CSAs, themselves Senior Civil Service appointments, in some cases again externally appointed.

Frameworks for the provision of scientific advice

- I3. The process of obtaining and using scientific advice by government departments in the course of policy development and implementation is defined by the GCSA's Guidelines on the use of Scientific and Engineering Advice in Policy Making (the Guidelines). The existence of CSAs in departments is one of the most important vehicles for delivering on the Guidelines.
- I4. The Principles of Scientific Advice to Government (the Principles) set out the rules of engagement between Government and those who provide independent scientific and engineering advice. They have been included in the Ministerial Code. While the Principles do not apply to CSAs (for whom other codes of professional conduct apply, including the Nolan Principles and the Civil Service Code), they do have an important role in ensuring that departments' relationships with SACs follow the Principles.
- I5. The Code of Practice for Scientific Advisory Committees (CoPSAC) sets out good practice in the management and best use of Scientific Advisory Committees and Councils. Again, CSAs have an important role in ensuring that their department has the right SACs and uses them effectively and appropriately.
- I6. While some Executive NDPBs are not explicitly covered by these various guidelines, Departments are presently reviewing their recommendations and they expect all NDPBs to follow the guidelines. The relationship of CSAs with Executive NDPBs is an issue being considered collectively by CSAC.

The cross-government function of CSAs

CSAs operate effectively as a network across Government. They support each other in developing and challenging advice and collectively develop relationship with relevant communities in academia and business.

The Chief Scientific Advisers Committee

17. As many of the departmental contributions set out, an important aspect of the work of CSAs is their interaction as a group on the GCSA's Chief Scientific Advisers Committee (CSAC). CSAC includes departmental CSAs along with a number of other senior scientific positions within Government, including the BIS Director General of Knowledge and Innovation, and the chief scientists of a number of non-ministerial departments.
18. This interaction between GCSA and the CSAs takes place in a number of ways; both formal meetings and increasingly in an on-going informal exchange in person, by phone and electronically. Discussions are robust and challenging as well as mutually supportive.
19. The formal CSAC Committee currently meets four times a year, generally for around three hours. The secretariat for CSAC is provided by the Government Office for Science. Formal CSAC meetings allow CSAs to discuss and agree items of significance and to hear from external stakeholders. Recent external attendees include, for example, the President of the Royal Society and the Director of the British Geological Survey.
20. The GCSA also hosts weekly informal meetings of CSAs. These are well attended by those CSAs available each week and offer a chance to discuss topical issues and to share issues of mutual interest and concern. These discussions will often lead to further activity. The Science Minister has attended a number of these meetings.
21. CSAs also meet informally a number of times a year with the Chief Executives of the Research Councils and the Technology Strategy Board (TSB).
22. Finally ad-hoc meetings are arranged, often on specific subjects involving appropriate sub-groups of CSAs and relevant external experts from the wider scientific community. Recent examples of this include:
 - the learning legacy from the Olympic Delivery Authority, involving representatives from ODA, Cabinet Office, DCMS, BIS and DfT.
 - BIS, DECC and DCLG worked closely on Defra's study on adaptation of infrastructure to climate change.
 - CSAs will also have bilateral discussions on relevant topics. For example BIS and the FCO collaborate on international science work through the Science & Innovation Network.

Working with other government analytical professions

23. CSAs work closely with the other professional analysts within government. Again, this happens at a number of levels.

24. The GCSA is a member of the cross-Government 'Heads of Analysis' group which brings together the heads of the five analytical professions – science and engineering, economics, statistics, social research and operational research.
25. Late 2010 saw a first joint meeting of CSAC with the Departmental Directors of Analysis Network (DDAN) and allowed the two groups to discuss issues of mutual interest. Further consideration is being given to issues that might be discussed at future meetings.
26. CSAs and Departmental Directors of Analysis (DDAs) also work closely together within departments. In a couple of cases (DfE and MoJ) the same individual serves both roles.

Engagement with the wider scientific community

27. The range of meetings set out above facilitate regular interaction not just between CSAs but also with key members of the wider scientific and engineering community including the Chief Executives of the Research Councils and the TSB, University Vice-chancellors, the Presidents and senior staff in the National Academies, and senior business scientists and engineers.
28. The GCSA and CSAs have recently started meeting with the wider scientific community in a more structured way through meetings to which CSAs and around 60 representatives of the wider community are invited. These both allow CSAs to share relevant issues with that community and allow the scientific community to offer views to government. The current intention is to hold these meetings every six months.
29. The Chairs of the Science Advisory Committees/Councils are invited to regular bi-annual meetings with the GCSA. CSAs have recently joined in these meetings for the first time to strengthen communication between these two groups.

The impact of CSAs

CSAs are having increasing impact within departments and collectively across Government.

30. CSAs play an increasingly important role within departments. Examples of the impact they have had within departments include:
 - Influencing the research carried out by departments, as described in paragraph 47.
 - In DfE the CSA chairs the Research Approvals Committee, ensuring proposed research will provide the best evidence to inform policy making.
 - In BIS, the CSA leveraged advice in complex systems analysis from the Engineering Infrastructure Experts Group (EIEG) to help de-risk \$50bn pa expected investment and develop a more integrated approach to infrastructure design and planning.
31. In some departments, CSAs have significant policy responsibilities as well as professional scientific leadership duties. For example, the CSA in the Department for Work and Pensions, who is also the Department's Chief Medical Adviser, has led policy delivery in the key area of Health, Work and Wellbeing. The presence of the CSA in this senior policy leadership role in the Department helps to underpin the use of scientific

evidence and analysis in the department and strengthens links with relevant stakeholders in the scientific community during policy development.

32. CSAs have played a key role providing advice for the GCSA's Scientific Advisory Group for Emergencies (SAGE). For example, CSAs from FCO, Defra, DfT, DECC, FSA, HSE and HO were involved in the SAGE for the Japan (Fukushima) incident. In addition, CSAs from HO, MOD, Defra, HSE and DfT/BIS have supported the GCSA's Blakett review on Black Swans.
33. The network underpins the ability to provide rapid responsive advice to policy teams for Ministerial decisions to address national emergencies required within hours and days, e.g. by BIS CSA accessing specialist expertise in cyber-security and civil contingencies.
34. As set out above, an important aspect of the work of CSAs is their collective work as CSAC. Examples of the impact of the CSA network such cross-government contributions include:
 - Peer challenge – for example the DECC CSA used the CSAC network to challenge the development of the DECC 2050 calculator.
 - The contribution of the CSAs collectively to the BIS Director General for Knowledge and Innovations consideration of the Science Budget during the Spending Review 2010.
 - Collective interaction with the research community – for example the Chief Executives of the Research Councils, the National Academies, University Vice-chancellors. This helps ensure that a cross-government view can complement the individual interactions between the departments and the wider scientific community.
35. We turn now to the six questions asked by the Committee in their call for evidence. Individual responses to these questions from departments are attached at [Annex A](#).

The ability of CSAs to provide independent advice to ministers and policy makers within their departments

In delivering the best science and engineering advice to ministers and departments, it is critical that the advice is, and is seen to be, independent. CSAs are increasingly developing their influence within departments and impartiality and independence are important elements of the CSA role.

The importance of CSA independence

36. Decisions will be more robust and credible if ministers and departments can demonstrate that they are based on the best independent evidence and that there is no selectivity in the evidence used in making decisions. This is one of the key principles in the GCSA's Guidelines on the Use of Scientific Advice in Policy Making and one of the arguments for having CSAs. It is also why the presumption is that the advice on which decisions are based should be published.
37. As can be seen from the departmental contributions (Annex A), the requirement that their advice should be independent is a key component of the CSA role in departments. In a number of cases, independence is specified in the job description.

38. Delivering independent advice requires an effective relationship with ministers and senior officials. It is an important aspect of the role of the CSA that they should have direct access to the Secretary of State should they have concerns. Developing an effective relationship with ministers and senior policy colleagues is critical to a CSA delivering their role effectively. The GCSA also provides advice to the Science Minister, calling on the collective advice from the CSA Network.
39. The detail of how the CSA role reports to ministers and the departmental Board varies from case to case. In a number of departments the CSAs are members of the Board, in others they contribute via other strategic decision making committees.

Scientific Advisory Committees and Councils

40. While in some cases the CSA and their team will provide advice directly, there are other mechanisms that ensure that independent advice can be offered to departments. One of the most important of these is the significant number of Scientific Advisory Committees and Councils (SACs) that report to departments and ministers. While the precise status of these committees varies from formal advisory Non-Departmental Public Body (NDPB) to less formal departmental committee, the principle that they should be able to offer their advice independently is fundamental to their effective operation.
41. There are currently around 70 such SACs. Their functions vary from offering strategic level challenge to departments through to offering very specific scientific or medical opinion in case handling. The processes for ensuring that they can operate independently of government are set out in the Code of Practice for Scientific Advisory Committees (CoPSAC).
42. The Government is committed to the independence of SACs. One of the first things the Government did following the election was to set out their commitment to the Principles (para 14) (published by the previous administration in April 2009) and to ensure that these were referred to in the Ministerial Code. The Government Office for Science has since consulted on CoPSAC and a revised version will be published later this year.
43. A number of departments have Science Advisory Councils (see para 56), providing advice and support to the CSA on issues across the full range of departmental issues. This is particularly important in departments such as DCMS with a very broad and diverse range of science disciplines applicable to its policy remit.
44. CSAs have an important role in monitoring the operation of any SACs that advise their department. As set out in the Principles, the departmental CSA is the first point of contact for the Chair of any SAC that is concerned about how their committee or its advice is being handled by the department. As mentioned in para 29, CSAs have recently joined the regular meetings of all SAC Chairs.

The extent of CSAs' influence over research spend

The role of the CSA in relation to departmental research spend depends on departmental requirements. In some cases, the CSA is accountable for budgets; in others they have a role in approving research proposals. But ensuring that research budgets are spent effectively is an important element of their responsibilities.

45. As with other aspects of the position, the role of the CSA in relation to research spend varies from department to department.
46. In a number of departments, particularly those with large research budgets, the CSA is formally accountable for research spend (and in some cases for significant numbers of staff). This is the case, for example, in the Department of Health, the Ministry of Defence, the Department for International Development.
47. In other departments, where there is no centrally managed research budget, the CSA has a role in approving research proposals which are funded from policy budgets across the department. This is the case for example in the Department of Business, Innovation and Skills and the Department of Communities and Local Government.
48. A number of departments adopt a combination of these two approaches with the CSA overseeing and approving all research spending and being directly responsible for some of the budget. Examples here include the Department for the Environment, Food and Rural Affairs, Home Office, Department for Education and the Food Standards Agency.
49. Examples of the different roles CSAs take in research spend in their departments include:
 - In Defra, the CSA produces an evidence investment strategy to recommend best value for money allocation of resources. Approval must be sought from the Defra CSA before any significant changes to evidence budgets can be made.
 - The CSA in Ministry of Justice sits on the VfM Board, the Financial Management Committee and The Transforming Justice Committee.
 - The CLG CSA sits on the Research Gateway committee to approve business cases for research projects.
 - DECC CSA has direct control over research spend within the science and innovation group (approx £20m pa) and his approval is required for research spend by policy teams where it involves significant scientific or technical content. He is also consulted on spend by some arms length bodies.
 - In Department for Health, as lead for Research and Development, the CSA is responsible for DH's policy research programme and the National Institute of Health Research.
 - In the Home Office, the CSA manages 350 scientists and a budget which includes £12m of external research spend.
 - In the Department for Transport the CSA has strategic oversight of research through his position on the Strategy Committee, although does not formally approve spend.
50. It is a legitimate question whether having executive or budget responsibility might compromise a CSA's ability to offer independent advice. While this is an issue that should be carefully considered, the Government's view is that it is for each department

to consider how best to position the role of CSA to meet their particular requirements. Indeed the approach adopted by departments can change as the structure and approach of the department changes. In both MOD and DfID only recently have the CSAs had direct control of budgets and that change was brought in as part of wider consideration of how to ensure most effective provision of evidence.

51. This question is one of a number where the GCSA and the Government Office for Science have an important cross-Government role in helping departments evaluate their evidence processes. The Science and Engineering Assurance Programme, building on earlier Science Reviews of departments, offers departmental CSAs and Permanent Secretaries external input on the effectiveness of their processes. The current SEA programme will conclude this financial year but the intention is to develop a lighter-touch process for the future that continues to support departments in considering these issues on a more ongoing basis.

CSAs' role in providing independent challenge and ensuring that departmental policies are evidence-based

The provision of independent challenge is another important element of the role of CSAs. This is another area where the development of the CSA network and more effective engagement with independent advisers and the wider scientific community can increase challenge to the benefit of government policy.

52. An important element of the role of CSAs is to provide challenge to the evidence base for policy decisions. As with the provision of advice, it is more likely to deliver robust decisions and for those decisions to be trusted and credible, if this challenge is independent and seen to be so.
53. As emphasised in the GCSA's Guidelines, scientific input to policy making should happen as early in the process as possible and requires ongoing engagement between policy officials and CSAs and their teams. This is another reason why it is important that CSAs are plugged into their department's management structures and that systems in place to ensure that can offer advice on policy decisions as conceived and taken forward.
54. Scientific Advisory Committees (SACs, see para 40) are key mechanisms in the provision of independent advice. Defra has established new arrangements for the CSA to have oversight of all SACs, supported by the Advisory Council. In Home Office, the CSA team manages all their independent SACs. The DCLG CSA is the point of contact for external independent advice under the Research Concordat between DCLG and RCUK.
55. At the highest level, the Prime Minister's Council for Science and Technology is commissioned by the PM to offer its views on key areas of policy. These will often challenge government policy. As with other SACs, the presumption is that this advice will be published. A recent example of how CST has challenged government is that of its report 'A National Infrastructure for the 21st Century', which highlighted the interdependencies between strategic infrastructure assets and services. The report contributed to the creation of Infrastructure UK (IUK).

56. Similarly, as mentioned in para 43, a number of departments have Scientific Advisory Councils in place. Those in MOD and Defra have been in place the longest (although Defra's was recently re-established with a new chair and members). The Advisory Council in the Home Office has been in operation for 8 years and the FSA's General Advisory Committee on Science for 4 years. More recently, DECC, DfID and DCMS have appointed Scientific Advisory Councils to offer the respective CSAs a broader range of independent challenge in delivering their responsibilities.

The range of expertise provided by the network of CSAs

The diversity of backgrounds and experience of CSAs is an asset and allows the network to be of great support to each other.

57. As set out above and in departmental contributions, the differing requirements for the CSA role in different departments results in a group of CSAs with widely different backgrounds and expertise. It is for each department to appoint the most appropriate person to the job and so the background and areas of expertise of CSAs will depend on the successful candidate from each recruitment exercise.

58. The majority of CSA are fixed-term appointments from academia or industry. Such appointments bring with them up-to-date expertise in relevant areas of science and engineering and the associated networks and contacts.

59. A number of CSAs are internal appointments. Such appointments offer different benefits including a better developed understanding of the way in which government operates (often with experience of working in a number of departments).

60. The personal expertise among current CSAs is varied: physical and computational chemistry (FCO), Economics (MoJ, DfE, HMT), electrical engineering and the strategic management of R&I (DCLG), occupational medicine (DWP), atmospheric science (Defra), medicine (DH), statistics (HO), toxicology (FSA), natural sciences (DECC) and clinical epidemiology (DfID).

61. The CSA network is the stronger for having this range of expertise. While it will never of course be possible for every area of science or engineering to be represented, the breadth of coverage at any given point is extensive and allows a range of perspectives to be brought to bear on any specific issue. The GCSA or departmental CSAs will often convene sub-groups of relevant colleagues (both formally and informally) to facilitate this. Issues such as Climate Change benefit from input from a number of different perspectives.

62. The CSA network also includes a number of members that are not strictly departmental CSAs. These include the the Chief Scientific Advisers in the Scottish and Welsh Governments, the BIS Director General for Knowledge & Innovation, Director of Science, Engineering, Analysis and Chemicals Regulation at the Health and Safety Executive and the Chief Scientific Adviser for the Forestry Commission, (the latter two are NDPBs for whom a contribution is included in Annex A given the extent of their engagement with the CSA network). Again the network of CSAs benefits from the broader experience they bring. In addition, CSAs regularly interact with Chief Scientists in a number of public sector agencies including the Met Office and DSTL.

63. As mentioned above, the expertise of the CSAs themselves is supplemented by the even wider range of expertise of the chairs and members of Scientific Advisory Committees and Councils. One of the objectives of the GCSA in increasing his engagement with this community is to ensure that the expertise of these independent advisers can be deployed as widely and effectively as possible across government.

The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities

All CSAs, whether external or internal appointees, are highly respected and influential within their communities.

64. CSAs are appointed as senior positions in order to ensure that appropriately senior people are appointed. As the departmental contributions set out, the current CSAs are all very well qualified with a significant number being Fellows of the relevant National Academy. The departmental contributions also list a number of the relevant networks that CSAs are able to bring to their role within government.

65. The extent to which they are highly regarded is also demonstrated by the fact that a number sit on the Councils of the Research Councils and other similar senior national and international advisory councils.

66. The internally appointed CSAs are senior government scientists (currently economists and a toxicologist) who themselves have strong links to academia and have worked with international organisations

67. There are many examples given in Annex A of CSA influence and standing in their communities, and they are often asked to speak at conferences and to work with external organisations, both in the UK and internationally. For example:

- DECC CSA is a member of the Scientific Advisory Committee of the RCUK Energy Programme
- The CSA at the Food Standards Agency is an active member of the European Food Safety Authority Advisory Forum and has wide global network
- CSA at CLG represents the UK on the UE Energy Efficient Buildings Association (Euro2bn programme)
- Defra's CSA has chaired or directed international scientific, technical and economic assessments of ozone depletion, ecosystems, climate change and agricultural science, many of which won prestigious awards.
- DH's CSA is a member of medical advisory councils and review panels for many countries, including Australia, Canada and the Caribbean.

68. A current objective of the GCSA and the Government Office for Science is to further improve engagement with the science and engineering communities both in academia and in industry, building on the CSAs' existing networks to improve government's links more generally.

The contribution of CSAs in promoting public trust in the independence and authority of science advice to government.

Part of the rationale for appointing CSAs and for the emphasis on their independence is to demonstrate the Government's commitment to independent advice and promote public trust.

69. As discussed already, the principle that scientific and engineering evidence should be independent and that this should be transparent is at the heart of the GCSA's Guidelines and now enshrined in the Principles. CSAs have a number of important roles in this regard.
70. The recognised independent nature of the GCSA and departmental CSAs also empowers them to speak in public and in the media in a way that the majority of civil servants are unable to do. This is itself a key statement of the Government's commitment to maintaining the independence of scientific advice.
71. As set out in the departmental contributions, CSAs are often asked to speak publically about the science or engineering underpinning Government policies. This allows them to demonstrate more effectively to both the public and the scientific community the extent to which scientific and engineering evidence is being used by government and being used appropriately.
72. Increasing use is being made of the opportunities offered by new media and social networking to increase this interaction with the public. For example, the GCSA now uses Twitter as a strand of his communications strategy and a number of CSAs use blogs to communicate with the public.
73. As set out in paragraph 42 CSAs are guardians of the Principles in relation to their department's Scientific Advisory Committees. The transparent operation of SACs can itself contribute to public trust. They are the person to whom a SAC Chair or member should turn if they have concern about the way in which independent advice is being handled.

Conclusion

74. In summary, the Government values departmental CSAs and their activity, both within departments and across Whitehall, as a key element in the delivery of sound and resilient policy decisions.
75. The existence of a CSA post in all major departments is evidence of that commitment.
76. The precise role of the CSA – and therefore the personal requirements of post holders – varies from department to department. This is a good thing, and results in a CSA network with a range of complementary skills and experience.
77. An important role of the GCSA and GO-Science is co-ordinating this network and ensuring it can have maximum impact across Whitehall and beyond.

78. CSAs are having increasing influence and impact and the Government is confident that the GCSA and CSAC will continue to work to ensure that they play an increasingly effective role.

October 2011

**HOUSE OF LORDS SCIENCE AND TECHNOLOGY COMMITTEE INQUIRY:
THE ROLE AND FUNCTION OF DEPARTMENTAL CSAs**

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These submissions have been cleared by Departmental ministers and Perm Secs

Department for Business, Innovation and Skills CSA: Vacant

BIS is strongly committed to policy development and delivery that is consistent with the best available scientific evidence, including proportionate assessment and mitigation of risk. The role of the Chief Scientific Adviser (CSA) will be influential in establishing the framework for UK sustainable economic development and rebalancing of our economy that defines and targets priority areas for investment and growth.

Professor Brian Collins was the department's first Chief Scientific Adviser (CSA), shared with the Department for Transport (DfT) from May 2008-11. He provided leadership for BIS's science, engineering and technology (SET) capabilities to ensure that fit-for-purpose scientific analysis and advice was integrated into priority policies. He played a key role in quality assuring infrastructure investments and assessing the technical feasibility of research and development projects. By working with Professor Sir John Beddington (GCSA), the network of SCAs across government, Professor Sir Adrian Smith, BIS's Director General Knowledge and Innovation Group, BIS's academic, research and industry partners and drawing on his own networks, he was able to source specialist advice to respond to technically complex challenges.

Last October, the Expert Panel from the Science and Engineering Assurance (SEA) Review recognised the many areas of good practice in science and engineering expertise in BIS such as the role of the CSA and the introduction of the STEM Assurance Scheme but existing weaknesses need to be addressed. The Department found it a valuable learning experience and is implementing its recommendations. BIS's recent re-structuring has been used to make further progress on increasing SET capability and accessing external advice in parallel with the recruitment of the new CSA.

I. The ability of CSAs to provide independent advice to ministers and policy makers within their departments

As part of the Department's recent re-structuring Rt Hon David Willetts MP, Minister of State for Universities and Science and the BIS Board committed additional resources to strengthen the capability and capacity of the Office of the Chief Scientist (OCS). The recruitment for the new CSA is being administered jointly with DfT in line with the Civil Service Code. He/she will report directly to the Permanent Secretary and be supported by a new SCS Deputy Chief Scientific Adviser (DCSA). The DCSA will be supported by a core team and provide leadership, as BIS' Head of Science and Engineering Profession (HoSEP), to about 180 individuals who are members of the Government Science and Engineering (GSE) network.

As the Department for Growth, BIS' CSA will aim to maximise the synergies when providing advice on a wide range of departmental responsibilities to ensure overall effectiveness of BIS policy. The CSA will also be responsible for further developing the Department's overall SET capabilities by working closely with BIS's Director Generals and Senior Analysts Group to engage across Whitehall with stakeholders in the business, science and engineering communities to support our policy delivery.

The extent of their influence over research spend

As a member of BIS's Senior Analysts Groups, the CSA will provide strategic oversight of the department's research strategies. BIS does not have a separate research and development budget as the amount spent on research for future years is not defined in advance. Directorates or groups allocate their budget to fund research as policy questions arise, in line with overall research priorities.

As Research Councils operate autonomously and manage their own budgets, a Concordat with the Research Councils provides policy makers, including the CSA, opportunities to discuss the strategic direction of BIS' research priorities over the next five years.

2. Their role in providing independent challenge and ensuring that departmental policies are evidenced-based

Ensuring departmental policies are evidence based was the main focus of BIS CSA activity for Professor Collins, and will continue to be core to the work of the new CSA. Professor Collins provided an independent challenge function to BIS by introducing the STEM Assurance Scheme. Deliberately designed as a 'light touch' initiative with policy makers to encourage and promote their early engagement, he was able to work closely with BIS' SET specialists to ensure that a coherent quality assurance system strengthens BIS's existing governance and management systems. Professor Collins led on specific issues, such as the Council for Science and Technology's report A national infrastructure for the 21st century. He identified potential solutions for the Prime Minister's infrastructure review by leveraging high quality advice in complex systems analysis from the Engineering Infrastructure Experts Group. His ongoing involvement has helped to de-risk \$50bn pa⁵² expected investment and develop a more integrated approach to infrastructure design and planning that highlights the interdependencies between strategic infrastructure assets and services.

To ensure that the full breadth of evidence is identified and analysed, the CSA will take a collegiate approach as part of BIS' analytical cadre and be an active and constructive member of the Senior Analysts Group to influence the integration of SET analysis with other analytical disciplines, such as economics and social research. He/she will draw on analysis from the Research Base Directorate within BIS' Knowledge and Innovation Group, supplemented by specialist knowledge from BIS wide range of partner organisations, such as the Research Councils, the Intellectual Property Office, the National Physical Laboratory and the Technology Strategy Board, to ensure that the Department meets its priorities and key deliverables.

3. The range of expertise provided by the network of CSAs

BIS draws on and benefits from the very valuable range of expertise from the network of CSAs by working closely on specific policies with several CSAs and their officials to enhance the development and delivery of joint policies. In the context of the low carbon industrial strategy, BIS contributed evidence and examples of low carbon industrial technologies and DECC provided the scientific analysis of low carbon products and services. The new CSA will continue this practice and work proactively with the network on BIS' priority policies. Further information is provided in the Government Office for Science's Memorandum.

⁵² The NIP refers to £200bn over the 4 year life of this Parliament

4. The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities

During his tenure as BIS' CSA, Professor Collins was a Fellow of the Royal Academy of Engineering, Professor of Information Systems at Cranfield University and currently chairs an Engineering and Interdependency Expert Group (EIEG) for Infrastructure UK.

Professor Collins was elected a Fellow of the Royal Academy of Engineering in 2009. He is also a Fellow of the Institute of Civil Engineers, the Institute of Physics and is an Emeritus Visiting Professor at City University London and holds an Honorary Doctorate from Kingston University.

5. The contribution of CSAs in promoting public trust in the independence and authority of science advice to government

Professor Collins communicated widely with diverse audiences to promote BIS' policy development and delivery citing examples of projects that used the best available SET advice while assessing uncertainty and risk clearly and persuasively.

Department for Communities and Local Government
CSA: Professor Jeremy Watson

The ability of CSAs to provide independent advice to ministers and policy makers within their Departments.

Professor Watson works alongside members of other analytical disciplines and with departmental Boards and ministers, to ensure robust, joined-up evidence is at the core of decisions within DCLG and across government. He also collaborates with other departmental CSAs, and with Research Councils and similar bodies, under the GCSA's leadership, to address and advise on issues which cut across government.

- Providing independent advice to ministers, and policy teams;
- Working with other analytical Heads of Profession (economics, social research, statisticians and operational researchers) and Departmental Directors of Analysis (DDAs) to ensure a robust and integrated evidence base underpins policy formulation, delivery and evaluation;
- Performing an independent challenge function to the department, ensuring that science and engineering evidence and advice is robust, relevant and high quality and that there are mechanisms in place to ensure that policy making is underpinned by science and engineering;
- Leading and engaging within and for the department on relevant national and international science and engineering issues; and
- Contributing to the development, delivery, implementation and monitoring of departmental evidence and innovation strategies.

His qualifications and experience (see below) make him well suited to fulfil this role.

The extent of their influence over research spend.

Professor Watson is involved with other Heads of Analysis in the formulation of Departmental research, and submissions to ministers seeking their approval for research spend.

Once projects are approved, Professor Watson sits on a Research Gateway Committee, alongside other senior analysts and representatives of finance and procurement to comment upon and approve business cases for individual research projects.

Their role in providing independent challenge and ensuring that departmental policies are evidence-based.

Professor Watson fulfils this function through his involvement in research programme and project formulation as described above. He also provides a central point of contact with sources of external independent support and advice under the auspices of the Research

Concordat between DCLG and RCUK, his own network of academic and business links, and by convening new networks of expertise, such as the DCLG Behavioural Research Network.

The range of expertise provided by the network of CSAs.

Professor Watson's areas of expertise include the strategic management of research and innovation, including technology evaluation and transfer between Higher Education Institutions and public and private sectors. He has worked across sectors to create and implement strategic research agendas, and has led research programme management teams for public, private and voluntary sector organisations. A chartered electrical engineer, he is technically qualified in applied physics, particularly building energy, control and automation, and has worked as an expert in industry in these areas (Eurotherm and the British Oxygen Company).

Before taking up the role of Chief Scientific Adviser in DCLG, he worked as Technology Director for BOC Edwards, and is currently Research Director with Ove Arup and Partners (part-time). He has additionally served on the Governing Board of the Technology Strategy Board, as a founding trustee of the Institute for Sustainability, and is currently a Council member of EPSRC.

Professor Watson is a Fellow of the Royal Academy of Engineering, a Fellow of the Institution of Civil Engineers and of the Institution of Engineering and Technology. Academic engagement is actively maintained through Visiting Professorships at the Universities of Southampton and Sussex in schools of Civil and Environmental and Engineering and Design, respectively. He is a member of advisory boards at the Universities of Cambridge, Imperial College, UCL and Reading.

The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities.

In his role with Arup Professor Watson leads strategic policy for research in the Built Environment Sector. In this role he also represents the UK on the EU Energy Efficient Buildings Association (Euro2bn programme). He is a Trustee of the Institution for Engineering and Technology. Linkages are considerable through extensive industry, academy, and professional institution and university networks.

The contribution of CSAs in promoting public trust in the independence and authority of science advice to government.

Professor Watson has an extensive programme of speaking engagements, through which he promotes and exemplifies the independence and authority of scientific advice to Government. He also convenes meetings where necessary where these values can be shown. For example he is organising a 'Demand Side Energy Summit' later this year at which government, not-for-profit associations, companies (large & SMEs), and academics will discuss actions needed to inform and mobilise research, development and deployment.

He also engages with the members and the work of the Building Regulations Advisory Committee, the Scientific Advisory Committee that provides independent advice to the Department, and whose activities are in the public domain.

Department for Culture, Media and Sport

The role of Chief Scientific Adviser in DCMS was filled by Anita Charlesworth (Chief Analyst and acting CSA) until her departure in August 2010. In the light of resource constraints, and on-going structural changes in the department the position was not filled following Ms Charlesworth's departure.

DCMS is currently considering how best to deliver the CSA role in the light of the resources it has been given for the Spending Round. It is a small department with relatively little resource at the senior levels at which CSAs normally sit.

In the absence of a CSA, the Department is able to seek advice on science and engineering issues through its Science and Research Advisory Committee (SRAC). The SRAC was established in October 2009 and is chaired by Dr Michael Dixon, Director of the Natural History Museum. The Committee provides a forum for a range of expertise drawn from DCMS bodies and the external academic community covering the full breadth of the DCMS remit. It is also able to commission new research projects, such as the current work of Dr Bradon Smith, an AHRC knowledge exchange fellow from the Open University exploring the issue of climate change in the cultural sectors.

High quality technical and scientific expertise is a standard part of our bodies' hierarchy, and as such provides DCMS with independent advice which is embedded into our policy making in a day to day basis. This complements the more strategic role played by the SRAC.

Department for Education
CSA: Carole Willis

Role and function of departmental Chief Scientific Advisers

a. The ability of CSAs to provide independent advice to ministers and policy makers within their departments

1. DfE's Chief Scientific Adviser (CSA), Carole Willis, is a full-time civil servant, a professional economist and our Director of Research and Analysis. Ms Willis has worked both inside and outside of the civil service and for several different government departments. The appointment of a social scientist as the department's CSA reflects the main sources of evidence used by the department - social and economic research, statistics, and associated analysis and modelling.
2. Our CSA helps shape scientific debate within the Department and works to embed scientific advice into policy making within DfE. Our CSA serves the Government in a way which maintains her professional integrity as an economist and impartiality in line with the requirements of the Civil Service Code, and in accordance with the professional standards of the Government Economic Service.
3. Ms Willis is responsible for the analytical community within DfE, and oversees our forward looking analytical plan. She advises ministers on research and evaluation priorities, and the scientific integrity and validity of all new research and evaluation proposals. She chairs the Department's Research Approvals Committee and provides an effective challenge to the Department on the evidence base for its policies.
4. Ms Willis is supported in her role of CSA and Director of Research and Analysis by the Heads of Profession for statistics, research, economics and operational research. All analysts in DfE work on behalf of the CSA/Director of Research and Analysis, and in accordance with their professional codes, to ensure that evidence underpins policy development and delivery decisions across the Department. There are around 200 professionally trained analysts within the department which provides us with a solid analytical base. Many analysts are bedded-out into policy Directorates, which helps to ensure that there is early analytical involvement in developing new policies.
5. Our CSA regularly engages with external experts when providing advice to ministers, and the department makes use of a wide range of academic and other external experts to provide advice on specific issues and to lead external reviews on particular policy areas⁵³.

b. The extent of their influence over research spend

6. In 2010-11 DfE spent £24.7m on research and evaluation to help us develop our strategies and policies, and to improve our service delivery. Our CSA has responsibility for the Department's dedicated research budget which accounts for about a third of the Department's annual expenditure on research and evaluation. All

⁵³ Most recently this has included the review of vocational education by Professor Alison Wolf; the review of child protection by Professor Eileen Munro; and the current external expert panel working on the new National Curriculum.

new projects seeking funding from the research budget need to make a case to the CSA for the funding, who then provides advice to ministers.

7. All of the Department's new research and evaluation is procured by a specialist buying unit (SBU). The research SBU team leader reports directly to our CSA. Having all research and evaluation projects procured in one place enables a much greater degree of control and transparency, helps ensure compliance with departmental procurement policy, and provides the Department with a ready source of management information about our research programme.

c. Their role in providing independent challenge and ensuring that departmental policies are evidence-based

8. The independent Science and Analysis Review of the Department, undertaken by GO-Science in 2010⁵⁴, made a strong positive assessment of the Department's use of science and analysis. It identified a clear focus on the use of analytical evidence to inform and guide the development and delivery of policy and that the Department's senior leadership, headed by our CSA, play a key role in driving this analytical, evidence-based approach.
9. Analysts are actively involved in the policy development process. Each Directorate has its own division of analysts to assist in the development of its policies. Our CSA ensures appropriate processes are in place to consider the costs and impacts of all new policy proposals, and their value for money, and is regularly involved in clearing submissions to ministers about new policy and analytical options from across the Department. In addition, all of our research and evaluation projects have significant input from appropriate analysts in the department. The project managers and project steering groups ensure that the research is robust, relevant and of high quality, and that the results are fed back into policy development.
10. Our CSA chairs the DfE Research Approvals Committee (RAC). The RAC scrutinises all new research and evaluation proposals which are to be externally contracted to ensure that they will genuinely fill an evidence gap, offer value for money, are scientifically robust and will provide the best evidence to inform policy making and delivery before funding is approved. The RAC comprises the Department's most senior analysts, and makes recommendations to ministers about whether each new project should be funded.
11. The CSA meets ministers regularly on a range of evidence, policy and statistical issues.

d. The range of expertise provided by the network of CSAs

12. Ms Willis joined the Department in August 2008 and has a remit to ensure the consistent and effective use of evidence, analysis and research in policy development and decision making. She is responsible for ensuring that a robust and influential evidence base is created - and actively used - to inform the Department's strategy

⁵⁴ <http://www.bis.gov.uk/go-science/science-in-government/reviewing-science-and-engineering/completed-reviews/department-for-education>

and policy, and for leading and representing the analytical community both within the Department and externally.

13. Ms Willis has a wealth of experience as a professional economist in the private and public sectors, applying economics and analysis to a range of public policy issues. After 7 years in economic consultancy, she joined the Civil Service in 1997, and has held senior posts in the Home Office, Department of Trade and Industry (now the Department for Business, Innovation and Skills) and the Department for Work and Pensions (DWP). Immediately before joining the Department, Ms Willis was head of research and cross-cutting analysis of pension reform issues at DWP. She has managed multi-disciplinary teams in most of her roles, bringing together a range of analysts and policy makers to deliver evidence based policy.
14. Ms Willis maintains close links with the Government's Chief Scientific Adviser and other CSAs across government. Ms Willis, and the wider department, also have many strong links with the academic and research community, for example through our Research Centres, and with delivery partners who are often involved in helping the Department plan our research, analysis and data collection activity.

e. The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities

15. Our CSA is a professional economist (with an MSc and BSc in economics) and a member of the Government Economic Service, and the Departmental Directors of Analysis Network (DDANs). She regularly engages with external academics and research organisations, both through the Department's three independent Research Centres and through links with the Research Councils, most notably the Economic and Social Research Council (ESRC). She is often approached by academics and external organisations to make presentations at external events, a recent example being an ESRC/Office for National Statistics event on longitudinal studies and data in July 2011. Ms Willis also has links to lead analysts in the OECD dealing with international education issues.
16. In addition, our Chief Social Researcher, Richard Bartholomew, is Joint Head of the Government Social Research Service and is actively engaged with the external research community. Our CSA encourages active and regular engagement between external experts, internal analysts and policy makers.

f. The contribution of CSAs in promoting public trust in the independence and authority of science advice to government

17. Our CSA actively contributes to the CSAC network and the wider scientific community. In addition, Ms Willis appeared before the House of Commons Science and Technology Committee in November 2009 to answer questions about various 'evidence' aspects of our literacy policies.
18. Ms Willis ensures that we take a rigorous approach to the publication of the independent research that we commission and the national and official statistics that we produce. We follow the Government Social Research guidance on research publication and the Codes of Practice for National and Official Statistics. The

Department publishes its research reports and well regarded research briefs on its website on the last Thursday of each month. Some research publications are made at other points, for example, to coincide with a particular event or Ministerial announcement. For our National and Official Statistics publications, the Department also issues a planned schedule of publications twice a year. The schedule sets out the details of National Statistics and Official Statistics that the Department expects to publish each month over the next eighteen months. These well ordered approaches to publication are simple but effective ways of promoting public trust, by ensuring that researchers, media and other organisations know when to expect new departmental research and data each month.

19. The DfE has a good track record of using and disseminating analytical data, as evidenced by the following, from the 2010 Science and Analysis Review of the Department: “Several of the Department’s stakeholders, both within government and from external organisations, commented positively on the ways that the Department disseminates research and statistical data” and “The review made a strong positive assessment of the Department’s use of science and analysis. There is a clear focus on the use of analytical evidence to inform and guide the development and delivery of policy. The Department also has many strong links with the academic and wider research community and with delivery partners who are often involved in research and data collection.”

Further information

20. We would be happy to provide further information if required.

23 August 2011

**Department for Energy and Climate Change
CSA: Professor David MacKay**

1. This submission responds to the call for evidence. It is intended to be included in the synthesis submission by GO-Science. This submission follows the format of the six aspects that the Committee will in particular be investigating.

The ability of DECC CSA to provide independent advice to ministers and policy-makers within their departments

2. Professor MacKay FRS was appointed on secondment from the University of Cambridge on 1 October 2009, for one year initially. His appointment was subsequently extended to three years – until September 2012. Professor MacKay is employed part time for the Department (80% of full time) and retains his permanent employment as Professor of Physics at the University of Cambridge.
3. As a departmental CSA, Professor MacKay is expected to demonstrate the values of integrity, honesty, impartiality and objectivity in the Civil Service Code. He is also accountable to ministers.
4. His key objectives are (1) to ensure key policy and planning decisions in DECC are evidence-based and (2) to ensure DECC has a plan for meeting its 2020 and 2050 targets that is feasible, costed and deliverable. He is also responsible for growing engineering capacity in the department.
5. As with other departmental CSAs, DECC's CSA works alongside other analytical disciplines, with departmental governance structures and ministers, to ensure robust, joined-up evidence is at the core of decisions within DECC.
6. Professor MacKay is a Director General of the Science and Innovation Group (SIG) This contains 84⁵⁵ staff, 59 of which are scientists or engineers. As a result of business planning following the Spending Review settlement, SIG is merging with the Chief Economist's Directorate (that includes DECC statisticians and some of its operational researchers) and the Strategy Directorate to form a new Strategy and Evidence Group (SEG). The aim of SEG is to provide joined up, rigorous multi-disciplinary analysis for ministers, the Permanent Secretary and the rest of the department. The Group will be jointly headed by the CSA, the Chief Economist and the Director of Strategy.
7. Professor MacKay's primary route for providing advice and challenge is through his formal role in departmental governance. He was a member of DECC's Management Board until March 2011. This Board was dissolved in March 2011 and replaced by a departmental Board. Although Professor MacKay is not a member of the departmental Board (chaired by the Secretary of State), he has an open invitation to attend Board meetings where there is discussion of scientific and/or technical issues.

⁵⁵ Following the completion of the Spending Review the Group has increased to 84 staff of which 27 specialist posts and 2 generalist posts are vacant (as at end of July 2011).

8. Professor MacKay is an active member of a number of high-level Governance Boards or Panels. These are:
 - a. **Approvals Committee** - (chaired by the Permanent Secretary) - approves major new investments and scrutinises detailed delivery plans that translate strategies into action for DECC's major programmes and policies.
 - b. **Strategy Board** - a sub-committee of the departmental Board, supporting the Management Board's responsibility to define DECC's strategy. The role delegated to the Strategy Board is guiding the development of UK energy and climate change strategy within DECC.
 - c. **Evaluation Board** - oversees and steers the department's work on measuring the impacts of policies. It identifies, prioritises and steers evaluation across DECC.
 - d. **Evidence Panel** – provides challenge and advice on evidence and analysis for DECC's delivery programmes. Professor MacKay jointly chairs the Panel with DECC's Chief Economist.
9. Professor MacKay was also a member of the Scrutiny Panel for DECC's business planning in Spring 2011 to implement the outcome of the Spending Review for DECC.
10. He also has regular bilateral meetings with the Secretary of State, ministers and the Permanent Secretary; and provides ad hoc challenge and advice on a range of topics important to DECC.
11. Professor MacKay is supported by a team of officials, including a Director of Science and Innovation, the Science and Innovation Group and a private office of three staff.

The extent of DECC CSA's influence over research spend

12. DECC's CSA has direct control over research spend within the Science and Innovation Group (approximately £20m per annum on research projects). Individual policy programmes within DECC also have discretion to commit Programme budget to research projects. DECC policy programmes spent approximately £3.5m on research in 2010 – 2011. Research projects which contain significant scientific or technical content require the CSA's approval, as part of their Business Case approval. At the present time the CSA does not formally approve the research of our arms length bodies, including the Nuclear Decommissioning Authority (NDA), which has an annual research budget of approximately £25m. He is, however, consulted on the NDA's research plans and priorities.
13. The CSA is a member of the Scientific Advisory Committee (SAC) of the RCUK Energy Programme. The SAC meets at least three times a year to advise the participating Research Councils on the strategic direction, scientific content and coordination of the programme and monitor progress.

DECC CSA's role in providing independent challenge and ensuring that departmental policies are evidenced-based

14. Please see response to the first topic.
15. Professor MacKay is the Head of Science and Engineering Profession in DECC. His role is to build, support and champion the science and engineering community, both within their department and in associated bodies. He also helps to take forward the HoSEP Strategy, and attends HoSEP meetings.

Expertise of DECC CSA

16. David MacKay is Professor of Natural Philosophy at the Department of Physics, University of Cambridge and a Fellow of the Royal Society. He has a BA degree in Natural Science from the University of Cambridge and a PhD in Computation and Neural Systems awarded by the California Institute of Technology. Since 2005, he has devoted much of his time to public teaching about energy and in 2008 published a book on sustainable energy consumption and demand.

The extent to which DECC CSA has authoritative standing within relevant academic, industrial or business communities, including whether he has effective networks within those communities

17. The CSA is recognised in the academic, industrial and business communities as an authority on sustainable energy and has written extensively on the subject. He has very effective networks within leading national and international Learned Societies. Through the scientists and engineers in the Science and Innovation Group, the CSA has both formal links and informal networks with all the Research Councils in the UK.

The contribution of CSAs in promoting public trust in the independence and authority of science advice to government

18. Professor MacKay has a programme of speaking engagements, through which he promotes and exemplifies his independence and authority of scientific advice to Government.
19. Professor MacKay has championed DECC's development of a transparent analytical tool to engage the public in thinking about UK energy strategy to 2050.
20. Professor MacKay has established an interim Science Advisory Group, comprised of world-leading independent scientists, engineers and social researchers to provide advice to him and DECC.

Department for Environment, Food and Rural Affairs
CSA: Professor Robert Watson

SELECT COMMITTEE ON SCIENCE AND TECHNOLOGY

Role and function of departmental Chief Scientific Advisers

Submission by the Department for Environment, Food and Rural Affairs

Introduction

The Department for Environment, Food and Rural Affairs (Defra) aspires to be a leader in evidence based policy making and for the evidence⁵⁶ underpinning its policy making to be recognised by the public, stakeholders and the external expert community as being of high quality and impact. Since its foundation in 2001, Defra has appointed a Chief Scientific Adviser to its Management Committee (i.e. at Director-General (DG) level) and Supervisory Board to champion evidence based policy making as the most senior member of the Defra evidence and analysis community.

Professor Robert Watson FRS has been Defra's Chief Scientific Adviser (CSA) since September 2007. His primary roles are to provide ministers and colleagues with advice on evidence used to inform policy; to challenge the quality of that evidence, the department's use of it, and investment in evidence-gathering; and is Management Committee champion for evidence based policy making, representing all analytical streams. He is a key communicator on the evidence underlying policy, nationally and internationally. As a member of the community of Whitehall CSAs, he also supports the UK Government's overall scientific work by working together with other Government CSAs and Executive Directors of the Research Councils.

1. The ability of CSAs to provide independent advice to ministers and policy makers within their departments.

Defra's CSA is an independent scientist of high standing, recruited by open process from outside the department. Further, he is supported in his role by Defra's independent Science Advisory Council (SAC), a non-departmental public body appointed under Nolan rules, and by a number of expert committees. SAC's purpose is both to support and to challenge the CSA in maintaining his independent role. The SAC helps to guide scientific priorities across Defra's entire policy making landscape including immediate responses to issues, medium-term opportunities for risk management and longer-term horizon scanning and planning. The SAC communicates advice to the CSA and through him to ministers.

To be effective in delivering advice, a CSA needs two things; firstly, access to ministers and the senior management team of his or her department. The Defra CSA is a member of the Management Committee⁵⁷ and attends both its meetings and those of the Supervisory

⁵⁶ By 'evidence' we mean reliable and accurate information that Defra can use to inform sound decisions in developing and implementing policy. It includes economics, statistics, natural and veterinary scientific information, social research, operational research, engineering, analysis, advice, monitoring and surveillance.

⁵⁷ The role of Defra's Management Committee is to: provide leadership; with Ministers, set and oversee the Department's strategy; allocate resources effectively and efficiently and determine priorities; manage

Board⁵⁸, as well as weekly ministerial meetings, and met the Secretary of State and ministers, individually or collectively, to provide scientific advice sixty-three times between 1st September 2010 and 31st August 2011. As a member of the management team, he meets weekly with the Permanent Secretary, other DGs, and key Directors (i.e. finance, communications, HR and legal).

Secondly, the CSA needs in-house support in the department. Defra's CSA is supported by an in-house team led by a Director (the Deputy CSA), by the other Heads of Profession (HoPs), including the Chief Economist, Chief Social Researcher, Chief Statistician, Chief Veterinary Officer and Head of Operational Research, and by the specialist staff embedded in policy teams throughout the department.

2. The extent of CSAs' influence over research spend.

The CSA proposes how the evidence budget should be split across Defra's policy and delivery needs, advising the Management Committee and ministers on the allocation of resources for investment in evidence gathering and analysis. With the support of his in-house team he draws up, and regularly updates, an Evidence Investment Strategy⁵⁹ (EIS) for the Department, which identifies the evidence needed to meet Departmental priorities of:

- 1 supporting and developing British farming and encouraging sustainable food production;
- 2 enhancing the environment and biodiversity to improve quality of life; and
- 3 supporting a strong and sustainable green economy, resilient to climate change; along with the major responsibilities of:
- 4 preparing for and managing risk from animal and plant disease; and
- 5 preparing for and managing risk from flood and other environmental emergencies.

The EIS is based on both a forward looking and top down assessment of opportunities and risks, and the long term needs for capability; and bottom up Evidence Plans⁶⁰ drawn up by SROs for their programmes. These Evidence Plans set out the policy context, existing knowledge and resources, and evidence needs. The CSA and his team use these analyses to recommend the best value for money allocation of resources.

In the current spending round, the CSA made the case for the importance of evidence to Defra, with priorities for evidence spend being based on the EIS and coalition priorities. This resulted in a decision by the Secretary of State, ministers and the management team to maintain investment as a proportion of total Defra budget. Evidence budgets for the Spending Review period were agreed and allocated in late 2010. Approval must be sought from the CSA before any significant changes to evidence budgets can be made.

performance and risk; develop the Department's talent and create a high performance culture; and develop and maintain contacts at Board level with other Government departments, key stakeholders and delivery partners.

⁵⁸ Defra's Supervisory Board meets quarterly and is chaired by the Secretary of State. It brings together the Ministerial Team, Permanent Secretary, Directors-General and other senior officials, together with lead and other Non-Executive Directors to monitor performance and delivery, including that of sponsored bodies. It looks primarily at the following: progress against the Business Plan; financial overview; risk and assurance. It may also give advice on the operational implications and effectiveness of strategic policy proposals.

⁵⁹ <http://www.defra.gov.uk/publications/2011/04/27/pb13471-evidence-investment-strategy/>

⁶⁰ <http://www.defra.gov.uk/corporate/evidence/science/strategy-evidence-plans/>

Flexibility to respond to future evidence challenges was achieved by reserving a proportion of the evidence budget (an 'unallocated evidence reserve') in the final three years of the Spending Review period (10%, 25% and 50% in years 2, 3 and 4 respectively). The CSA will continue to work with SROs, HoPs and evidence teams as part of annual business planning to review evidence needs and priorities in order to distribute the unallocated evidence reserve. SROs will review their evidence plans annually and update when necessary. This ensures that evidence investment is strategically managed across Defra's portfolio.

A small proportion of the budget is allocated to strategic evidence gathering (including horizon scanning, support for partnership with Research Councils and others, and innovation) and in addition the CSA has a small "challenge" budget that can be used to fund activities such as the National Ecosystem Assessment.

3. *The role of CSAs in providing independent challenge and ensuring that departmental policies are evidenced-based.*

The role of Defra's independent CSA is to ensure the quality, appropriateness and value for money of Defra's evidence base, challenging Departmental plans and use of evidence in advice when appropriate. The CSA is, ultimately, responsible for ensuring that the broad range of evidence needed to meet Defra's remit is robust and fit for purpose, including that provided by Defra's arms length bodies.

The CSA challenges and advises on policy formulation. For example, the CSA has recently given advice on issues including Bovine TB, the Natural Environment White Paper for England, adaptation to climate change, tree health and sustainable agriculture.

Under new arrangements for advisory bodies, the CSA will have oversight of the work of Defra's expert scientific committees, supported by Defra's Science Advisory Council. This will improve transparency and accountability, provide for stronger coordination, whilst allowing Defra to have continued access to independent, authoritative and cost-effective challenge and advice to support its policies.

4. *The range of expertise provided by the network of CSAs.*

Given the cross-cutting nature of this question, and its relevance across Whitehall, the Government Office for Science is best placed to provide a response. As Defra CSA, Professor Watson has found the opportunity to discuss issues with Whitehall colleagues a valuable support to his own role and a useful way of extending consideration of Defra policies to other relevant Government departments.

5. *The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities.*

The question is best addressed to stakeholders but the career of Defra's current CSA - Professor Watson – demonstrates the strong experience and standing he brings to the post of CSA. He was previously at the World Bank where he was the Chief Scientist and Senior Adviser for Sustainable Development. He has also held senior positions at NASA, and was the Associate Director for Environment in the White House, where he was responsible for ensuring that science underpinned policy making.

In parallel to his formal positions Defra's CSA has chaired, co-chaired or directed international scientific, technical and economic assessments of stratospheric ozone

depletion, biodiversity/ecosystems (the Millennium Ecosystem Assessment, which was awarded the Zayed Prize in 2006), climate change (the Intergovernmental Panel on Climate Change (IPCC), which was awarded the Nobel Peace Prize in 2007), and the international assessment of agricultural science and technology for development. During the last twenty years he has received numerous national and international awards recognising his contributions to science and the science-policy interface, including in 2003 an honorary CMG from the United Kingdom, in 2010 – the Asahi Glass Blue Planet Prize (the environmental equivalent of a Nobel Prize), and in 2011 being elected as a Fellow of the Royal Society.

6. *The contribution of CSAs in promoting public trust in the independence and authority of science advice to government.*

The CSA's objectives include enhancing the:

- public trust of Defra on scientific issues, and
- respect of the science community in Defra's use of evidence.

The CSA routinely interacts with the media – television, radio and print – as well as giving invited talks at conferences open to the public. In addition, Defra's Information Strategy (described in the Business Plan) sets out the steps the Department is taking to make data and information publicly available – something the CSA strongly supports and takes every opportunity to promote. Key indicators will be available against which Defra will publish data to show the cost and impact of public services and its own activities.

19th September 2011

Department of Health
CSA: Professor Dame Sally Davies

1. The ability of CSAs to provide independent advice to ministers and policy makers within their Departments

Dame Sally has been Chief Scientific Adviser at the Department of Health and responsible for Research and Development since 2004. In addition to these responsibilities, Dame Sally was appointed Chief Medical Officer for England and Chief Medical Adviser to the UK Government on 1 March 2011. Dame Sally is a member of the departmental Board.

The combination of the above roles places Dame Sally in a particularly strong position to provide independent advice to ministers and policy makers in the Department. Dame Sally meets with ministers and the Secretary of State on a weekly, potentially daily, basis.

The Government's Public Health White Paper (*Healthy Lives, Healthy People*) specifically states, "*the Chief Medical Officer will have a central role in providing independent advice to the Secretary of State for Health and the Government on the Population's health*".

Dame Sally is supported in her role by the Research and Development Directorate and Departmental policy teams. Through the leadership she provides to the public health and medical professions, Dame Sally is in an almost unique position to draw upon knowledge and experience in the field in order to shape her independent advice.

2. The extent of their influence over research spend

As lead for Research and Development in the Department of Health, Dame Sally is responsible for the Department's Policy Research Programme (PRP – with an annual budget of around £50 million) and the National Institute for Health Research (NIHR – with an annual budget of around £1 billion).

The PRP is a national programme of research dedicated to providing an effective evidence base for policy development and evaluation in the Department. The Science Review by the Government Office for Science (2008) found the PRP to be a model of good practice in concept and operation.

The NIHR aims to increase health and wealth in England through supporting: research infrastructure in the NHS; training for clinical and applied health research; programmes of research for better health and care; and appropriate systems for governance of health R&D.

Successes in 2011 include:

- The launch of the NIHR Centre for Surgical Reconstruction and Microbiology at Queen Elizabeth Hospital Birmingham – the first and only research centre of its kind in the UK to focus both on military and civilian care and treatment,
- The launch of a competition for members of an NIHR School for Public Health Research – with a particular focus on bridging the gap between public health academia and public health practice,
- The announcement of the largest ever funding – up to £800m over 5 years – to be made available for translational research.

3. Their role in providing independent challenge and ensuring that departmental policies are evidence-based

The Department of Health is committed to ensuring that policy is based on the best available evidence of what works. As described above, Dame Sally in her role as both Chief Scientific Adviser and Chief Medical Officer and as a member of the departmental Board, is ideally placed to provide an independent challenge where necessary and appropriate.

As well as her own expertise and experience, Dame Sally has a wide network of independent external support. As lead for Research and Development, Dame Sally is advised on research by external advisory boards that include independent academic experts. As Chief Medical Officer, Dame Sally (and the Department) can call upon the advice of a large number of independent scientific advisory committees e.g. the Joint Committee on Vaccination and Immunisation (JCVI). A list of these scientific advisory committees is attached at Annex A.

4. The range of expertise provided by the network of CSAs

Dame Sally brings a wide range of expertise to the network of Chief Scientific Advisers encompassing key academic, clinical, civil service and international advisory roles.

Dame Sally's background is in haematology, being a Consultant Haematologist at Central Middlesex Hospital (1985 – 2011), Professor of Haemoglobinopathies at Imperial College Faculty of Medicine (1997 – 2011) and since 2011, an Emeritus Professor.

Some of Dame Sally's current roles are listed below:

- Chair, UK Clinical Research Collaboration (UKCRC) Board (2004 to date)
- Member, UK Collaborative on Developmental Sciences Board (2007 to date)
- Member, UK Government Global Science and Innovation Forum (2007 to date)
- Member, World Health Organisation Advisory Committee on Health Research
- Chair, cross-Government TSE R&D funders forum
- Chair, cross-Government R&D 'Flu funders forum

Dame Sally is a member of the Cross Government Chief Scientific Advisers Group and has regular meetings (weekly) with other CSAs. An example of Dame Sally's cross-Government work with other CSAs is the cross-Government research and surveillance strategy for obesity.

5. The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities

Dame Sally has extensive, effective, personal networks both nationally and internationally and across academia, the NHS, business (particularly the life sciences sector), charities, professional societies, science media and patient groups.

Examples include:

- Fellow, Academy of Medical Sciences
- Council Member, Medical Research Council (*ad personam*)
- Co-Chair, Pharmaceutical Industry Competitiveness Taskforce, Working Group Five (Clinical) (2001-2005)
- Member, Health Care Industry Taskforce Steering Group (2003 – 2007)
- Member, British Medical Journal (BMJ) International Advisory Board (2008 to date)
- Member, International Advisory Board A*, Singapore (2008 to date)
- Member (elected), Council of Caribbean Medical Research Council (1999 - 2011)
- Panel Member, International Review Panel, Canadian Institutes for Health Research (2011)
- Member, Genome Canada and Canadian Fund for Innovation panels (2007, 2008, 2009)
- Panel Member, International Review of the National Health and Medical Research Council, Australia (2008)
- Adviser, European Science Foundation on Clinical Trials (2008 to date)
- Inaugural Member, Advisory Board for “*The Digital Health Initiative*”, United Nations

Dame Sally has led the UK delegation to the World Health Assembly and to the WHO Ministerial Summit on Health Research.

6. The contribution of CSAs in promoting public trust in the independence and authority of science advice to government

Dame Sally’s contribution to the promotion of public trust in the independence and authority of science advice to government has been significant and she transmits these values in her wide and varied engagements with the public.

For example, in her Chief Medical Officer role, Dame Sally made frequent media appearances during the 2010/11 seasonal ‘flu period, during which she was able to convey health protection advice to the public – advice derived from the best available independent scientific advice.

A further example of where Dame Sally has provided evidence based advice to the public is the CMO Guidelines on Physical Activity (published with the three other UK Chief Medical Officers). These guidelines, based on latest science, provide advice on activity and fitness levels.

DH Annex A

Department of Health Scientific Advisory Committees

- Administration of Radioactive Substances Advisory Committee (ARSAC)
- Advisory Board on the Registration of Homeopathic Products (ABRHP)
- Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection (ARHAI)
- Advisory Committee on Borderline Substances (ACBS)
- Advisory Committee on the Safety of Blood, Tissues and Organs (SaBTO)
- Advisory Group on Hepatitis (AGH)
- Commission on Human Medicines (CHM)
- Committee on Medical Aspects of Radiation in the Environment (COMARE)
- Committee on the Safety of Devices (CSD)
- Expert Advisory Group on AIDS (EAGA)
- Herbal Medicines Advisory Committee (HMAC)
- Human Genetics Commission (HGC)
- Joint Committee on Vaccination and Immunisation (JCVI)
- Scientific Pandemic Influenza Advisory Committee (SPI)
- Independent Review Panel for the Classification of Borderline Products (ARBPB)
- Rapid Review Panel (RRP)
- Committee on the Medical Effects of Air Pollutants (COMEAP)
- Advisory Committee on Dangerous Pathogens (ACDP)
(Also sponsored by Defra and the Health and Safety Executive)
- Scientific Advisory Committee on Nutrition (SACN)
(Also sponsored by the Food Standards Agency)
- Committee on Carcinogenicity of Chemicals in Food, Consumer Products and the Environment (COC)
(Also sponsored by the Food Standards Agency)

- Committee on Mutagenicity of Chemicals in Food, Consumer Products and the Environment (COM)
(Also sponsored by the Food Standards Agency)
- CJD Incidents Panel (CJDIP)
- National Expert Panel on New and Emerging Infections (NEPNEI)

Department for International Development CSA: Professor Christopher Whitty

The first Chief Scientific Adviser (CSA) at the Department for International Development took up the appointment in January 2005. The role, in part, responded to the recommendations of the House of Commons Science and Technology Select Committee on International Development and, while it exercised an internal and independent challenge function on the use of science and evidence within the Department, was separated from the day to day management of resources. The role of CSA has since been merged with that of the Director of Research (DoR), supported by the appointment of a Deputy Chief Scientific Adviser (DCSA) from academia, and in addition to continuing to exercise an internal scientific advisory and challenge function, the CSA/DoR also has responsibility for the Research and Evidence Division; which includes

- the delivery of the research portfolio which covers health, agriculture, education, climate change and environment, governance and humanitarian and growth, although the Chief Economist has intellectual leadership of the growth portfolio.
- evidence synthesis and research uptake
- overall management of the Evaluation and Statistics portfolios and
- management of the Chief Professional Officers who have professional leadership of the professional advisory cadres including in health, education, livelihoods (agriculture), climate change, and infrastructure.

The current incumbent, Professor Christopher Whitty, was appointed in June 2009 on a three year contract with an option for an extension. The DCSA, Professor Tim Wheeler, was appointed in 2010. The CSA is seconded in from the London School of Hygiene & Tropical Medicine, where he is research-active and works in the NHS, on a part time (80%) basis and the DCSA is seconded from the University of Reading (also on an 80% part time basis) where he is research-active.

The Chief Scientific Advisers role spans four key areas;

- Ensuring DFID's policies and operations, and its contribution to wider government issues, are underpinned by excellent science, technology and innovation advice and are informed by the best evidence.
- Identifying new areas where science, technology and innovation can contribute to helping to meet the Millennium Development Goals (MDGs)
- Strengthening scientific capacity and effectiveness in DFID, mainstreaming science into policy making and improving the systems which ensure good access to and use of science in DFID.
- Ensuring that DFID interests are fully represented across Government and identifying where wider development benefits might be leveraged from others' investment.

I. The ability of CSAs to provide independent advice to ministers and policy makers within their departments;

The terms of reference for the CSA/DoR post reflects the requirement for such advice to be provided. They explicitly commit the CSA/DoR to;

“Providing advice to the ministers and Management Board on science, technology and innovation:

- *advising on specific issues proactively or as requested*
- *identifying new areas in which science and technology can contribute to DFID's departmental strategic objectives and the Millennium Development Goals (MDGs)*
- *providing an independent science challenge function”*

The CSA and Deputy CSA are both part-time secondments from academia to help maintain their independence.

The CSA and DCSA divide meetings with ministers depending on topic to maximise expertise available to ministers.

The CSA and DCSA have right of access to ministers and senior officials, and the CSA is on the Leadership Team and relevant Management Board subcommittees.

2. The extent of their influence over research spend;

The Chief Scientific Adviser is also the Director of Research so has direct responsibility for departmental research spend. He manages a department of 124 staff with an annual research budget of £235.8 million that will increase to 3% of overall DFID spend (around £320 million) by 2014/15.

3. Their role in providing independent challenge and ensuring that departmental policies are evidenced-based;

The Chief Scientific Adviser is a member of the Development Policy Committee (DPC) and the Investment Committee, the two policy-relevant sub-committees of the Management Board (the others are Security, Audit, and Senior Leadership (SCS appointments)). The DPC, chaired by the Director General Global Issues, is responsible for commissioning, directing, endorsing, and reviewing DFID policy. It meets on a monthly basis and discusses and considers near final versions of all policy papers, and significant practice papers on behalf of the Management Board. The DPC sees all proposed papers responding to commitments in the DFID Business Plan as well as other emerging policy, guidance, policy reviews or evidence papers. Policy papers submitted to the DPC for review and approval need to have been submitted in advance to the Chief Scientific Adviser for comment. The evidence base for any policy proposals needs to be clearly presented throughout, either as a summary in the paper or in a more detailed annex, and papers need to contain a robust analysis of the evidence for statements and recommendations; considerable store is set by the Chief Scientific Adviser on the policies being backed up by peer-reviewed literature, accurately and fairly reflected.

The Investment Committee's role is to ensure that DFID investments represent good value for money for UK taxpayers and that clear systems exist to take strategic financial decisions on the basis of evidence. It does this through looking at strategic investment decisions and resource allocation, at the balance of the investment portfolio in aggregate, and at the adequacy and implementation of investment appraisal systems. The scope of the Investment Committee covers all DFID programme investments whether multilateral, bilateral, or global public goods.

In addition to the role played in the Development Policy and Investment Committees the CSA/DoR, has overall responsibility for the Quality Assurance Unit, based in Research and Evidence Division, which has been mandated to provide independent quality assurance for the Business Case process required for all DFID spending decisions in order to improve DFID's value for money and make spending decisions robust. The Business Case process includes a mandatory assessment of the evidence on which spending proposals are being made. In doing so the Quality Assurance Unit has 3 core roles

- Formal quality assurance of the Business Cases for large (over £40m), novel and contentious programmes.
- Post approval quality assurance of a random sample of approved Business Cases, and
- Facilitation of the Early Peer Review (EPR) process for draft Business Cases which is conducted by reviewers outside the Unit.

4. The range of expertise provided by the network of CSAs;

The DFID CSA is an epidemiologist and has international expertise in medicine and health, especially infectious diseases, and wider expertise in scientific background to humanitarian issues. The DFID DCSA has international expertise in agriculture and climate change and wider expertise in environment and sustainability.

5. The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities

The DFID CSA and DCSA both have authoritative standing within the international research community in development. The CSA is Fellow of the Academy of Medical Sciences. Both are Professors of Universities well-regarded within their disciplines with high institutional rankings and high personal impact factors. Before joining DFID both chaired or were members of national and international advisory groups in relevant areas. Both are members of relevant specialist and international networks. In terms of networks the DFID CSA is a Fellow of among others the Royal College of Physicians, Faculty of Public Health, Royal Society of Tropical Medicine & Hygiene, member of the American Society of Tropical Medicine, and outside health Fellow of the Royal Geographical Society, member of Chatham House and RUSI, speaks at many non-medical development events such as the Development Studies Association.

6. The contribution of CSAs in promoting public trust in the independence and authority of science advice to government.

Both the DFID CSA and DCSA regularly contribute to the public understanding of science issues, although these are undertaken primarily in their University roles. Examples include: broadcast (TV and radio) and print media, invited lectures to academic audiences; evening lectures to school and community audiences; advising the development of science exhibitions, including the Science Museum. They are therefore involved in promoting science in development. They have not however been involved much in the public face of science in Government.

Department for Transport CSA: Vacant

In summary, the DfT Chief Scientific Adviser's role is to ensure that the Department's policies and operations, and its contribution to wider Government issues, are informed by fit-for-purpose science, technology and engineering advice and that the Department's science, technology and engineering priorities are clearly communicated across and beyond Whitehall. A key part of this is delivered through raising the Department's overall science, engineering and technology capability and the way it interacts with policy making. The CSA also leads or coordinates specific projects with a particularly strong science, engineering or technology component in collaboration with colleagues across the Department. The CSA works closely with other analytical professions to ensure the overall effectiveness of DfT policy. The role also helps the department maintain our reputation for excellence in analysis and use of evidence, and our credibility and influence across Whitehall, with partner organisations and with the business, science and engineering communities.

The CSA position in the Department for Transport (DfT) is temporarily vacant following the completion of Professor Brian Collins' CB FREng appointment in May 2011. Professor Collins was also the CSA for BIS. A competition to recruit successors to both posts is underway, administered jointly by the two departments but as two separate competitions which may result in the appointment of different individuals.

The Committee has indicated that it is interested in particular in a number of specific aspects of the role and function of the work of departmental CSAs. These are addressed below.

The ability of CSAs to provide independent advice to ministers and policy makers within their Departments.

The heart of the role of the DfT CSA is to draw on their independent professional expertise and work with all analytical professions across the Department to provide advice to ministers and senior officials in priority areas that require science and engineering input. In particular, the DfT CSA proactively identifies areas where such input is needed, provides scrutiny, peer review and challenge on the science, engineering and technology evidence base and methodologies, and advises on their future development. The DfT CSA is appointed under the Civil Service Code.

As a senior adviser, the CSA attends the Department's Strategy Committee and leads on strategic engagements with external bodies such as Research Councils, the Technology Strategy Board and others to communicate DfT's science, engineering and technology priorities and work to align the strategies of external bodies with DfT objectives where their actions are critical to DfT objectives. The CSA works with external bodies to provide additional challenge, resource and capability as needed, e.g. learned institutes and universities.

The CSA is supported in this role by a small departmental Science and Research team led by a Senior Civil Service Deputy Chief Scientific Adviser who is charged with a combination of executive delivery and advice support for Science, Engineering and Technology issues across DfT and who also acts as Head of Profession for Scientists and Engineers.

The extent of their influence over research spend.

The CSA can identify research needs in relation to strategy, policy or delivery areas, and provides advice both in relation to research investment in support of specific projects, programmes or policies (including the development of future technology and capabilities) and in relation to the wider balance and prioritisation of research spending. The latter aspect is likely to be of increasing importance going forward and this will be an important feature of the CSA's contribution to the Strategy Committee.

Their role in providing independent challenge and ensuring that departmental policies are evidence-based.

As already noted this is at the heart of the CSA's role and the CSA is also expected to work with external bodies such as learned institutes and universities to provide additional challenge as needed. The CSA fulfils this function by engaging throughout the policy cycle, participating in research programme formulation and contributing to the oversight of the Department's evidence and research strategy. Typically, the CSA will also provide a central point of contact with sources of external independent support and advice under the auspices of Research Concordats between DfT, EPSRC and ESRC, their own network of academic, business and other departmental links and by engagement with new networks of expertise such as the Transport Knowledge Transfer Network.

The range of expertise provided by the network of CSAs.

The CSA has an important role in contributing to the cross-government network which provides added value by allowing Departments to draw on both the collective views of the CSA community and for a very wide range of high quality specialist expertise which could not be provided by any one CSA. For DfT drawing on this network has been valuable, for example, in relation to volcanic ash and considering climate change, including the specific implications for transport winter resilience.

The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities.

The DfT CSA is expected to be highly credible in the academic field and have the knowledge, skills, networks and relationships to draw on the experience of the scientific, engineering and academic communities. The previous post holder, Professor Brian Collins is a Fellow of the Royal Academy of Engineering, and his predecessor, Professor Frank Kelly is a Fellow of the Royal Society. The DfT CSA also needs to be able to demonstrate leadership and management skills at a senior level, with a track record of delivering results in complex environments, and with the ability to draw on those skills to help ensure that DfT makes excellent use of science and engineering throughout the Department. For example, Professor Collins was a member of the BIS Automotive Council, the EPSRC Council and prior to joining DfT had held senior positions at Clifford Chance, the Wellcome Trust, GCHQ and remained a Professor of Information Systems at Cranfield University throughout his DfT appointment. By drawing on these skills, the DfT CSA needs to establish a high level of credibility within Government and with policy makers.

The contribution of CSAs in promoting public trust in the independence and authority of science advice to government.

The DfT CSA engages across their networks and with professional and learned institutes and through a broad variety of speaking engagements to promote and exemplify the independence and authority of scientific advice to Government both nationally and internationally. For example, Professor Collins regularly delivered keynote speeches at international conferences in the UK and elsewhere. He also led a series of seminars for DfT on issues of relevance and importance to wider transport science and engineering with a broad range of internal and external speakers.

**Department for Work and Pensions
CSA: Dr Bill Gunnyeon**

Submission from the Department for Work and Pensions

Introduction

At the time of writing, the Department for Work and Pensions (DWP) is part-way through major re-structuring; this submission therefore reflects principles which have been and will be applied rather than describing historic structures or speculating on future ones.

Historically, the Department of Social Security channelled ‘core funding’ into a couple of specified academic units so as to encourage their development into an academic base to underpin the development of social policy and assessment of programmes and their impact. At the time, it reflected spontaneous internal recognition of the desirability to proactively seek an evidence base for government social policy. The move to a framework contract approach reflects the wide current availability of the research expertise DWP requires.

DWP prizes its reputation for evidence-based policy making, which has been recognised in successive Cabinet Office Capability Assessments, and is reflected in considerable cross-party consensus on welfare policy. This consensus extends to outside policy stakeholders including the academic community. There is no suggestion that DWP will change its stance.

The Department employs social researchers, economists, statisticians, operational researchers, psychologists and medical practitioners. There is one post (Scientific Adviser to the Industrial Injuries Advisory Council) for which a scientific qualification is required, but there are other post holders with a STEM background who regard themselves as part of the government STEM community. By agreement with the then Government Chief Scientific Adviser, the Chief Medical Adviser became and remains the departmental Chief Scientific Adviser (DCSA). Successive post holders have worked closely with DWP colleagues from the other disciplines already mentioned in delivering their DCSA responsibilities; those colleagues currently include two cross-government Heads of Profession. Responses to the precise questions posed by the Committee reflect the input from that collaboration as well as from the DCSA as an individual; it would be invidious to try and tease out some responsibilities in any case.

Responses to Questions

The ability of CSAs to provide independent advice to ministers and policy makers within their departments

The Chief Medical Adviser sees ministers and policy makers regularly on health related matters. He met ministers on 68 occasions over the past year, and provided support to ministers on another 19. Traditionally, he has right of access to them on medical issues. He has had innumerable meetings with policy makers. There has been no suggestion of restricting his ability to give independent professional advice to ministers or policy makers; doing so would hardly accord with the following aspiration in the ‘Department Business Plan 2011-15’ published in May 2011 ‘We will build on an already strong record of openness to be more transparent in everything we do, with transparency a key operating principle for the Department. We will ensure our customers and the general public see more of the information we use to define our service delivery, the impact that our programmes and activities are having and how efficient and effective we are being, with published data

available through data.gov.uk, the single online portal for central and local government data. This will help our ongoing work to improve our efficiency and effectiveness while providing active support to Government aspirations for democratic accountability, transparency of publication, contestability and choice’.

The extent of their influence over research spend

The Departmental research budget is ultimately set by ministers. The Department does not support ‘blue skies’ research projects, but it has supported a number of cross-sectional and longitudinal surveys such as the English Longitudinal Survey of Ageing, Understanding Society and the British Social Attitudes Survey. Data from them regularly feed into both immediate and longer term research needs, providing research analyses relevant to on-going policy development,. Such funding crosses the budget-setting process with ongoing commitments to cross-government initiatives through outside delivery and outside funders. The need for research projects, whether to provide evidence for policy formulation or to assess programme impact, will reflect the policy agenda, which in turn arises during business planning. Research planning and the budget setting process become an iterative process of defining research questions and aligning them to the overall available budget in a process described at <http://research.dwp.gov.uk/asd/asd5/>. Despite sometimes making tough choices, the outcome has always been a programme which provides the evidence base which the Department needs and prizes. There is, again, no suggestion that this will change or that research which is an essential underpinning of policy will not be commissioned.

Their role in providing independent challenge and ensuring that departmental policies are evidence-based

Arising from arguments above, and implicit in the Departmental Business Plan quotation, DWP ministers expect evidence-based policies developed through rigorous intellectual challenge.

The range of expertise provided by the network of CSAs

Dr Gunnyeon contributes the following expertise: An accredited specialist in Occupational Medicine, he is a Fellow of the Faculty of Occupational Medicine and holds Fellowships of the Royal College of Physicians of London, the Royal College of Physicians of Edinburgh and the Royal College of General Practitioners. He is a Past President of the Faculty of Occupational Medicine, the standard setting body for the training of Occupational Physicians in the UK. He has been Honorary Senior Lecturer in Occupational Medicine at Aberdeen University.

The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities

As President of the Faculty of Occupational Medicine, Dr Gunnyeon automatically joined the Academy of Medical Royal Colleges. The Academy’s role is to promote, facilitate and where appropriate co-ordinate the work of the Medical Royal Colleges and their Faculties for the benefit of patients and healthcare. He therefore had substantial links and standing within relevant academic, industrial and business communities when he joined DWP and the Civil Service in 2005. The current status of such links has recently been assessed as part of the review of science within DWP.

The contribution of CSAs in promoting public trust in the independence and authority of science advice to government

Given his sphere of activities which reflect his medical background and the role required of him by DWP, Dr Gunnyeon contributes less towards this objective than other Chief Scientists with a traditional science background and role. But, his appointment reflects the desire of DWP to have the highest possible quality of medical advice and so maintain the confidence of the general public and the medical profession in DWP policies. The fact that there is a general acceptance of them across political parties and outside Parliament reflects the successful approach to developing the evidence base of DWP policies. To that extent, his standing and work do help promote the independence and quality of advice of other DCSAs.

Food Standards Agency CSA: Dr Andrew Wadge

Introduction and background

1. The Food Standards Agency (FSA) has as two of its core and founding principles being science- and evidence- based and being open and transparent in all its work. The FSA Chief Scientist (CS) plays a fundamental role in championing these values and providing assurance, accountability and challenge on how they are implemented in practice. The FSA welcomes the opportunity to contribute to this inquiry.
2. The role of the FSA CS was agreed by the FSA Board at its open meeting in February 2006, as part of a review that implemented a number of measures to strengthen the FSA's governance of science. Details of the CS role are set out in the published Board Paper FSA 06/02/07⁶¹, and discussed further below with reference to the aspects highlighted by the Select Committee. In summary, the CS is responsible for:
 - challenge, advice, assurance and accountability on FSA use of science, including the integrity of the processes used to source and use scientific evidence and ensuring expert scientific advice is available to the FSA
 - overseeing prioritisation of FSA's science and evidence spend
 - championing science skills within the FSA, acting as Head of Profession and leading Continuous Professional Development for FSA scientists and analysts
 - representing the FSA in the community of departmental Chief Scientific Advisers and the wider scientific community, across the UK and internationally
3. This remit covers all scientific and analytical disciplines relevant to the FSA's evidence base, including natural and physical sciences, social sciences, economics, operational research and statistics. This reflects the inclusive definition of evidence set in the FSA's Science and Evidence Strategy 2010-15⁶².
4. FSA's Chief Scientist is Dr Andrew Wadge, appointed in September 2006. He is Director of the Chief Scientist Group, comprising the Analysis and Research Division (including the FSA's analysts led by their respective Heads of Profession) and the Chief Scientist Team, which supports the CS on science strategy, governance and skills, and on engagement, prioritisation and communication.

Role and function of the FSA Chief Scientist

5. Key elements of the role and function of the FSA Chief Scientist are summarised below with reference to the aspects highlighted in the Committee's enquiry.

Independent advice to ministers and policy makers within their departments

Independent challenge and ensuring that departmental policies are evidenced-based

6. The FSA is a non-Ministerial government department and its Chair and Board are responsible for discussing and agreeing FSA policy and advice, which is done in open Board meetings. The CS attends all Board meetings with the specific role of providing independent advice and where necessary challenge on the quality of the evidence base and how it has been used to inform proposals. The CS provides an Annual Report to the Board showing how the FSA has used science and highlighting any areas for

⁶¹ <http://www.food.gov.uk/multimedia/pdfs/fsa060207.pdf>

⁶² <http://www.food.gov.uk/science/researchpolicy/scistrat>

development. The CS is consulted on all submissions to ministers that have a scientific element.

7. At an executive level, the CS is a member of the Executive Management Board and provides a corresponding advice and challenge function on the evidence base informing policies and advice. The CS is also involved in the FSA's response to food safety incidents, with a specific role in ensuring that FSA's response and its advice are properly informed by the evidence and by robust risk assessment.
8. The CS is supported by a large network of scientists within the FSA (some 250 FSA staff have scientific qualifications to at least degree level and nearly half of these have postgraduate qualifications), and by the independent expert advice provided by the nine Scientific Advisory Committees (SACs) that advise the FSA (which together comprise some 140+ independent experts across a range of scientific disciplines).
9. The SACs provide the independent risk assessments that underpin policy, in line with the established principle of functional separation of risk assessment and risk management (or, to put it another way, between independent advice and decision making). In addition, the General Advisory Committee on Science (GACS), established in 2007, has the specific role of providing independent challenge and advice to the CS and the FSA Board on how the FSA uses science. Chairs of relevant SACs attend Board meetings at which decisions drawing on their Committee's advice are discussed. This provides additional assurance by helping to ensure that SAC advice is understood clearly by the Board, and that it has been represented accurately by the executive in formulating proposals for risk management. The CS advises on all appointments to SACs and is responsible for a programme of independent reviews of the SACs.
10. The CS has developed tools and guidance to support good governance in the use of evidence to inform policy. These include a Science Checklist and Good Practice Guidelines for SACs.⁶³
11. The FSA's policy of openness provides an additional layer of assurance on the independence of the advice and challenge provided by the CS: decisions are discussed openly, and the evidence base for them is published. Both are open to public scrutiny and to challenge.

Influence over research spend

12. Overseeing prioritisation of FSA's science and evidence spend is part of the CS role. The CS chairs the FSA's internal Evidence Prioritisation Board, which considers all bids for new evidence projects across the FSA, and recommends priorities for funding, using a common prioritisation framework. Part of the CS role in this process is to ensure research spend is aligned with strategic priorities and to challenge the level and the balance of funding, not only across different policy areas but also across different types of

⁶³ The **Science Checklist** is a tool to support the governance of science and assure the FSA Board that the science base behind proposals is comprehensive and has been interpreted correctly. The aim of the checklist is to make explicit the points to be considered in the preparation of papers dealing with science-based issues which are either assembled by the Executive or which draw on advice from the SACs. The **Good Practice Guidelines** are aimed at SACs and provide a framework for SACs to operate within, covering all aspects of a committee's work, building on the guidance in the cross-Government Code of Practice for SACs (COPSAC). Further details at: <http://www.food.gov.uk/science/researchpolicy/commswork/goodpracticeguidelinessacs>

evidence (for example secondary research, review and use of existing data, and evaluation as well as new research projects). The CS also takes part in decisions by the Executive Management Board on overall FSA spend, helping to ensure evidence needs are reflected appropriately within overall expenditure plans.⁶⁴

Expertise provided by the network of CSAs:

13. The FSA strongly supports and participates fully in the networking of CSAs led by the GCSA, Professor Sir John Beddington. The network brings together a range of expertise and perspectives and helps to identify and to help tackle common issues and opportunities for collaboration. For example, the FSA CS is part of the CSA groups looking at climate change and food security, and at risk, hazard and uncertainty. We would hope that this co-ordination and collaboration continues to develop.

Relationships and engagement with academic and other communities

14. The FSA CS has strong links with the active academic community, not least through the network of experts in the SACs, membership of the European Food Safety Authority (EFSA) Advisory Forum, and the CSA network, as well as wider networking with key science funders and providers in the UK and globally. In addition, the CS plays a central role in fostering and further developing the FSA's extensive use of collaborative research funding with other partners (examples include the Food Research Partnership, Global Food Security programme and the joint strategy on *Campylobacter* with Defra, BBSRC and others. The FSA generally has a very active engagement with industry, business and other stakeholder communities and the CS plays a full role in that.

Promoting trust in the independence and authority of science advice to government

15. The FSA exists to provide independent and evidence-based advice; it cannot operate effectively without the trust of the public and its stakeholders. As noted above, the FSA believes that being open and transparent and science- and evidence- based are fundamental to achieving this. The FSA CS has a key role in ensuring this happens in practice. The procedures and activities described above under the other aspects of the CSA's role will, if delivered effectively, help to promote trust. Again, the FSA's policy of openness plays a key role by ensuring the evidence base and roles of the CS and the independent SACs are open to scrutiny and challenge.

16. A number of specific activities further contribute to this aspect of the CS role by engaging the public in debate about the FSA's science:

- The CS publishes an Annual Report highlighting how the FSA has used science and any areas for development; this is presented at an open Board meeting
- FSA CS has an active blog providing independent commentary and inviting open debate on science topics; he also contributes to other science blogs
- The CS has a high media profile and often represents the FSA in media interviews, explaining the science behind the issue
- Leading FSA engagement in National Science and Engineering week

About the FSA Chief Scientist

⁶⁴ Note, the FSA Board has reaffirmed its expectation that the proportion of the Agency's programme expenditure which is targeted on its science and evidence needs will be maintained year-on-year, in line with one of the Agency's core principles of being science and evidence based.

17. Andrew Wadge was appointed FSA CS in 2006 having previously been acting Chief Scientist. He was the FSA's Director of Food Safety and prior to that served as head of FSA's Chemical Safety and Toxicology Division, working on issues including toxicology of food chemicals, allergy and food intolerance, food additives, contact materials, pesticides and veterinary medicine residues. Originally working in academic research laboratories and Westminster Medical School, he has been a Government scientist since 1986, holding posts in the Department of Health, including work on the health effects of environmental pollution, and then leading the Food Chemical Safety Unit with responsibility for the secretariat to the independent expert Committee on Toxicity.

Foreign and Commonwealth Office
CSA: Professor David Clary FRS

The ability of CSAs to provide independent advice to ministers and policy makers within their Departments.

The FCO CSA is well placed to give independent advice to ministers and senior policy makers in terms of departmental structure, strong personal and professional contact networks and grading.

For management and logistical purposes, the CSA's Office is situated within the FCO's Prosperity Directorate. This allows daily contact and direct access to some of the FCO's main science-using policy departments (e.g. Climate Change and Energy Department). In terms of formal management reporting lines, the CSA reports directly to the PUS.

Within the FCO Professor Clary works closely with policy departments, senior officials, Heads of Mission, and both internal and external experts to provide independent and evidence-based advice. Ministers also directly commission advice from Professor Clary as needed (e.g. on nuclear and other energy security issues). As a member of the Whitehall CSA network Professor Clary works with experts in other government departments to advise on cross-government issues (e.g. provision of future HMG climate science).

Appointed at SCS3 level, the CSA has the seniority and influence of an FCO Director General. This allows access to formal and informal senior policy groupings and discussions (e.g. PUS meetings, Leadership Conferences).

The extent of their influence over research spend.

The FCO does not have a dedicated research budget.

Professor Clary regularly contributes FCO views and interests to GCSA exercises to identify cross-cutting research needs and challenges across government (e.g. counter-proliferation, Antarctic science and climate science).

Their role in providing independent challenge and ensuring that departmental policies are evidence-based.

Professor Clary is directly consulted by Principle and Private Secretaries to the Foreign Secretary and ministers, FCO Directors and Departments on major policy papers, projects and decisions where there is a possible science underpinning or interest. He is included on broader distribution lists and consultations on other policy issues which sometimes require scientific challenge and has the opportunity to comment or input if necessary.

The FCO CSA is also part of Whitehall and wider senior science policy groupings whose decisions have direct relevance for FCO policy (e.g. The Scientific Advisory Group on Emergencies, the NSC Officials S&T Committee, the Global Science and Innovation Forum). Professor Clary's strong working links with the BIS International Knowledge and Innovation Unit allow him to support and contribute to bilateral international science work (e.g. with

India, US and Brazil) as well as acting as the senior focal point in the FCO for the joint FCO-BIS Science and Innovation Network.

The range of expertise provided by the network of CSAs.

Professor Clary's contribution to the group expertise of CSAs is as an international expert on physical and computational chemistry. His continuing research on chemical reactions at the University of Oxford underpins many of the most challenging global problems such as energy and climate. As a previous Head of the Mathematical and Physical Sciences Division at the University of Oxford (eight departments: Mathematics, Statistics, Engineering, Computer Science, Physics, Chemistry, Earth Sciences and Materials Science) he has very broad experience and scientific knowledge.

The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities.

Professor Clary has excellent national and international connections through his election to Fellowships of many distinguished national and international academies. These include the Royal Society, Royal Society of Chemistry, Institute of Physics, American Physical Society, American Association for the Advancement of Science and the American Academy of Arts and Sciences.

As the President of Magdalen College Oxford, and previous academic appointments at Manchester, Cambridge and UCL, his links with UK academia are very strong. As one of the principals of the Oxford Science Park he also is very well connected with entrepreneurial networks in the UK. From Visiting Fellowships in Laboratories round the world (including Singapore, Jerusalem, Paris, Sydney, Boulder and Berkeley) and invited lectures at a very large number of international conferences he has excellent connections overseas which are essential for the CSA of the FCO.

The contribution of CSAs in promoting public trust in the independence and authority of science advice to government.

In his role as FCO CSA, Professor Clary has given priority to public talks, broadcasts and writings to highlight the strengths of UK science and advocate the engagement of science in diplomacy (e.g. a recent podcast for the Financial Times on “Science and Diplomacy”). He produces a topical blog for the public FCO website.

Professor Clary's public communications often include description of the independent role of the FCO CSA and other CSAs. Professor Clary receives many invitations from a wide variety of bodies to give talks and presentations in this area.

The Forestry Commission
CSA: Professor Peter Freer-Smith

The ability of CSAs to provide independent advice to ministers and policy makers within their Departments.

Professor Freer-Smith performs a dual role. In his capacity as Chief Scientist for the Forestry Commission's Forest Research Agency, he is responsible for ensuring the quality and robustness of the science undertaken by the Agency. The Forestry Commission is a non-ministerial Government Department, and forestry is a devolved matter. In his capacity as Chief Scientific Adviser for the Forestry Commission he works alongside colleagues from the Department and its devolved administrations to determine the evidence base, which will inform future policy and operational decisions. These decisions have a major impact on the British forestry sector, which uses the Forestry Commission's research outputs to support its own decision making. Professor Freer-Smith also contributes to the provision of impartial and expert advice to ministers. He also collaborates with other departmental CSAs, and with Research Councils and similar bodies, under the GCSA's leadership, to address and provide advice on issues which cut across government.

- Providing impartial and expert advice to ministers, and policy teams to ensure effective policy formulation and delivery.
- Working with Forestry Commission analysts (economists, social policy, statisticians and wider forestry policy) and Forestry Commission Country Directors and Heads of Policy to ensure a robust and integrated evidence base underpins policy formulation, delivery and evaluation;
- Ensuring that science evidence and advice is robust, relevant and high quality and that there are mechanisms in place to ensure that policy making is underpinned by science;
- Leading and engaging within and for the department on relevant national and international science issues; and
- Contributing to the development, delivery, implementation and monitoring of departmental evidence and innovation strategies to ensure that research programmes are focussed, balanced, and provide best value for money;

His qualifications and experience (see below) make him well suited to fulfil this role.

The extent of their influence over research spend.

Professor Freer-Smith is a member of the Department Research Strategy Management Board. The Board has a number of roles:

- the production of a Science and innovation strategy for British Forestry (complying with government guidelines on Science, Engineering and Technology)

- resourcing of strategic programmes of research and research services to implement the foregoing, particularly those delivered by Forest Research
- monitoring and evaluation of the programmes in the Strategy and the annual reporting on that progress to the Forestry Commission Executive Board and Commissioners
- monitoring the Strategy to ensure that it is fit for purpose and delivering stakeholder expectations

In delivering these roles the Board has to arrive at a consensus on:

- a set of high-level research objectives linking, as appropriate, departmental objectives and specific objectives from devolved country forestry strategies
- major strategic changes requiring new skills bases or new working methods in the Forestry Commission (examples might be procedures for horizon-scanning or technology transfer)
- areas of current research that should no longer be regarded as priorities; and
- methods for consultation and preparation of future strategies.

Professor Freer-Smith, together with the Forest Research Heads of Research Centres, provides the scientific advice to inform these discussions and the eventual decisions arrived at.

Their role in providing independent challenge and ensuring that departmental policies are evidence-based.

Professor Freer-Smith fulfils this function through his involvement in the Research Strategy Management Board as described above. For example, during the recent discussions within the Board about implementing the changes to research required by the Spending Review, he successfully argued for the need to retain a larger core capacity for social science within the Departmental research budget. His role extends to providing expert impartial advice, but does not have responsibility for the allocation of resources, which lies with the Forestry Commission's Head of Analysts. Given that responsibility for forestry is devolved and that there are often divergent policy directions and evidence needs in England, Scotland and Wales, Professor Freer-Smith provides a national perspective to the development of research programmes, which provide best value for money to Forestry Commission at both the Great Britain level, and the devolved level.

The range of expertise provided by the network of CSAs.

After a number of research posts and working as a university lecturer Peter Freer-Smith joined the Forestry Commission in 1987. In June 2005 He was appointed Visiting Professor in the School of Biological Sciences, University of Southampton. He was appointed Forestry Commission Chief Scientist in 2009. He has had numerous papers published in national and international journals. He is a co-author of the Read report⁶⁵: 'Combating Climate Change - a role for UK forests', which examines the potential of the UK's trees and woodlands to mitigate and adapt to changing climate, forming part of the UK response to the IPCC 4th

⁶⁵ <http://www.forestry.gov.uk/readreport>

Assessment Report. He also sits on the editorial panel for the International Journal of Forestry⁶⁶.

The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities.

Professor Freer-Smith works with other UK and European research providers, and is currently involved in two EU funded collaborative projects. He is a member of the management committee of one of these (TRANZFOR⁶⁷) and this project involved ongoing work with forest scientists in Australia and New Zealand. He sits on the Advisory Board of the European Forest Institute regional centre for Atlantic forests⁶⁸, and is a member of the International Council of the International Union of Forest Research Organisations⁶⁹. In 2006 he gained an OECD Fellowship to work at INRA⁷⁰, the French national Institute for Agricultural Research. He has served on the NERC Terrestrial Life Sciences Peer Review Committee and the EU COST⁷¹ committee, also has experience of international review work and is well-networked with the UK forest sector.

The contribution of CSAs in promoting public trust in the independence and authority of science advice to government.

Recent high level work has included the Defra Science Arms Length Bodies review, working closely with Defra's Chief Scientist and evidence team. He has also been closely involved with the development of the Forestry Commission/Defra joint action plan on tree health and plant biosecurity.

He was closely involved with the submission of evidence to two recent Parliamentary Select Committees:

- the House of Commons Select Committee on Science and Technology inquiry into forest research in the UK, and
- the House of Lords Select Committee on Science and Technology inquiry into the capacity of the Forestry Commission, and other agencies across government, to respond to the increasing number of pest and disease threats posed to our forests, woodlands and trees.

⁶⁶ <http://www.hindawi.com/journals/ijfr/>

⁶⁷ <http://www.tranzfor.eu/tranzfor/>
<http://www.efiatlantic.efi.int/portal/research/>

⁶⁹ <http://www.iufro.org/>

⁷⁰ <http://www.international.inra.fr/>

⁷¹ <http://www.cost.esf.org/>

Health and Safety Executive CSA: Dr David Bench

Dave Bench is the Director of Science, Engineering, Analysis and Chemicals Regulation within the Health and Safety Executive. As currently constituted, this post was created in April 2011.

This includes the role of operational chief scientist within HSE (rather than a Chief Scientific Adviser) with responsibility for the quality of HSE's science and ensuring there is an independent evidence-based challenge of HSE's policies and practices.

He discharges these responsibilities for science as Director of the Corporate Science, Engineering and Analysis Directorate (CSEAD), and as Director of the separate Chemicals Regulation Directorate (CRD).

Through CSEAD, this includes:

- support to operational directorates and policy teams on the analysis and use of evidence;
- developing and maintaining HSE's analytical evidence base, including health and safety statistics and the behavioural and economic evidence for HSE interventions;
- Head of Profession for science and engineering;
- oversight of science and technology planning;
- assessing HSE's capability and capacity to deliver current and future science needs.

The ability of CSAs to provide independent advice to ministers and policy makers within their departments;

Through CSEAD, the Director has a central role in developing and monitoring arrangements to ensure HSE's policies and programmes of work are based on sound evidence, particularly scientific, engineering, statistical, economic, social research, risk and evaluation evidence. This includes commenting on the evidence base used in policy proposals that go to the HSE Board.

For example, the policy on regulating health and safety working with pathogens was changed using evidence derived from scientific investigations into the Foot and Mouth outbreak at Pirbright in 2007.

The Director seeks to influence the internal culture of the HSE. He is responsible for developing the way that scientists within the HSE relate to those who use their work in policy or enforcement. The relationships between HSE's scientists and their clients must be excellent to achieve continual development in policy and enforcement.

For example, CSEAD runs a Scientist and Policy Making course to raise the awareness of scientists and policy makers of each others' work and requirements.

The Director also engages with HSE's scientists through seminars and bulletins.

The extent of their influence over research spend;

The Director is a member of HSE's Senior Management Team (SMT), and attends the HSE Board as required. As a member of SMT, he contributes to strategic thinking, change and modernisation within CSEAD and CRD and more widely in HSE.

HSE's budget for science and technology is split between research and reactive work - such as incident investigation and the analysis and assembly of evidence for policy development and enforcement of health and safety law.

The Director oversees a 3-year rolling science plan which allocates budgets for research and technical support across HSE. This includes a challenging examination of both the scientific feasibility and business need of proposals. Budgets are allocated to HSE directorates to deliver these plans.

The Director monitors the progress and completion of work, including demonstrating the impact and utilisation of work.

As Director of CRD, he is responsible for the crop protection research programme which is funded by DEFRA, and forms part of DEFRA's research management arrangements.

Their role in providing independent challenge and ensuring that departmental policies are evidenced-based;

This role is fundamental in ensuring the successful application of HSE's research and technical support work. All of HSE's activities are dependent on robust science, engineering and analysis to underpin policy, enforcement, investigation, as well as in relation to the specific area of chemicals regulation.

The Director plays a key part in enabling HSE to adapt to new challenges, both driving the agenda and shaping the way the organisation addresses new demands placed on it. The modern working environment is creating new challenges: HSE will need different scientific skills and resources, and developing these resources and ensuring they deliver effectively will be key.

As well as championing the science that HSE produces with stakeholders and the broader community – which includes other government departments – the Director will also make sure that it is the right science used in the right way.

The Director is Head of Profession for scientists and engineers within HSE and its in-house laboratory (the Health and Safety Laboratory), including oversight of professional development.

The range of expertise provided by the network of CSAs;

The Director is a member of the Chief Scientific Advisers' Committee and also attends the CSA Wider Community Meetings.

The Director is supported by staff who are in contact with the CSAs' teams and leading analysts in DEFRA and DWP.

The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities;

The key relationships to be managed by the Director are:

- HSE Board Chair and members
- Key industry representatives – trade associations, private sector companies, trade unions
- ministers and Senior Civil Servants across a range of government departments including the cross-Whitehall network of Chief Scientific Advisers
- Other regulators
- Interest groups (e.g. non-government organisations) within the health, safety and environment and wider regulatory sector in the UK and abroad
- A broad cross section of the academic community
- Members of HSE's Senior Management Team
- HSE staff and their representatives.

The contribution of CSAs in promoting public trust in the independence and authority of science advice to government.

The Director conducts reviews of the quality of the scientific resources and outputs of the Health and Safety Laboratory which have been published on HSE's web site. The review teams are eminent scientists from British and overseas universities and research institutes.

HM Treasury

CSA: Dr James Richardson

The ability of CSAs to provide independent advice to ministers and policy makers within their Departments

Dr Richardson is well placed to perform this role as a distinguished labour market economist, with a wealth of experience in public spending issues and welfare reform. He holds this new position alongside his roles as a Director of Public Spending and Chief Microeconomist in the Treasury.

He has regular access to ministers and is influential with policy makers across the department.

The extent of their influence over research spend

HMT expects to spend of the order of £0.5m on external research over the Spending Review period (2011-12 to 2014-15). As the departments CSA, Dr Richardson will be involved in decisions about the allocation of this spend but the precise mechanisms are still developing.

Their role in providing independent challenge and ensuring that departmental policies are evidence-based

HM Treasury sees the role of its departmental Chief Scientific Adviser as being primarily around ensuring that HM Treasury's policies are firmly rooted in all relevant evidence. The advice of the CSA will be coordinated with that of the Government Economic Service and Government Social Research Service through the Government Economic and Social Research Team (GESR) at HM Treasury, though the precise mechanisms for this are still developing.

Dr Richardson was already a prominent member of the Government Economic Service (GES) leading and drawing heavily on expertise within the GES.

Supported by the Government Economic and Social Research team, HM Treasury assists officials across Whitehall to take a structured and evidence based approach to policy making through, for example:

- The Green Book - setting out a framework for use by central Government covering the appraisal and evaluation of all policies, programmes and projects. It sets out the key stages in the development of a proposal from the articulation of the rationale for intervention and the setting of objectives, through to options appraisal and, eventually, implementation and evaluation. It describes how the economic, financial, social and environmental assessments of a proposal should be combined and aims to ensure consistency and transparency in the appraisal process throughout government.
- A best practice "Five Case" Business Model setting out how a proportionate and well structured business case should be presented to support spending proposals
- The Magenta Book (maintained and coordinated by the GESR Team) – providing guidance on evaluation for Central Government, setting out the key issues to consider when designing and managing evaluations, and the presentation and interpretation of evaluation results. It describes why thinking about evaluation before

and during the policy design phase can help to improve the quality of evaluation results without needing to hinder the policy process

- The Orange Book – providing a basic introduction to the concept of risk and the development and implementation of risk management processes in government organisations. This is supplemented by a range of more detailed practical guidance on aspects like setting and communicating risk appetite at Board level, managing risk with delivery partners and tools to monitor organisational risk maturity. HM Treasury works closely with, and supports, a network of senior stakeholders responsible for risk improvement within their respective organisations ensuring that they are aware of the latest developments in relation to risk management.

The range of expertise provided by the network of CSAs

Dr Richardson has been Director, Public Spending at HM Treasury since September 2008. He is responsible for overall public expenditure control, including running the recent Spending Review. He also has specific responsibilities for Treasury policy on public sector workforce, pay and pensions and on defence, diplomacy and intelligence issues.

Dr Richardson joined HM Treasury in 1998 and has worked predominantly on public spending issues, including heading the Labour Market Policy team (covering DWP spending) and the Home and Legal team (covering Home Office, MoJ and Law Officers' spending). He went on secondment to the Department for Work and Pensions and the Ministry of Social Development, DWP's equivalent in New Zealand, from 2003 to 2006.

Dr Richardson has a PhD in economics and is the Treasury's Chief Microeconomist.

The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities

As Treasury's Chief Microeconomist, Dr Richardson is a prominent member of the Government Economic Service and chairs the Appraisal Group.

The contribution of CSAs in promoting public trust in the independence and authority of science advice to government

Dr James Richardson was appointed as HM Treasury's first Chief Scientific Adviser (CSA) on 2 June 2011. The ways in which he can most effectively contribute to this agenda are being considered.

HM Treasury
September 2011

The Home Office
CSA: Professor Bernard Silverman

Home Office Science - Introduction

Home Office Science comprises, approximately 350 specialists across the whole range of scientific disciplines: physical scientists and engineers; economists, social researchers and operational researchers; statisticians; and veterinary, medical and biological scientists. It has a vital role in underpinning the Home Office's work, both policy and operations, with the best science and technology available. Home Office Science has locations in central London and across the UK including the Centre for Applied Science and Technology's secure sites at Sandridge (Hertfordshire) and Langhurst (Sussex).

1. The ability of CSAs to provide independent advice to ministers and policy makers within their departments;

1.1 The Home Office CSA, Professor Bernard Silverman, provides independent science advice to the Home Secretary, the Department's ministers and senior policy colleagues across the range of Home Office business. The Minister for Crime and Security has responsibility for all Home Office science.

1.2 The CSA provides advice on specific issues to ministers and policy colleagues across the department and also provides wider scientific advice through participation in regular meetings, some weekly, some monthly, at which the Home Secretary or other ministers are present.

1.3 The CSA also sees Home Office Executive Management Board papers, and can ask to attend the Board when issues relating to science are discussed.

2. The Extent of their influence over research spend;

2.1 The CSA is responsible for the management of approximately 350 scientists (including analysts and statisticians) and engineers in the department. He is responsible for a delegated budget of about £34m (2011/12), which covers staff and internal costs as well as about £12m of external research spend. Of this, about £5m is for the British Crime Survey.

2.2 The CSA also has sight of the remaining external science spend of (approximately) £19m in the department. These budgets are held by policy areas (mostly in the Office for Security and Counter Terrorism), but the CSA has influence over them through the Science Governance Process. This is driven by area science strategy boards, one for each Home Office business area, which establish the priorities and appropriate research plans relevant to that area. The area science strategy boards are a collaborative process chaired by the relevant Home Office Board member or nominee. They are further comprised of the key policy and research leads, together with the CSA and the two Home Office Science Directors (Science, Engineering and Technology; and Social Science). The Area Boards

prepare programmes of research work which, when agreed by the CSA, are submitted for ministerial approval.

3. Their role in providing independent challenge and ensuring that departmental policies are evidence based;

- The CSA is asked to provide advice by ministers on a range of subjects. A recent example has been Professor Silverman's Review of Research and Development in Forensic Science, which was published in June 2011. This looked at the range and scope of forensic science research conducted in the UK by both public and private sectors.
- The CSA oversees a quality assurance process for all research to ensure that projects are appropriately specified and carried out.
- It is important to note that Home Office Science provides advice and support not only for policy development, but also for operational delivery across the range of the department's priorities in immigration, crime and policing, and counter-terrorism.

4. The range of expertise provided by the network of CSAs

The Home Office CSA is actively involved in the CSA network, directly or via colleagues, for example in meetings of the Scientific Advisory Group for Emergencies. He participates regularly in Chief Scientific Advisory Committee and weekly CSAs meetings.

5. The extent to which CSAs have authoritative standing within relevant academic industrial or business communities, including whether they have effective networks within those communities.

- Professor Silverman is a Fellow of the Royal Society and former President of the Royal Statistical Society.
- He maintains a wide range of academic networks. The department has formal links with the Research Councils, including concordats with the Economic Social Research Council and the Arts and Humanities Research Council.
- The Home Office CSA has formal links with counterparts and academics in the US to support collaborative work in Homeland Security.

6. The contribution of CSAs in promoting public trust in the independence and authority of science advice to government

6.1 The CSA is active in supporting the work of the Independent Science Advisory Committees of the Home Office, whose management also comes under the CSA's team (rather than the Policy Teams) to help promote their independence.

6.2 The Home Office CSA continues to promote the Independent Statistical Press Conferences and briefings (instituted by his predecessor) for National Statistics produced by Home Office Statistics on crime, immigration, terrorism, and animal procedures.

Additional Information:

- Grade - SCS PB2
- Tenure - 3 years with the possibility of extension
- Full time/part time (quantified) - Full time
- Qualifications and background:
 - Undergraduate degree (BA) in Mathematics; three higher degrees (MMath, PhD, ScD) in Statistics, all from Cambridge. Chartered Statistician.
 - Background: 35 years in academic posts. Wide research achievements both in core methodological and practical aspects of computational statistics and in collaborations with other disciplines right across the scientific/medical/ social science range.
 - Considerable portfolio of work for commerce, industry and Government. Leading member of scientific community both in UK and internationally, for example Council of Royal Society, President of (US) Institute of Mathematical Statistics, President of Royal Statistical Society.
- Reporting line - Permanent secretary
- Relationship with policy makers and involvement with policy decisions:
 - Close relationship maintained through formal and informal links with the Science Governance Process (as outlined at question 2).
- Access to ministers - frequency of meetings:
 - The CSA met with ministers on 19 occasions between May 2010 and June 2011 and additionally has been present at a number of larger meetings chaired by the Home Secretary or other ministers. In addition, there are frequent meetings and other contacts between ministers and other senior Home Office Science colleagues.
- Relationships with other CSAs the GCSA and departmental SACs:
 - Member of the Chief Scientific Advisers Committee and
 - attends weekly meetings with the GCSA and departmental CSAs.
- Status to the Departmental Management Board:
 - The CSA sees the Board papers and can request to attend in person at any item with clear scientific relevance. In addition, one of the Board members has the task of acting as “Board sponsor” for science.

Ministry of Defence
CSA: Professor Sir Mark Welland

**MEMORANDUM ON INQUIRY TO INVESTIGATE THE ROLE AND
FUNCTION OF DEPARTMENTAL CHIEF SCIENTIFIC ADVISERS –
SUBMISSION FROM THE MINISTRY OF DEFENCE**

**The ability of CSAs to provide independent advice to ministers and policy
makers within their departments;**

The Chief Scientific Adviser (CSA) occupies one of the most senior and influential positions within the Ministry of Defence (MOD) with the post holder being directly accountable to ministers and to the Permanent Under Secretary (PUS). CSA leads a Science and Technology (S&T) community across defence that supports the front line in countering Improvised Explosive Devices (IEDs) and contributes to our intelligence effort in respect of this and other current and future technological challenges. This crucial role is most important however for providing high quality scientific advice to ministers and other senior officials. The CSA also supports decisions on current military operations, future equipment acquisitions and the nuclear deterrent and assisting the delivery of future battle-winning technologies.

The CSA provides the UK technical lead in support of the 1958 Mutual Defence Agreement with the United States on nuclear matters and has a key personal role in the development of the UK's nuclear programmes including technical support for the UK-French Treaty on Hydrodynamics. This is a vital function of the role and involves close and regular engagement with the US and other countries at the highest levels and it is important that the CSA has the credibility and presence to operate in these environments.

There is also vital engagement with our international partners and allies in other areas of research. The CSA personally leads bilateral relationships with France, Australia and Canada, and on the development of strategic collaboration with potential new partnership countries. MOD CSA also works closely with industry and academia across the full range of S&T.

The CSA is also a member of various committees across government relating to science and research matters. For example, the CSA is a member of the National Security Council Officials' Committee (NSC(O)), Scientific Advisory Group in an Emergency (SAGE), Chief Scientific Advisers Committee (CSAC), Counter Terrorism Strategy (CONTEST) Science and Technology Programme Board and the Engineering and Physical Sciences Research Council (EPSRC).

The CSA is supported by a Defence Scientific Advisory Committee which provides independent advice on Defence science and technology research.

The extent of their influence over research spend;

The CSA has control of the Defence Science and Technology (DST) annual budget of around £400 million each year and chairs the Defence Research and Development Board, which advises on the balance of DST investment and how it is delivered.

Their role in providing independent challenge and ensuring that departmental policies are evidenced-based;

Through membership of the Investment Approvals Board (IAB) - the senior body in Defence responsible for considering major investment proposals. The IAB makes recommendations to ministers on projects where cost, complexity, risk, precedence, innovation and / or contentiousness are particular issues for which Ministerial approval is necessary. The Board has collective responsibility, under the Defence Board, for the management of all aspects of the Department's investment approvals process.

The CSA has an important role that sits outside of the main acquisition and support chain to provide constructive challenge to proposed military capability solutions currently within or proposed to join the Equipment and Support Programme. Such a function requires expertise in how to think in a manner more consistent with the future needs of defence and be immune to any resistive forces that represent the modus operandi that has contributed to many of the Department's current financial and capability problems.

At these times of extreme financial pressure, potential solutions that can save significant costs to MOD in the short term are a particular priority. But additionally and of greater strategic importance, the outcome of the Strategic Defence and Security Review requires fresh thinking to meet the future role with a reduced budget.

The range of expertise provided by the network of CSAs;

Each CSA has one or more areas of expertise in a branch of science, engineering or technology. Their considerable expertise can be called on for specific tasks or to provide collective advice to ministers and senior officials. For example, the MOD's CSA was involved together with CSAs from Defra, DfT, BIS and the Home Office in the SAGE meetings on last year's volcanic ash problem. More recently CSAs from a wide variety of Departments were involved in providing advice following the Fukushima nuclear disaster.

The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities;

The appointment of CSAs demands the selection of a distinguished scientist or engineer with the credibility, authority and presence to engage with all levels of Government, Industry, Academia and International partners.

MOD CSA maintains active links with the academia and standing within that community by continuing some of his academic work in parallel with his departmental duties. The current incumbent, Professor Sir Mark Welland, is a Fellow of the Royal Society, a Fellow of the Royal Academy of Engineering, and a Fellow of the Institute of Physics. He is also a Member of Council of the Royal United Services Institute and Member of the Danish Academy of Sciences. In 2008 Sir Mark was elected to the National Academy of Sciences, India as a Foreign Fellow in recognition of his contributions to science and engineering both generally and specifically in relation to his work in India. In 2011, Sir Mark was awarded the US Secretary of Defense's Award for Exceptional Public Service and the National Nuclear Security Administration (NNSA) Gold Medal for Distinguished Service.

The contribution of CSAs in promoting public trust in the independence and authority of science advice to government.

Successful policy can only be delivered with support from the public if it can be clearly demonstrated to be based on sound evidence. CSAs have a vital role in explaining issues involving complex, new or controversial science or technology.

The latest *Public Attitudes to Science 2011*, published in May 2011, shows that there is a demand for hearing more about science, with 51% saying they hear and see too little information about science. For example, there is currently no evidence that any nanomaterials pose a significant public or environmental risk. However, *Public Attitudes to Science 2011* found that around 80% of people felt uninformed about nanotechnology. 29% felt that the benefits associated with nanotechnology outweighed the risks, 6% felt the risks outweighed the benefits, 20% felt they were equal and 44% did not know.

In taking a leading role, the MOD CSA has spoken at national and international conferences and written in the national press on such issues as the safety of UK submarines' nuclear power plants and the positive effect of defence research on the entire UK research base.

Ministry of Justice
CSA: Rebecca Endean

The ability of CSAs to provide independent advice to ministers and policy makers within their Departments.

Rebecca Endean acts as both the CSA and the Director of Analytical Services. In both roles she leads members of her analytical disciplines across MOJ and in partnership with analysts in MOJ's arms length bodies. She works extensively with policy and corporate colleagues and ministers, to ensure robust, joined-up evidence is at the core of decisions within MOJ and across government. She also collaborates with other departmental CSAs, and with Research Councils and similar bodies, under the GCSA's leadership, to address and advice on issues which cut across government. Her key objectives as CSA and Director of Analytical Service are to:

- Provide robust, timely and strategic advice to ministers and to departmental Board on analytical issues, that is independent and challenging to ensure that science and analytical evidence and advice is robust, relevant and high quality;
- Providing effective collaborative support to policy plan projects and core MOJ projects and undertaking analysis to help the department to deliver the Spending Review and Transforming Justice to ensure that policy making is underpinned by evidence;
- Ensure that analytical capability in MOJ is excellent, build capacity, set direction and raise staff engagement
- Undertaking a programme of real world visits and maintain good links with external academics and research institutes
- Working with other analytical Heads of Profession (economics, social research, statisticians and operational researchers) and Chief Scientific Advisers to ensure a robust and integrated evidence base underpins policy formulation, delivery and evaluation;
- Act as Chief Scientific Adviser for MOJ including leading and engaging within and for the department on relevant national and international science and evidence issues.

Her qualifications and experience (see below) make her well suited to fulfil this role.

The extent of their influence over research spend.

Rebecca is the Director of Analytical Service. She oversees the development of the Departmental Analytical Programme and the Evidence and Analysis Strategy. She and her Deputy Directors are actively involved in the formulation of Departmental Analytical priorities and clear submissions to ministers seeking their approval for analytical spend.

Once projects are approved, they are monitored through the Analytical Services Board. Rebecca chairs this Board. She also sits on the Boards of the key users of evidence in MOJ (Justice Policy Group and Corporate Performance Group) and is able to influence the need to analytical work and appropriate financial resourcing through this route.

Their role in providing independent challenge and ensuring that departmental policies are evidence-based.

As a permanent civil servant, Rebecca adheres to the Civil Service Code. The Code requires her to demonstrate integrity (putting the obligations of public service above personal interests), objectivity (basing advice and decisions on rigorous analysis of the evidence) and impartiality (acting solely according to the merits of the case). This leads to independent and robust advice to ministers and policy makers.

As both Director of Analytical Services and CSA, Rebecca is actively involved in the discussing, formulating and prioritising of the department's evidence needs to ensure policies are evidence-based. She does this in close collaboration with policy, corporate and operational colleagues and her team of analysts. She is supported in this task by around 185 governmental analysts and MOJ Heads of Profession for Economics, Operational Research, Social Research and Statistics.

She also provides challenge and an analytical perspective via a number of sub-groups to the departmental Boards including the Value for Money Board, Financial Management Committee and the Transforming Justice Committee.

The range of expertise provided by the network of CSAs.

Rebecca brings considerable economic expertise to the CSA network and extensive experience of the strategic management of evidence within Government. She joined MOJ in 2008 as the first Director of Analytical Services of the newly created department. Since then she has developed expertise in the criminal justice system, probation and prisons, legal aid and the civil and family justice systems.

Prior to joining MOJ, Rebecca had considerable analytical and policy expertise as a policy advisor and analyst. This covered a wide range of social policy issues, in particular labour market, poverty and family policy. She has a BSc (Hons) in Economics and Economic History from London School of Economics, and a MA in Economics from Warwick University. She gained an OBE for her work at Department for Social Security (2000).

She shares this expertise not only with the network of CSAs, but also via the cross-Departmental Directors of Analysis group and Government Economics Service.

The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities.

Rebecca Endean carries out a programme of real world visits to the external analytical community and their representatives. She has a programme of external speaking engagements, through which she promotes and exemplifies the need for independence, high quality evidence that is targeted at the needs of policy makers.

She convenes events for external academics and research organisations both for MOJ and occasionally jointly with the Home Office. The last was in Feb 2011 for those interested in working with MOJ to explore greater scope for joint working and highlight areas of common action. This has led to the setting up of a joint group of MOJ analysts and external analytical stakeholders to develop ideas to improve procurement and project management.

The contribution of CSAs in promoting public trust in the independence and authority of science advice to government.

Rebecca has also ensured the centralisation of statistical functions within MOJ to facilitate their independence. She also has line management responsibility for the MOJ Chief Statistician who has sole responsibility for the publication of independent statistics. He has developed and implemented a range of improvements of policy and procedures for the publication of statistics and a consultation to on proposals to make criminal justice statistics more transparent and user friendly.

HM Treasury—Written evidence

- Name of department: HM Treasury
- Name of CSA: Dr James Richardson

Employment arrangements

- Grade:
SCS Pay Band 2
- Tenure (and, if on a fixed-term contract which is due to end in the near future, arrangements for appointing a successor):
Permanent appointment
- Whether full or part time (and, if part time, other work commitments): Part time CSA; also Director of Public Spending and Chief Microeconomist in HM Treasury.
- Qualifications and background:
Dr Richardson has a PhD in Labour Economics from London School of Economics. He is currently Director of Public Spending and Chief Microeconomist in HM Treasury. He has previously held positions on public spending and welfare reform.

Relationships within the department

The Committee would like to understand how each departmental CSA develops and maintains influence within the department. To this end, the Committee requests information about the following:

- The CSA's reporting line:
Reports to HMT's Chief Economic Adviser (Dave Ramsden) in his capacity as CSA, with right of access to Permanent Secretary (Sir Nicholas Macpherson)
- Whether he or she is on the departmental Management Board:
No
- How his or her relationship with policy makers and involvement with policy decisions can be characterised:
Dr Richardson has a close relationship with policy makers and is influential in many key policy decisions.

- Whether the CSA is involved in the development of departmental research strategies and decisions on research spend and, if so, to what extent:
Dr Richardson will be involved in decisions about the allocation of the Treasury's relatively small external research budget but the precise mechanisms are still developing.
- Frequency of meetings with ministers (and, specifically, how many meetings has the CSA had with the relevant minister in the period from beginning of September 2010 until end of August 2011):
Dr Richardson had more than 50 meetings with HMT ministers in this period.
- How access to ministers is controlled
Dr Richardson is able to access ministers on request, subject to diary pressures.
- The CSA's relationship with the departmental scientific advisory committee:
Not applicable as HMT does not have a scientific advisory committee.

Relationships across the departments

Please see the overarching memorandum submitted to the Committee by GO Science.

September 2011

HM Treasury and Ministry of Defence—Oral Evidence (QQ 128-159)

Evidence Session No. 6.

Heard in Public.

Questions 128 - 159

TUESDAY 15 NOVEMBER 2011

Members present

Lord Krebs (Chairman)
Lord Broers
Lord Crickhowell
Lord Cunningham of Felling
Baroness Hilton of Eggardon
Baroness Neuberger
Lord Patel
Baroness Perry of Southwark
Lord Rees of Ludlow
Earl of Selborne
Lord Wade of Chorlton
Lord Willis of Knaresborough
Lord Winston

Examination of Witnesses

Dr James Richardson, Chief Scientific Adviser, HM Treasury, and **Professor Sir Mark Welland**, Chief Scientific Adviser, MoD.

Q128 The Chairman: Good morning and welcome to our first witness panel. In a moment I will invite you to introduce yourselves for the record, but thank you very much for coming to join us. As you will no doubt be familiar, the session is being webcast and therefore comments will be recorded while the broadcasting system is switched on. If you would like to make an opening statement when you introduce yourselves, feel free to do so, otherwise I will lead off with the questioning. Perhaps I could invite you to introduce yourselves, starting with Dr Richardson.

Dr James Richardson: I am James Richardson, the Chief Scientific Adviser at the Treasury.

Professor Sir Mark Welland: Mark Welland, Chief Scientific Adviser at the Ministry of Defence. I have been in post since April 2008.

Q129 The Chairman: Thank you very much. Could I start off with a very general question? Perhaps both of you in turn could say something about how you perceive the role of Chief Scientific Adviser in your departments and whether it has changed since your appointment. I realise, Dr Richardson, you were appointed relatively recently, so maybe it has not changed that much, but perhaps you can tell us how you think it ought to change—if you think it ought to—and perhaps start off by elaborating on those general points. Sir Mark, you could kick off.

Professor Sir Mark Welland: The first point I want to make is that the Ministry of Defence has had a Chief Scientific Adviser since the 1960s, so it has a long track record of scientific advice. In my current role I provide scientific advice to ministers and other senior officials in the Ministry of Defence. I am directly accountable to ministers and to the Permanent Under-Secretary. I lead the Science and Technology community across defence, and that supports front-line and other current and future technological challenges. I also support decision-making—it is important—on current military operations, future equipment acquisitions and the nuclear deterrent, and assisting in the delivery of future battle-winning technologies.

In my current role I am the principal for the 1958 mutual defence agreement with the United States of America on matters nuclear. That covers our nuclear programme; nuclear warheads and the nuclear deterrent programme. It also covers sensitive terrorist-related activities relating to weapons of mass destruction. I also look after and provide technical support for the UK/French treaty on hydrodynamics that was signed at the UK/France summit last year and opened up an unprecedented technical exchange with France on scientific experiments that underwrite our nuclear weapon stockpile.

I also have significant international engagement beyond the US; I have mentioned France already. So we have bilateral relations with France, Australia and Canada. Just recently, I also signed a new agreement with India that will significantly enhance our scientific and technical exchange on defence and security-related matters.

I also work closely with industry and academia across the full range of science and technology, and in that role especially I am supported by the Defence Scientific Advisory Committee, which provides independent advice to me and to the department.

So that is my current role, largely. I do not know whether you want me to go on to the changes or whether you would like—

The Chairman: Perhaps you could carry on a little bit about the changes. That would be helpful.

Professor Sir Mark Welland: I think we all know the background. Defence has seen enormous change over the past three years since I have been in this post. It has mainly been economically driven, with reductions in budgets all round. With the new Government, we have also had a national security strategy and the strategic defence and security review, and science and technology have been strongly engaged in all of that. I am personally committed to ensuring that we supported that strategy and that review, so those two papers in themselves represent the future for defence and the future for science and technology in defence. In both those papers science and technology has a strong role to play, which I am very pleased about.

On process, I had a review done of science and technology in defence and implemented some significant changes in the way we deliver science and technology to make it much more

efficient. In simple terms, in Whitehall we have a Science and Technology Strategy Unit, and we then ask the DSTL, or industry or academia where appropriate, to deliver our programmes against the S&T budget, which this year is the order of £439 million⁷².

I have also increased our openness with academia and industry. Part of that is trying to break down classification issues, but a lot of it is about defence in general being much more open to new ideas from partners that we have historically not worked with. The Centre for Defence Enterprise, for example, has completely changed the way we work with SMEs and academia. Orion Laser is a new laser facility and has one of the largest lasers in world. It opened recently at AWE, and I made sure that 15% of it is open to academics across the United Kingdom; so there is a much more open attitude towards engaging with a much wider supplier base.

What about my own role in the Ministry of Defence going forward? I mentioned the national security strategy and the SDSR. We have also had a review on defence reform and the structure of defence, led by Lord Levene. In that review it was recommended that my role was changed down from a Permanent Secretary role to a DG—from a four-star to a three-star role. I can talk about that more later if you so wish.

The Chairman: We would like to come back to that, but perhaps after we have heard from Dr Richardson.

Dr James Richardson: I think the key point of context obviously for my role is that, predominantly within the Treasury, science means social science and especially economics. The Treasury has had a Chief Economic Adviser since the 1960s and a solid tradition of social scientific evidence-based policy making within the Treasury for many, many years. So I see my new role as Chief Scientific Adviser very much as complementary to that long-standing social science and predominantly economics role within the Treasury over many decades.

The second key point of context is that this is a new role. Although I do not really have an answer to your question about how it has changed so far, I think it is important to say that it will almost certainly change in the coming months and years. I will give an initial view on the role, which I am sure will change with further engagement with the relevant stakeholders, indeed including you.

I see the key role here as being about joining up the Treasury's existing economics community with the broader scientific community, and particularly with natural scientists. That is the big opportunity here for us in the Treasury. We are not about to become a department that does a lot of hard natural science, but there are an increasing number of areas, or at least an increasing awareness of the number of areas, in which economics and natural science interact and where it is important for us in the Treasury to understand not merely the economics of a question but perspectives from other sciences, and indeed, I suspect, from other social sciences that we might not have been as engaged with in the past. That is the key role that I wish to bring to this: to join up areas and to ensure in those areas in which there is a maximum value from working together with other scientific disciplines that we have a route to the experts on those and that we are able to understand the wider range of perspectives.

⁷² The MOD later clarified that the budget is £435 million.

Q130 Lord Cunningham of Felling: Can I ask both of you what the advantages are of a Chief Scientific Adviser being an internal or an external appointment, and what the disadvantages are? We have noticed that there are variations in the appointments across Whitehall. We have one of each here, I think, so your views would be very helpful.

Dr James Richardson: Perhaps I would say this, because I am an economist, but I think it is a trade-off, and of course economics is essentially the study of trade-offs. There are obviously advantages and disadvantages to each model. An external appointment clearly brings you a stronger connection to certain external networks, and it is also fair to say that it is probably more likely that you will get somebody who is completely up to date with the latest developments if you bring in somebody from, say, academia; whereas with an internal appointment, with the best will in the world it is hard to keep absolutely at the cutting edge while managing a role within the organisation. So, as you might expect, from an external appointment you gain better connections with the external world.

The advantages of an internal appointment are essentially the inverse of that. You are more likely to understand how the organisation that you are part of operates and therefore more likely to find it easier to gain traction over that organisation in influencing decisions or advice that goes to ministers. The aggregate effectiveness of any individual is in part a product of these two opposing forces, so I do not find it at all surprising that there is variation. Indeed, where you get these trade-offs, you would expect to see a distribution of outcomes because there are other variables in the nature of the department as to how easy or difficult it is for outsiders to operate or for insiders to engage externally. That is going to give you a degree of variation in what the right outcome is for that trade-off, and you are going to see a distribution. I think that is what you would expect from a problem of this sort.

Q131 Lord Cunningham of Felling: Can you give the Committee any specific examples of where being an internal appointment has caused you difficulty in the furtherance of your job?

Dr James Richardson: I cannot. I should be clear; I have only been doing this job for a brief period so I think it is a little early to have acquired a great deal of difficulties. It is perhaps an advantage in the Treasury, in facing outwards, that you find that if you pick up the phone and say, “I’m from the Treasury”, people are very willing to talk to you. That may be different in some other departments. We always find that people are extremely willing to engage with us and give us their time.

So being an insider seeking to have conversations with outsiders is not a difficult function to take up. That may be different for different departments. I have not come across any difficulties, but I certainly recognise that somebody who had come in from the outside would bring certain advantages that I do not have and would also have certain disadvantages that I do not have.

Q132 Lord Cunningham of Felling: Are people in the Treasury always willing to talk to you?

Dr James Richardson: Yes, and that is obviously an advantage of being an insider. I know most of the senior people in the Treasury pretty well.

Lord Cunningham of Felling: Right to the top.

Dr James Richardson: Yes. I have very regular conversations with the Permanent Secretary, who I have worked with for many, many years.

The Chairman: Before we come to Sir Mark, I think Lord Willis and Baroness Perry would like to come in with comments.

Q133 Lord Willis of Knaresborough: Yes, thank you very much, Chairman. Dr Richardson, as you well know there was considerable joy when the Treasury at last appointed a Chief Scientific Adviser. It was somewhat of an embarrassment that the Treasury website did not even record the fact that you had been appointed, and, given the fact that you are Director of Public Spending, which must be a massive task in itself, and also the Chief Microeconomist for the Treasury, I just wonder how much time you can actually spend on this key function of being the department Chief Scientific Adviser, or is it merely just a tick in the box by the Treasury that we actually have one? I was disturbed to hear you say that your job was primarily about economics. I understand that, because you are a brilliant economist and are spoken incredibly highly of within the Treasury. You then went on to say that the Treasury has a Chief Economist and that you see your job as complementary to it. So I am really confused about whether this is just a tick in the box.

Dr James Richardson: I do not see it in that way at all. I have to say that I was somewhat surprised to find myself an extremely minor celebrity at the point of my appointment, but perhaps that is also a disadvantage of being an insider: you do not expect these things. As I said, we think there is a real opportunity here because we want to try and engage economics within the broader scientific community. There was then a debate within the Treasury as to whether that would be better done by the Chief Economic Adviser or by me as Chief Microeconomist. Our view was that overlaps are likely to be even stronger on the microeconomic side than on the macroeconomic side, where the Chief Economic Adviser spends more of his time. That may be something that we want to think about as we engage with it, but our initial view was that it was probably more sensible for the Chief Scientific Adviser to be the Chief Microeconomist than, as it were, the Chief Economic Adviser, because those overlaps would be stronger.

It is very much the case that I see the value in areas where there are overlaps, and that is why I think that having somebody who has a policy role has advantages. I am certainly not going to pretend that there are no disadvantages. Clearly, if I were a full-time Chief Scientific Adviser I would have more time to spend on the role, but the inverse of that is that because I already have a substantial policy role I see a great deal of reports and am involved in a great deal of debate where I think the overlaps are potentially quite strong. So I am firmly embedded in issues on which the need for an evidence-based scientific approach is very great, and I think that gives me more leverage because I am already seeing this material and that influence in my other role.

The Chairman: Thank you. That is fine.

Q134 Baroness Perry of Southwark: My question follows very much on what Lord Cunningham has been pursuing. When you were appointed, presumably the Permanent Secretary and the Minister spoke to you about their expectations of the job. What specifically did they say they wanted you to do, qua Chief Scientific Adviser, quite apart from the huge job that you have in your other roles? Putting it on the bottom line, when you have

your annual appraisal, what are the goals that you have been set in Civil Service terms in your CSA role?

Dr James Richardson: Let me answer the second point first. I have a specific objective in this role to promote high-quality evidence-based advice within the Treasury, and that is the core thing that is set. That was very much the discussion that I had with both the Permanent Secretary and the Chief Economic Adviser around the creation of this role, and it was very much a discussion between the three of us and others, including obviously the Government Chief Scientific Adviser, about what we wanted from the role, where it would be best placed within the Treasury and whether it best sat with my Chief Microeconomist role or with the Chief Economic Adviser role. So it was very much around that point of promoting better evidence-based advice. As I say, there are real opportunities in joining up a range of disciplines with our existing strengths in economics.

Q135 Lord Rees of Ludlow: Following up on what Baroness Perry said, could you give one example of an issue that you have addressed where you have felt you have been wearing your science adviser hat rather than your other hat?

Dr James Richardson: In the brief period in which I have been involved in this, I cannot say that I have seen that. Perhaps I can give you an example of something in which I have acted as Chief Microeconomist that I think will perhaps give you a sense of the kind of—

The Chairman: That is slightly different. Could you answer Lord Rees's question?

Dr James Richardson: I do not think in the period I have had so far that I have had a particular issue—

The Chairman: How long have been in the role?

Dr James Richardson: I was appointed in June.

The Chairman: So five months. You have not had any case where you have offered scientific advice that improves policy in the first five months?

Dr James Richardson: I am not sure that I would see it quite like that. What I have sought to do at this point is to engage with the scientific community and establish a series of areas where it would make sense for me to be more engaged, and, yes, I am still in that process.

Q136 The Chairman: Okay. Have you established a scientific advisory council, as other departments have, to help you engage with the external community?

Dr James Richardson: No we have not done that. We have had a bit of a discussion about—

The Chairman: Is it your intention to do so?

Dr James Richardson: We have had a bit of a discussion about whether this is a good idea.

Q137 The Chairman: Where is the discussion leading?

Dr James Richardson: At the moment I think our view is that we already have quite a substantial input into the Treasury's governance from—

The Chairman: So the answer is no, you are not going to establish a scientific advisory council?

Dr James Richardson: The answer is that we still have an open mind but we are not immediately drawn to establishing it. We have had councils of economic advisers in the past.

The Chairman: Thank you.

Q138 Lord Winston: A quick question. I just wondered what input you had had into the announcement by the Government for £50 million into graphene research.

Dr James Richardson: I was involved in that. I did see most of the papers on it, but yes, I cannot say that my decision on it was particularly decisive. However, I was certainly one of the officials who saw papers and commented on that as it went through the process.

The Chairman: What was your view?

Dr James Richardson: I cannot claim to be an expert on graphene, but there are clearly generally high returns to these kinds of investments. It looked like a good investment in supporting the science base, and we will obviously see whether it succeeds.

Q139 The Chairman: You said that one of your roles was to network with the external community, so who did you go to to get advice about that response on graphene?

Dr James Richardson: I did not personally engage externally.

Q140 The Chairman: That is fine, thank you. Perhaps we could now turn to Sir Mark and ask you to comment on the same question that Lord Cunningham asked about internal versus external appointment, as someone who came in from outside?

Professor Sir Mark Welland: Different departments have different needs. I think we have established that. I am quite clear that for the Ministry of Defence you need an external appointment, for a number of reasons. The Ministry of Defence relies very substantially on science and technology, and it requires in the CSA somebody who is current, credible and able to challenge. That challenge can be anything from looking at an issue on the front line in Afghanistan right through to very long-term equipment procurement, so there is a very significant challenge issue there.

I was just thinking that my technical credibility was hugely important in my relations with the US, France and India—in negotiating with all of them. My scientific engineering credentials were hugely important. I could not have done my job with them without that background. So I am quite clear that for the Ministry of Defence, even though the CSA has a significant executive function, the independent scientific engineering credibility of the candidate, and the independence that flows from that, is hugely important.

Q141 Lord Rees of Ludlow: In that connection, I would like to ask a bit more about the downgrade of your post because it is clear you have a tremendous range of responsibilities, that you are certainly someone of great scientific standing, and, moreover, that you are someone who has credibility with the United States and with the other international

partners. I think there has been widespread concern about the proposed downgrading of the post for all those reasons, and I wonder whether you feel able to comment on the extent to which you share those concerns?

Professor Sir Mark Welland: I have already said that the Ministry of Defence is undergoing significant reform in structure. If you look at the defence Board, the previous defence Board, of which I was a member, has now been replaced with a defence Board of which I am not a member, but neither are the three service chiefs. So you have quite a different structure within defence. There is a move towards downgrading a number of posts across defence. That is ongoing as part of Lord Levene's work. In the context of Lord Levene's review, the Chief Scientific Adviser has lost one executive function: chairing the Investment Approvals Board, which I chaired until earlier this year. I am a member of the Investment Approvals Committee, which has replaced it. I am a voting member but I am not the chair, and the Principal for the 1958 mutual defence agreement is now going to be the policy director. So there is a change in my job specification and in responsibilities, and, given the background of significant restructuring in defence, it was inevitable that my post was looked at. As Lord Levene recommended, it was reduced to director-general.

At some point one has to be pragmatic about this, so my view in this was that it was crucial that the CSA remains at the heart of science and engineering in defence, and that all the qualities that my predecessor brought to the job can continue into the future. In the future, the Chief Scientific Adviser will retain: the budget, which is the most important element; chairmanship of the R&D board, along with the Minister; the technical lead for the 1958 mutual defence agreement; and the leadership of the 10,000 scientific and engineering staff at the Ministry of Defence. So he or she will largely retain all the primary functions that make the Chief Scientist's role effective.

Q142 Lord Rees of Ludlow: Having said all that, your post has a distinguished lineage going back to Zuckerman, Bondi, Oxburgh, and people like that. Do you think it will be possible to attract someone of that standing now the post has been downgraded, and, if not, are you concerned about it?

Professor Sir Mark Welland: It is still an extraordinarily attractive post among the CSAs in government. It is extremely influential, both with the Ministry of Defence and beyond. It is an extremely attractive post. The competition is going on at the moment, with final interviews in the next week, so I do not really want to make any comments about my views on that, given the stage of that process. I think it is still a very attractive post; defence has significantly restructured and there are great opportunities for the CSA to be just as effective as I and my predecessors have been.

Q143 Lord Broers: But do you not think, Sir Mark, that having the higher grade gives you more credibility? I talked to Hermann Bondi about this in 1990, when there was some talk of it being degraded then, and he said it was absolutely vital for credibility that this did not happen, particularly for people coming in from outside. That is a key issue, is it not, because it gives you a standing in the Civil Service that immediately means that people will listen to you and work with you.

Professor Sir Mark Welland: If my post had been downgraded in the old defence structure, I would be extremely concerned, because in that previous structure the fact that I was a four

star made a big difference. However, in the new structure that no longer applies. So the Chief Scientific Adviser will retain all the influence that they have previously had.

I accept that from an international perspective, especially perhaps with the US, that the levels of these positions matter and that some work will be required to ensure that my successor retains the support and credibility in the US.

Q144 Lord Cunningham of Felling: Sir Mark, what are the aims, objectives and advantages of making this change?

Professor Sir Mark Welland: There are two things. I have already referred to one: the fact that the post has changed. The Chief Scientific Adviser in the Ministry of Defence has a large budget, has responsibility for those 10,000 scientists and engineers, and for me—as chairman of the Investment Approvals Board—had a very strong executive function that looked after about £13 billion of expenditure per year. That has changed, and I think it is important that all posts have the right standing and ranking in the department, given the responsibilities of the post. I think it would have looked slightly odd if the Chief Scientific Adviser had remained as a four star, given the way the rest of the department is changing in defence reform.

Q145 Lord Crickhowell: I want to take Dr Richardson back to the line of questioning that was being pursued first by Lord Willis. I do not doubt the importance of the economic and financial advice that comes from the Treasury, but I take myself back to the Cabinet Committee decisions, in which I took part, about large industrial projects or perhaps something coming from the Ministry of Defence. You talked about establishing good relationships with the other sciences outside these particular one-off situations, but the one thing that the Prime Minister in my day, and the Committee, had no shortage of from the Treasury was comments about the finances and the economics. My question is: when the crucial factors in the decisions being considered are scientific and technological, would it not be helpful to have someone in the Treasury who had a real understanding of those arguments, rather than simply putting the usual Treasury line? It does not seem to me that the Treasury can relate in those individual decisions in quite the way one would like to see them relate if their input and your advice is almost entirely on the economic side.

Dr James Richardson: It depends on how you see those decisions being taken. Obviously I cannot comment on the decisions that you were involved in, because they were before my time, but the way in which the Treasury now seeks to operate—and my understanding is that this is rather different than in the past—is to have a more delegated approach to these things with departments, in which the Treasury tries to focus on areas where we can add the most value and prefers to rely on departments knowing their own area.

Obviously we have a critical framing role, but I do not think the Treasury would seek to interpose itself as the decision-maker on scientific matters. Our judgments are in areas that we are responsible for: economics and finance. Of course, the decision of the Government as a whole will involve all those perspectives, and that will be brought together in the relevant Cabinet Committee or other forum, but I do not think the Treasury seeks to be the master of all subjects.

Q146 Baroness Neuberger: To finesse a little more what Lord Crickhowell was saying, clearly there is a cross-cutting theme in government at the moment using behavioural economics, and this Committee had a sub-committee looking at that. You talked about having a Scientific Advisory Committee. Given that cross-cutting theme, is there not an argument that, along with microeconomists, such as you—and macroeconomists and no doubt behavioural economists—there should be psychologists in the mix and other social scientists? Given how strong a theme that now is, is that not what makes the case and leads to greater expertise in helping the decision-making in other departments?

Dr James Richardson: I would certainly agree with the substance of what you are saying. We in Treasury, and other parts of government, would benefit more from a better understanding of these overlaps on decisions. The question, really, is: can we rely on the behavioural group that has been set up at the Cabinet Office, or do we need to duplicate it? Particularly in these times, when budgets are tight, we would prefer to rely on that unit than to duplicate it. Clearly, if they are unable to manage the various issues we would have to think about whether we needed some capacity. But I think in the first instance we would wish to work with them.

Q147 Baroness Neuberger: Do they not have a slightly different function from the function you would expect you to have as scientific adviser? They come up with the ideas. Is not part of the role of what you would do within the Treasury to critique those ideas? Do not you need to have—I would argue—independent people outside government in your inner circle to help critique what they are saying?

Dr James Richardson: They have a multiple role, and one of their roles is to promote understanding of these issues. For example, later today I am going to a seminar at No. 10 with Professor Kahneman on these kinds of issues, which they have organised. They have a role in promoting understanding and the links, and that is what I am saying: we would rather plug into that role. If it proves inadequate we may wish to develop it further but, rather than each department try and have its own expertise, it may be better for government to draw in the collective expertise of the academic community on these collectively.

The Chairman: The point about independent expertise leads neatly to Lord Selborne.

Q148 Earl of Selborne: Yes, and I think both of you have helpfully set out the core business of departmental CSAs, and I summarise it—tell me if I have it wrong—as promoting high-quality evidence-based decision-making by advice to ministers and to others, and to provide an independent challenge in the decision-making process. I think it would be helpful to hear at what stage, and to whom, you provide that independent challenge. Would you give us a feel as to how that operates? Perhaps you could give us some feel of how often you feel that this has had a positive effect in decision-making, what use is being made of such scientific advice in the department scheme, and perhaps examples where it has been less successful. I recognise that Dr Richardson has already told us that he cannot really give us an example, but perhaps at least you could tell us what your aspirations will be for the future?

The Chairman: While you are thinking about that, perhaps I could turn to Sir Mark first.

Professor Sir Mark Welland: For me, independent challenge in the Ministry of Defence happens in a wide range of fora. As chairman of the R&D board, and with the budget that sits below that board, I have the ability to look at any part of the science and technology

programme that we fund, and if I am not content with any part of it I can either have some further work done internally or I can use the budget to have the work done externally. I have complete latitude, and the budgets to back it, where I feel that we need to challenge or provide an extra level of scrutiny, or even if I have an inkling that I want to try something different, so I will always use that. On the Investment Approvals Board, which I used to chair but am now a member of, I was viewed not simply as a scientist or an engineer but actually as somebody who could look at evidence, understand where that evidence had come from, what the conclusions flowing from the evidence were, and to challenge that process. So it was not strictly a scientific challenge but an independent challenge to assumptions made, in some cases around a business case itself. Sometimes it might have been about a safety element and sometimes a technical element. I always had that sense of being able to challenge and be independent.

In my regular meetings with ministers and the Secretary of State, I have a very open relationship, which means that I am prepared to stand up and challenge any assumptions that I feel the department is able to respond to. I will always make a point of challenging ministers where I feel it is appropriate, even if it is outside science and technology, because, as I said, a lot of this is about the analysis of evidence and using evidence in an effective way, which is something that scientists and engineers are well versed in.

For me there are many ways in which I can provide that challenge. I can see that challenge affecting not simply the science and technology of the department but the core business of the department, whether it is equipment procurement—which is what the Investment Approvals Committee is primarily about—or more general defence policy-related issues.

Q149 The Chairman: Can you give some positive and less positive examples of where your advice has had an impact on policy?

Professor Sir Mark Welland: Let me give you one example, a very technical example, on improvised explosive devices in Afghanistan. We did some work that challenged some of the assumptions about how we were addressing the problem in Afghanistan. It is simple to think that IEDs—improvised explosive devices—are just something in the ground that you are trying to address, but in fact by challenging those assumptions we could show that you could be far more effective by looking further back in the chain that leads to this device being planted in the ground. That is one example. Another example in equipment procurement was a piece of equipment used for digging holes for tanks to hide in, and there was an issue to do with the metallurgy of the material used and the design of the bucket that excavated the ground. I was able to provide independent scientific challenge into that that has changed the way in which that programme has developed.⁷³

Q150 The Chairman: That is very helpful. Are there any cases where you were disappointed?

Professor Sir Mark Welland: I was disappointed in the last Government in that—against my advice and evidence—the scientific and technology budget took a £100 million reduction. That was a big disappointment to me. Sometimes, despite the best advice and best evidence, you have to accept a political decision that goes against that. My main disappointment,

⁷³ After the session the MoD confirmed that Sir Mark was referring to the TERRIER procurement programme. The difficulty specifically related to the vehicle's front loader system and chasse.

frankly, is that despite that advice and despite the fact that I felt it was necessary to win the battle as to why independent scientific advice into the future of defence was necessary, there was a significant reduction in the budget.

Q151 The Chairman: Thank you. Dr Richardson, as Lord Selborne has already indicated, for you this is somewhat of a hypothetical question, since you said you have not yet actually offered independent scientific advice on any policy issue in this early stage, but perhaps you could reflect on how you would aspire to do it. I am thinking particularly of the point that Sir Mark raised about independence and speaking truth to power. You, as a career Civil Servant, have your future career to worry about in a way that Sir Mark does not as he goes back to his academic home in Cambridge. Can you explain to us why that does not impact upon your ability to provide independent challenge?

Dr James Richardson: Certainly. In terms of what success looks like, I think, as Sir Mark said, that there are interventions throughout the process, and quite often the most successful forms of intervention are about getting either the right person into the right role, or getting the person in the role to think about the subject in the right way, long before any individual piece of advice starts being written. It might well become necessary to intervene in a piece of advice, but it is certainly not as good as being able to influence the whole mind-set in which people approach these things and to get people to understand the evidence base themselves. That would be the first metric that I would see: ensuring that throughout the organisation the people writing advice understand the evidence base from which they are operating.

I think it is also the case that you would want to have access to the advice, be able to comment on it and make critical statements. Certainly with the Treasury—other departments might operate differently—it is one of the advantages of being an insider that you naturally, in the course of things, see a great deal of advice and that your comments are taken on board. I am absolutely confident that I can bring that to the role.

Then there is obviously also the stage of when the advice is going to the Minister. Do you have access to the Minister? I see the Treasury's ministers on a regular basis, and it is well known—you see this in the accounts of the Treasury from former Treasury ministers, and so on—that Treasury officials are quite happy to debate in front of their ministers in a way that I understand is less prevalent in most other departments, and that actually is true of the most junior person in the room as much as of the Permanent Secretary.

Q152 The Chairman: Sorry, we are running short of time. Are you saying that the ability to provide independent challenge and speak truth to power is not compromised by the fact that your future career lies within the Civil Service?

Dr James Richardson: Providing independent, objective, impartial advice to ministers is absolutely a key part of being a civil servant, and if any civil servant were not doing that they would be falling short.

Q153 The Chairman: You have said you have not yet provided independent scientific advice. If you look forward in anticipation of the next six months, in which areas are you anticipating you will be providing independent scientific advice and challenge?

Dr James Richardson: I do not want to be definitive about this but obviously there are areas, and the whole question of behavioural issues is likely to prove extremely fruitful. I suspect that will then interact with a whole number of policy questions on which that cross-cutting thinking is relevant. That is certainly a fruitful area. One area that I am particularly interested in, because it overlaps quite strongly with a lot of my public spending responsibilities, is whether we in the Treasury from a finance/microeconomic perspective have really understood all the science around risk management. This is a subject that engineers, and so on, have a great deal of expertise in, and my sense is that there is probably a lot that we could learn in that area.

The Chairman: Okay. Thank you.

Q154 Earl of Selborne: I just wanted to come back with one quick question, perhaps for Sir Mark. We heard from Sir John Beddington last week when he explained to us how CSAs from departments meet under his chairmanship to discuss issues of mutual interest, and I can imagine that there would be such that concern the Ministry of Defence. Take, for example, natural disaster risk management, for which it might be helpful to pool the expertise of other CSAs. How effective is this pooling of resources of CSAs across departments?

Professor Sir Mark Welland: I think it is very effective. We meet regularly. We share membership of a number of committees, and my first stop if I have an issue that goes outside the fence across government will be to contact the relevant CSA, because I have faith and belief and evidence that in that way I will get a response from the department. The CSAs are generally well connected to the departments and can elicit a response, even if it is from a different part of the department. I would say that it works well.

Q155 Baroness Hilton of Eggardon: On a related question, I wonder whether Dr Richardson attends these breakfast meetings. Furthermore, I am not clear from the Treasury who looks at the social consequences of decisions that are made by economists about finance, tax, and so on. Do you have external people who advise you about the social consequences, the effects on women and children, and so on, of some of the policies that emerge from the Treasury, or do you rely on your hunches?

Dr James Richardson: In terms of meetings of the CSAs, I have attended the lunch meetings. I am one of those Chief Scientific Advisers whose childcare responsibilities mean that I am not able to attend meetings early on a Wednesday morning—I have to drop my daughter at nursery, and I suspect the meetings would be somewhat less conducive if I brought her with me. But I have found meetings that Sir John has kindly re-arranged to be a useful introduction for me, and I am sure I will find them very useful.

Obviously we look at the social consequences, and so on. We have direct responsibility for some policies, such as tax, but obviously we operate with departments on multiple responsibilities and indeed with HMRC on tax. So yes, we work with the departments and most departments have substantial research capabilities in those areas. But of course there is a very lively debate about social policy. This may be an area where the social science dimension and the natural science dimensions may look a little different. It is never the case that the things the Treasury do are not subject to substantial external public independent scrutiny. They always are, because we operate in policy areas where social scientists are

naturally drawn to these public debates. Our views on social policy and economic policy, and so on, are always going to be subject to that scrutiny.

The Chairman: Thank you.

Q156 Lord Broers: I have another question for Dr Richardson. Do you think we act in a joined up way in using our own industrial base to supply the products we need for transport, energy and defence, and do you think in making policy decisions in those areas that you, in your new role as CSA, can make that process more transparent?

Dr James Richardson: I cannot claim it is a subject on which I have particular expertise. I know it is being looked at at the moment, and I have not caught up with the latest developments in that thinking, so I would not want to make a statement on behalf of the Treasury on that. Obviously, supply chain issues are quite important, and they are being looked at, but if you wanted a view from the Treasury, I am not the person to ask.

The Chairman: Thank you. We have covered the final question about assessment of performance.

Q157 Lord Winston: We have had a certain amount of evidence from some of the witnesses that suggests there is not much of an assessment of performance from all the CSAs, and I wonder whether you would like to comment on whether your performance is assessed, how that is done and what objectives have been set at the start of your post?

Professor Sir Mark Welland: My performance is assessed rigorously, SCS-style, 360 degrees. I have produced a set of objectives that were agreed with the Permanent Under-Secretary, and my performance is measured against those. I genuinely feel as though I am held to account for what I need to do.

Q158 Lord Winston: Are the funding decisions, for example, peer-reviewed? Were research funding decisions peer-reviewed in the normal way?

Professor Sir Mark Welland: It is absolutely vital that all the money that we spend on research is peer-reviewed. It is competed for in the first case, and I hold the programme officer responsible for that to account in that respect. I am supported by the DSAC, which regularly deep dives into specific programmes and satisfies itself and me that we are delivering the best quality science and engineering in those particular areas.

The Chairman: Dr Richardson, do you have anything briefly to add to that?

Dr James Richardson: My position is the same. I am appraised and my objectives are assessed in the normal kind of Civil Service manner. I have specific objectives in this area and a 360-degree appraisal is a key part of that.

Q159 The Chairman: Do you have a research budget, so if you need to get further expertise you can commission it?

Dr James Richardson: The Treasury does not have a specific research budget. We generally work through others. That said, if there was a specific issue on which I felt very strongly that

we needed to commission some research, it would certainly be in my gift to seek funding for that, and if I made the case strongly I would⁷⁴

The Chairman: Thank you very much. That draws us to the end of this session. I would like to thank you both for your time in giving us evidence. As you know, you will receive a draft of the transcript and have an opportunity to comment on it within the next week or so. Thank you very much indeed for your evidence.

⁷⁴ The witness clarified after the session that he intended to say “probably get funding for it”.

Home Office—Written evidence

- **Name of department**

Home Office

- **Name of CSA**

Professor Bernard Silverman

Employment arrangements

- **Grade**

Civil service pay band 2

- **Tenure (and, if on a fixed-term contract which is due to end in the near future, arrangements for appointing a successor)**

Appointed from 15 March 2010, for three years with the possibility of extension

- **Whether full or part time (and, if part time, other work commitments)**

Full time

- **Qualifications and background**

- Undergraduate degree (BA) in Mathematics; three higher degrees (MMath, PhD, ScD) in Statistics, all from Cambridge. Chartered Statistician
- Background: 35 years in academic posts. Wide research achievements both in core methodological and practical aspects of computational statistics and in collaborations with other disciplines right across the scientific/medical/social science range
- Considerable portfolio of work for commerce, industry and Government. Leading member of scientific community both in UK and internationally, for example Council of Royal Society, President of (US) Institute of Mathematical Statistics, President of Royal Statistical Society

Relationships within the department

The Committee would like to understand how each departmental CSA develops and maintains influence within the department. To this end, the Committee requests information about the following:

- **The CSA's reporting line**

Permanent Secretary

- **Whether he or she is on the departmental Management Board**

The CSA is not a member of the Home Office Executive Management Board but sees board papers and can request to attend in person at any item with clear scientific relevance.

- **How his or her relationship with policy makers and involvement with policy decisions can be characterised**

Most of the CSA's interaction with policy makers is through informal contact, in some cases through regular bilateral meetings and in other cases through ad hoc contacts and discussions. The CSA's attendance at regular Home Office directors' meetings and also at formal policy meetings facilitates this. It is also important to note that Home Office Science is very much embedded in the department, with teams co-located with policy colleagues in business areas, and the crucial relationships need not involve the CSA personally.

In addition, the CSA has a formal relationship with policy makers and involvement with policy decisions through the Science Governance Process via the Home Office Area Science Strategy Boards (one for each Home Office business area), which establish priorities and appropriate research plans relevant to the department's business area. The Area Science Strategy Boards are a collaborative process chaired by the relevant Home Office Board member or nominee. Their members include the CSA and Home Office Science Directors, together with key policy and research leads from the business area.

- **Whether the CSA is involved in the development of departmental research strategies and decisions on research spend and, if so, to what extent**

The CSA is responsible for research planning strategy via the Science Governance Process (outlined above) with a delegated budget of about £34m (2011/12), which includes about £12m of external research spend. Of this, £5m is for the British Crime Survey.

The CSA also has sight through the Science governance process of all the remaining science spend (approximately) £19m in the department. These budgets are held by policy areas (mostly in the Office for Security and Counter Terrorism).

- **Frequency of meetings with ministers (and, specifically, how many meetings has the CSA had with the relevant minister in the period from beginning of September 2010 until end of August 2011)**

The CSA met with Home Office ministers on 19 occasions between September 2010 and August 2011. Additionally he normally attends weekly and monthly meetings associated with specific business areas, chaired by the Home Secretary or another Home Office minister. Apart from the CSA, other senior Home Office Science colleagues have frequent meetings and contacts with ministers.

- **How access to ministers is controlled**

Meetings with ministers and the CSA are generally facilitated by the Private Office and the Science Secretariat.

- **The CSA's relationship with the departmental scientific advisory committee**

The Home Office Science Advisory Committee (HOSAC) is chaired by the Permanent Secretary. The CSA attends all meetings and generally acts as Vice-Chair if the Permanent Secretary is unable to attend. The Chairs of the other departmental scientific advisory committees are members of HOSAC and the CSA maintains regular informal contact with them.

Relationships across the departments

The Committee would also like to understand how departmental CSAs interact with each other and the nature of their relationship with the Government Chief Scientific Adviser (GCSA).

The Home Office CSA is actively involved in the CSA network, both directly and via colleagues. He regularly attends the Chief Scientific Advisers Committee (CSAC), the informal weekly CSA meeting, and other events, and through these has built close working relationships with the GCSA and fellow CSAs. He has bilateral meetings with his colleagues at Ministry of Justice. There is now collaboration with Department of Health on research to support the work of the Advisory Committee on the Misuse of Drugs.

September 2011

Home Office, Department for International Development, and Department of Energy and Climate Change—Oral evidence (QQ52-84)

Home Office, Department for International Development, and Department of Energy and Climate Change—Oral evidence (QQ52-84)

[Please see under Department for International Development](#)

Home Office Science Advisory Committee, Department of Energy and Climate Change Science Advisory Group, and Ministry of Defence Scientific Advisory Council (QQ247-277)

Home Office Science Advisory Committee, Department of Energy and Climate Change Science Advisory Group, and Ministry of Defence Scientific Advisory Council (QQ247-277)

[Transcript to be found under Department of Energy and Climate Change Science Advisory Group](#)

Home Office Science Advisory Committee—Supplementary written evidence

[Letter from Dame Helen Ghosh DCB, Permanent Secretary]

On 13 December 2011, I provided oral evidence to the House of Lords Science and Technology Select Committee inquiry into the role and function of Chief Scientific Advisers. During the session I agreed to provide additional information regarding the publication of the minutes of the Home Office Science Advisory Committee (HOSAC).

To promote openness, in line with the Government Office for Science's Code of Practice for Scientific Advisory Committees, the truncated minutes of HOSAC meetings are published on the Home Office website. Classified material that cannot be placed in the public domain, for reasons that include national security, is redacted as appropriate.

The minutes and reports of the Surveys, Design and Statistics sub-committee (SDSSC), a sub-committee of the HOSAC, are published on the Home Office website. Minutes of the CBRN sub-committee are not published as these are Classified.

The minutes of HOSAC and SDSSC meetings are available on the webpage:

<http://www.homeoffice.gov.uk/science-research/science-advisory-committees/hosac/>

5 January 2012

Health Protection Agency—Written evidence

The ability of Chief Scientific Advisers to provide independent advice to ministers and policy makers within their Departments.

For Governments to make effective policies and implement them it is critical that these activities are based on the best available independent expert scientific advice and this advice is available for public scrutiny. CSAs should also ensure the transparency of the process used to provide scientific advice and have in place processes to minimise potential conflicts of interest and bias. It is also important that ministers and policy makers understand the principles of the science on which their policies are based and Departmental CSAs are critical in providing both these essential functions.

The range of scientific disciplines which impact on any Department is very wide and it would be unreasonable to expect a CSA to be expert on all these areas. It is essential therefore that CSAs have access to independent scientific advisory committees to cover all the areas of relevance to their Department. Guidance on the operation of such committees, especially their freedom to publish independent advice, has been published by GOScience and the Royal Society and this guidance is strongly supported. Furthermore, if CSAs need to brief ministers or policy makers on topics outside the areas normally covered by their own advisory networks they need to ensure they consider the advice provided by scientific advisory committees which operate through other government Departments.

It is to be welcomed therefore that all Government Departments (including the Treasury) have appointed or intend to appoint CSAs.

The extent of the influence of CSAs over Departmental research spend

In some cases, for example the Department of Health (DH), the CSA has also been responsible for the distribution and administration of the Department's research budget, for DH the National Institute for Health Research. This arrangement is supported as the CSA is familiar with the policy priorities of their Department and can also access the science base to support them, at the detailed experimental level if necessary. For these reasons, it is also important that CSAs have a major role in determining the size of Departmental research budgets and the overall strategic direction of the research activities they support. It is also suggested that CSAs appoint a high level independent group to assist them determining the overall strategic direction of their Department's research activities. However, the assessment of individual research applications is best left to expert groups.

The role of CSAs in providing independent challenge and ensuring Departmental policies are evidence based

Independent challenge and ensuring policies are evidence based are the most important roles for a CSA. It is critical therefore that CSAs have direct and frequent access to ministers and are able to express their views without censure. In some cases where little or no direct scientific evidence is available CSAs should also be able to gather expert opinions and present clear options to ministers and policy makers, along with a clear assessment of the uncertainties surrounding the advice. These arrangements are almost certainly in place within most if not all Government Departments.

In exceptional cases Departmental CSAs should be able to publically express, without censure, views which may differ from Ministerial policies, as is the case for Chief Medical Officers.

The range of expertise provided by the network of CSAs

At present the expertise provided by the network of CSAs seems to cover all major scientific fields. However this range of expertise should be regularly reviewed by an independent body, ideally the office of the Government's Chief Scientific Adviser (GCSA), to take account of changes in the membership of the CSA network and new scientific disciplines which may arise.

The extent to which CSAs have authoritative standing within relevant communities and have effective networks within them.

The standing of CSAs within their relevant communities is critical to their authority, both in providing advice to ministers and policy makers and also in promoting public trust. This matter is however very difficult to assess and appointment committees should ensure they have authoritative and independent advice. It is suggested that this role is played by the GCSA's office.

The contribution of CSAs in promoting public trust in the independence and authority of scientific advice to Government.

As argued above, public trust in the independence and authority of the scientific basis of government policies is greatly enhanced if CSAs are seen themselves to be independent and are highly respected among their relevant professional communities. If this can be achieved they can provide a powerful and trusted voice for the government, especially in times of national emergency. Therefore CSAs should play this role more often, be media-trained and develop a reputation as highly effective, authoritative and trusted communicators to professional bodies and the general public.

September 2011

Health and Safety Executive—Written evidence

Questionnaire to all departmental Chief Scientific Advisers

Name of department	<i>Health and Safety Executive</i>
Name of CSA	<i>Dave Bench</i>
Employment arrangements	
Grade	SCS Pay Band 2
Tenure (<i>and, if on a fixed-term contract which is due to end in the near future, arrangements for appointing a successor</i>)	Permanent
Whether full or part time (and, if part time, other work commitments)	1.0 FTE
Qualifications and background	<p>After graduating from York University (applied & environmental biology) he spent the first 10 years of his career - in the Ministry of Agriculture, Fisheries and Food - in scientific roles dealing with risk assessment of chemicals.</p> <p>Throughout the rest of his career he has been responsible for policy development and the management of science in a range of areas, focusing particularly on the strategic management of research programmes. This has encompassed a number of policy areas including genetic modification in agriculture, animal health, marine, chemicals, and now health and safety.</p> <p>In his current role he leads two directorates in the Health and Safety Executive (HSE): the Corporate Science, Engineering & Analysis Directorate and the Chemicals Regulation Directorate, and contributes to the broader work of HSE as a member of the Senior Management Team. He fulfils the role of operational chief scientist for HSE with responsibility for the quality of HSE's science and ensuring that there is an evidence based challenge of HSE's policies and procedures. He also acts as head of profession for scientists and engineers within HSE and the Health and Safety Laboratory.</p>

<p>Relationships within the department: The Committee would like to understand how each departmental CSA develops and maintains influence within the department. To this end, the Committee requests information about the following:</p>	
<p>The CSA's reporting line</p>	<ul style="list-style-type: none"> • Reports to Geoffrey Podger – HSE Chief Executive
<p>Whether he or she is on the departmental Management Board</p>	<ul style="list-style-type: none"> • Dave Bench is a member of HSE's Senior Management Team
<p>How his or her relationship with policy makers and involvement with policy decisions can be characterised</p>	<ul style="list-style-type: none"> • As Director of Science, Engineering, Analysis and Chemicals Regulation, his staff collaborate with other HSE teams who contribute to Government policy to provide the scientific assurance required to commission research, to advise ministers, and to develop health and safety interventions. He can challenge on the basis of science and evidence at all levels up to the Senior Management Team and HSE Board.
<p>Whether the CSA is involved in the development of departmental research strategies and decisions on research spend and, if so, to what extent</p>	<ul style="list-style-type: none"> • He has oversight of the development, delivery and use of work in HSE's rolling 3-year Science Plan including resource allocation for research and technical support between directorates. • He can challenge the scientific feasibility of research proposals. He has oversight of the business justification for proposed work and the demonstrated value of completed work. • He is accountable to the CEO for budgets allocated for research and technical support to his own directorate. • He can advise and influence other directors on their commissioning of research and technical support after budgets have been allocated. • He is responsible for the crop protection research programme which is funded by DEFRA, and forms part of the DEFRA's research management arrangements.
<p>Frequency of meetings with ministers (and, specifically, how many meetings has the CSA had with the relevant minister in the period from beginning of September 2010 until end of August 2011)</p>	<ul style="list-style-type: none"> • He (and HSE's previous CSA) have had no meetings with ministers in the last 12 months.
<p>How access to ministers is controlled</p>	<ul style="list-style-type: none"> • Previous meetings with ministers have been at the ministers' request.

<p>The CSA's relationship with the departmental scientific advisory committee</p>	<ul style="list-style-type: none">• He has informal contacts with DWP's arrangements. HSE does not have a scientific advisory committee for developing its science plan.• He has informal contacts with HSE's 2 scientific advisory committees (on the control of chemicals and on of genetic modification (contained use)) He has no specific responsibility for these other than to ensure that they have access to independent scientific advice.
<p>Relationships across the departments: The Committee would also like to understand how departmental CSAs interact with each other and the nature of their relationship with the Government Chief Scientific Adviser. Please refer to the memorandum.</p>	

September 2011

Institute of Conservation—Written evidence

I am writing on behalf of Icon, the Institute of Conservation, to respond to the call for evidence on the role and function of the departmental Chief Scientific Advisers. Icon is the lead voice for conservation of cultural heritage in the UK. We are a registered charity committed to public benefit. Icon's mission is to raise public awareness of the cultural, social and economic value of caring for our heritage and to champion high standards of conservation in the UK. Icon's 2500-strong membership embraces the wider conservation community, including professional conservators in all disciplines, and everyone who shares a commitment to improving understanding of and access to our cultural heritage. Icon has a vibrant Science Group with 317 members. For further information about our work please visit www.icon.org.uk This evidence has been prepared by the Chief Executive with contributions from the Science Group and Trustees of Icon.

We would like to focus our submission on the issue of the ability of CSAs to provide independent advice to ministers and policy makers within their departments. It is currently the case that all departmental Chief Scientific Advisers are independent and provide ministers and others with independent advice. This is the foundation on which many of the other aspects of your enquiry rest. For example, Independent CSAs are able to provide independent challenge and can ensure that Departmental policies are evidence-based; independent CSAs are more likely to promote public trust in the independence and authority of science advice to government. **Icon strongly supports preserving the independence of Chief Scientific Advisers.**

We understand that in the current economic climate there is a need to cut costs wherever possible. With regard to our own sector, we understand that there are a number of cost-cutting proposals being considered in regard to the CSA in DCMS. One is to rely upon the expertise available within non-departmental public bodies. Another is to rely on Department personnel. The wide remit of DCMS would require the right person who would be sensitive to all of the sectors covered by the Department. A third possibility would be for the CSA to be shared with another Department. We suggest that if the other Department were to be carefully selected to complement the DCMS remit, such an arrangement could work. **Of these three options, Icon's preference would be for sharing an independent CSA between Departments.**

The appointment of a Chief Scientific Adviser in DCMS was an outcome of the recommendations made by Dr. Michael Dixon in his 2007 report, *The Appointment of a Chief Scientific Officer to DCMS: A review and recommendations*. We welcomed the appointment of Dr. Anita Charlesworth. She is an economist well able to cover and communicate across many of the areas of DCMS's remit including conservation of moveable heritage, the historic environment, sustainability, and sports science. While it is unlikely that any one scientist would be able to cover the wide remit of DCMS, Dr. Charlesworth called on the expertise of others by forming the Scientific Research Advisory Committee. She thereby encouraged a cross-disciplinary approach, with representatives from the different DCMS sectors on the same panels. This is crucially important if our small cultural sector is to thrive. **We would like to draw the attention of the Committee to the long delay in appointing a successor to Dr. Anita Charlesworth and ask the Committee to address this issue in its recommendations.** We would welcome the appointment of an independent

adviser with similar expertise as soon as possible. There is an urgent need for this role to continue to provide independent advice and the evidence base for DCMS policy.

It is our view that CSAs in general have great potential for communicating about science across Departments. *The House of Lords Science and Technology Committee: Science and Heritage Report with Evidence 2006* noted that conservation is in essence about sustainability. CSAs could link together research on sustainability in different domains. **Icon would welcome more communication with CSAs in the future.**

13 September 2011

Institute of Physics—Written evidence

The ability of CSAs to provide independent advice to ministers and policy makers within their departments

1. The introduction and development of the roles of departmental Chief Scientific Advisers (DCSA) has proved effective in bringing science to the forefront of government policy decisions. The government Chief Scientific Advisers, and the DCSAs act as a focal point for both science in government, in Westminster and the devolved governments, and also for those outside of government.

2. Any advice that the DCSAs provide must be independent, authoritative, robust and far sighted. This advice must be approached in a dispassionate and thorough way using up-to-date information on a national and international basis. To support this, DCSAs should maintain the ability to consult more widely, for example, by using networks and contacts of leading scientists in each field where advice is being sought. If the information available to base advice on is incomplete and/or contradictory, DCSAs must be able to make sound judgements. We believe that these principles have been adhered to.

3. However, it is clear that the ability of DCSAs to provide this impartial advice to ministers is related to the ‘access’ that DCSAs have to both ministers and senior civil servants within a department, and also access to the early stages of policy development. This ‘access’ varies from one department to another, and also sometimes within different areas of the same department, and is dependent more on the current people and processes in place than an established rule across government.

4. The role of DCSAs seems to have been further marginalised by the budgetary restrictions within departments. As the overall budgets have been reduced in most areas, the perceived value of scientific advice has fallen, with individual directorates and teams focusing on their own ‘bottom line’. In some cases it seems that a DCSA is only consulted on an issue if the subject under consideration is deemed sufficiently ‘scientific’ by those leading the project. This is clearly not ideal; one of the most important, if perhaps intangible, benefits of the DCSA structure is a greater understanding of the pervasiveness of science. Ideally, DCSAs should be able to provide input on all issues, bringing the benefit of the logical and thorough approach of a trained scientist.

5. In some cases, the DCSA is a member of the departmental Board, giving a full view of the entire range of departmental activities, and we would recommend that this approach be taken up in all government departments. The influence of the DCSAs could be further enhanced by ‘institutionalising’ the role. For example, the DCSAs should be required to sign off departmental business plans and spending review submissions. In this way, all departmental Permanent Secretaries would be required to interact with their DCSA.

The extent of their influence over research spend

6. Departmental R&D budgets have undergone substantial changes over the past decade, with most, if not all, undergoing significant reductions. While it might be too much to ask for the network of DCSAs to reverse this, each DCSA should have a good understanding of the

R&D needs of a department, both in terms of policy development and in delivering the functions of the department, and lobby to ensure that these are met efficiently. However, given the differing nature and scope of the DCSA role, and of R&D spending levels, in different departments, it would not be appropriate to assign government-wide rules to this.

7. In addition to holding an influence over departmental R&D spending, DCSAs should have an active involvement in departmental procurement practices. Departmental procurement budgets are typically orders of magnitude greater than dedicated R&D budgets. Through innovative and pre-commercial procurement strategies, departmental budgets can be used both to meet the needs of the government, and also support innovative science-based businesses. For example, the Small Business Research Initiative, while administered by the Technology Strategy Board, requires significant departmental ‘buy in’ if it is to fulfil its potential in supporting innovative small businesses, and the DCSA has a role to play here

The range of expertise provided by the network of CSAs

8. The network of DCSAs and also the Civil Service science and engineering network have a significant role to play. The ability to coordinate both the use and undertaking of scientific research across government has the potential to provide cost savings, but also to benefit individual departments through collaborations and cross-fertilisation of ideas.

Their role in providing independent challenge and ensuring that departmental policies are evidence-based

9. Clearly, the ability to challenge policies with scientific evidence is essential to the role of the DCSAs. However, it could be argued that if it has got to that point, then it is already too late – the DCSAs and their teams and networks should play a role through the policy development process, including areas which require public consultation. This would include, for example, commissioning further research to expand the evidence base for policy decisions.

10. On this basis, the relationship between ministers and their DCSAs should be open, transparent and mutually trusting. For example, if a decision is made which goes against the DCSA’s advice, the considerations which led to this decision should be made clear to the DCSA, and, if appropriate, included in a public statement.

The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities

11. The role of the DCSAs is pivotal and they should aspire to the standing held by, for example, the Chief Medical Officer. Given the range of issues with which the DCSAs may need to, and perhaps should, engage, it is arguable that there should be greater interaction between the DCSAs and representative groups of scientists across all areas (i.e. not just university-based researchers). Currently, the DCSAs have good relationships with the research councils and National Academies, but perhaps weaker links with learned societies and discipline-specific groups, as well as bodies that represent industrial sectors.

The contribution of CSAs in promoting public trust in the independence and authority of science advice to government

12. This is an important aspect of the DCSA role. It is the case currently, that while several DCSAs make themselves available to public events and other engagement activities, others do not.

23 September 2011

Institution of Chemical Engineers—Written evidence

Institution of Chemical Engineers—Written evidence

[Submission to be found under Engineering the Future](#)

Institution of Civil Engineers—Written evidence

Institution of Civil Engineers—Written evidence

[Submission to be found under Engineering the Future](#)

Institution of Engineering and Technology—Written evidence

Institution of Engineering and Technology—Written evidence

[Submission to be found under Engineering the Future](#)

Institution of Mechanical Engineers—Written evidence

Institution of Mechanical Engineers—Written evidence

[Submission to be found under Engineering the Future](#)

ITS United Kingdom—Written evidence

1.0 Introduction

1.1 ITS (UK) is a ‘not-for-profit’ public/private sector association financed by members’ subscriptions providing a forum for all organisations concerned with ITS. The Society works to bring the advantages that ITS can offer in terms of economic efficiency, transport safety, and environmental benefits to the United Kingdom – and at the same time expand the ITS market. Membership, over 150 UK organisations, comprises Government Departments, Local Authorities, Police Forces, consultancies, manufacturing and service companies, and academic and research institutions. ITS United Kingdom encourages discussion on issues such as public/private co-operation, standards, legislation, information provision and new technology. ITS (UK) was a significant contributor to the Parliamentary POSTNote 322 ‘Intelligent Transport Systems’ published in Jan 2009.

1.2 Since the inception of the CSA role ITS (UK) has benefited from the expertise and experience that previous incumbents have brought, and has enjoyed jointly working with them, in either the solo responsibility or more recently as the joint CSA for the Department for Transport and the Department for Business and Innovation.

1.3 Intelligent Transport Systems, or more commonly, ‘ITS’, is the term used to describe combinations of sensors, telecoms, information processing and location referencing to deliver improved transport systems and services including information before and during a trip for travellers by all modes. Some examples – ITS can improve the efficiency of transport through traffic control and enforcement of traffic regulations and enhance road safety through in-vehicle systems for collision avoidance and better lane keeping. Many commercial organisations use ITS to manage vehicle fleets, both freight and passenger, through the provision of real-time information and two way communication between manager and driver. Electronic ticketing (by means of Smartcards, for example) enables faster, easier travel by public transport. In addition Intelligent Transport Systems have beneficial effects on the environment by reducing air and noise pollution on highways and by helping to create traffic free zones in cities.

2.0 House of Lords Select Committee on Science and Technology - Inquiry’s Questions - ITS (UK) written responses to questions where we have expertise

2.1 *the ability of CSAs to provide independent advice to ministers and policy makers within their departments*
their role in providing independent challenge and ensuring that departmental policies are evidenced-based

CSAs can only deliver independent advice or an independent challenge if they are brought in to operational Divisions’ policy preparation at an early stage, so that they are aware of the evidence being collected and can comment on its breadth and robustness, and are part of the formal “sign-off” processes when submissions go to ministers for approval. It obviously helps if postholders are members of or observers at Departments’ Executive Boards so that they are able to give strategic advice – or a challenge – at the highest levels. In a formal sense postholders need to have a reporting line at Director General level or higher and to

be recognised within Departments as having a cross-cutting responsibility analogous to Chief Economist, Chief Statistician etc.

To be able to validate Departments' usage of science and engineering evidence CSAs need to have unfettered access to the plans for assembling evidence, the deliverables from these studies, and the necessary resources either to calibrate it independently or to test the extent to which it is being scrutinised by operational Divisions.

Inevitably CSAs will be required to deal at the highest priority with the immediate demands of Government – for example in the case of DfT the 2010 eruptions of Eyjafjallajökull with the consequent impact on nearly all modes of travel. However it is also important that CSAs have the capacity to examine areas that necessitate both a longer-term and a very wide-ranging perspective. A good example of this is the DfT / BIS CSA's lead on the 'Critical Infrastructure' requirements that sought to consider the long-term strategy for the replacement and refurbishment, of the most crucial elements of the UK's infrastructure – ie water, ICT, energy and transport.

Finally, in order to have credibility within a Department when giving advice the personal 'track record' of CSAs has to reflect reputation and credibility acquired over a lengthy career in diverse academic and business areas and the appointment has to be made at a sufficiently senior level to indicate that the postholder 'has clout' within the organisation. The precise area of professional expertise is invariably irrelevant – previous CSAs at the MoD have been biologists, for example. The key criterion is the ability to assess the processes for collecting evidence, testing its relevance and robustness, and translating these factors into clear advice for ministers.

2.2 *Influence of CSAs over research spend*

As a result of initiatives going back to the 1970s and the "Rothschild" recommendations from the Central Policy Review Staff regarding the 'Haldane Principle' and customer-held budgets, in most Government Departments research spend is predominantly decided by the associated policy units. There is nothing wrong with this approach in principle but it is essential that it is complemented by independent audit by a CSA regarding absolute and relative priorities. DfT has had an exemplary system for this in that operational units plan research in conjunction with policy customers and independent external advisers but the individual bids are then aggregated and submitted to ministers via the CSA who is thereby well-placed to address any gaps or duplications and assess the extent to which individual research programmes should be joined together in the interests of developing an overall 'systems' understanding.

The involvement of CSAs in budgeting is also a sound way to create a dialogue between Government and the wider external research and supply community regarding needs, requirements and means to develop and introduce innovative technological systems and services. The CSA structure also provides a simple way to cascade Government policies and priorities to academia and industry to support competitive research procurement and where appropriate develop joint funding of projects.

2.3 *The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities*

It is difficult to address this topic generically. Previous CSAs at the DfT have undoubtedly matched the description ‘authoritative standing’ – for example the last two incumbents have been recognised as FRS and FEng which in many ways is the ultimate professional accolade. It is debatable whether personal standing within industrial or business communities is necessary or desirable. What is certainly essential is that a Department’s CSA is able to demonstrate to these communities that the organisation (s)he heads is aware of its role as a part of the UK economy; that a range of external bodies is regularly involved in the development of the organisation’s research strategies which are published; that the teams considering policy questions and framing research are exposed to an innovative and far-looking perspective; and that there is provision for a long term and strategic approach incorporating ‘Foresight’ or ‘Horizon’ studies as well as the capacity to address problems of the moment.

2.4 The contribution of CSAs in promoting public trust in the independence and authority of science advice to government.

To some extent this point has been addressed with the comments above in 2.1 regarding the organisational position of the CSA and the extent to which (s)he is involved in the development of policy and has direct access to ministers and top officials.

What is the range of expertise provided by the network of CSAs across government departments?

A number of government departments have recently been the subject of Science and Engineering Assurance (SEA) Reviews, the aims of which were to consider how departments use science and engineering in the formulation of departmental policy. Each SEA Review identified a list of recommendations and constructive criticisms that were intended to assist departmental CSAs fulfil their roles more effectively. Whilst the Review reports are public documents they are not readily accessible for viewing by non-Departmental personnel. The Committee’s attention is drawn to this process and the recommendations appertaining to the DfT’s CSA role that are contained within the DfT’s SEA Review.

3.0 Summary

3.1 Throughout their tenure the most recent CSAs at DfT have proved invaluable to the ITS industry as a ‘portal’ for ongoing dialogue with a Government. In conjunction with the incumbents’ personality, approachability and wealth of expertise and experience, this has represented an invaluable asset for discussions on the implementation of ITS. As many of those technological innovations have a long-term development process and their benefits are then accrued over a considerable period of time the perspective, planning and value needs to be considered in decades rather than years. The CSAs have also fulfilled the vital role of ensuring that the industry is aware of the technology and services needed for delivery of current policies, and that policy makers are aware of the new opportunities emerging for them from the availability of new technology. The UK’s ITS industry is a world-leader in many areas and the contribution that the CSA makes to this status cannot be underestimated.

October 2011

ITS UK, Finmeccanica UK, LGC Science and Technology, and Serco Science—Oral evidence (QQ 234-246)

ITS UK, Finmeccanica UK, LGC Science and Technology, and Serco Science—Oral evidence (QQ 234-246)

[Transcript to be found under Finmeccanica](#)

LGC—Written evidence

1. About LGC

LGC, previously known as the Laboratory of the Government Chemist, was privatised in 1996 and has since extended its scientific reputation through substantial internal investment, grown revenue by 800% and created many hundreds of new jobs for the UK. LGC is now one of the leading private science facilities in the country, employing over 1300 individuals undertaking chemical and biological analytical services for industry and governments on an international scale, with operations in Europe, Asia and America.

2. LGC's relationship with Chief Scientific Advisers

LGC supplies scientific, regulatory and programme management services to a number of government departments, and is the designated National Measurement Institute (NMI) for chemical and biological measurement R&D. Having originated in the civil service and because of our continued role in providing key scientific support services to government, we have strong links with the department agencies we work with. However, there is also a need for LGC to build and nurture strong communication links with senior government officials across all departments, to ensure that LGC's world leading skill base in chemical and biological metrology is widely recognised and easily accessible in response to shifting public needs. CSAs are valuable contact points for LGC with government departments and are an important point of call for discussions regarding strategic direction of LGC's national activities. Discussions are two-way, with CSAs advising LGC on government priorities, and LGC feeding back on the best ways to use the scientific resources available in our organisation.

3. Ability of CSAs to provide independent, evidence based advice to ministers and policy makers

This requires access to a broad network of technical specialists and stakeholders, including commercial suppliers of scientific services. We feel that LGC plays an important role both in representing the commercial supplier base for outsourced government scientific services, and in providing independent scientific advice in our areas of expertise in chemical and biological metrology. To date our communications with CSAs have predominantly been initiated by LGC with personal invitations to CSAs to visit LGC. It may also be valuable to formalise communication routes between CSAs and organisations like our own by establishing targeted industry liaison committees or forums. The independence of CSAs of party politics is valuable to ensure continuity of advice and policies between governments. Ultimately this helps deliver a smoother workflow for LGC (contracts often outlive governments), enabling our services to be relevant and provide best value to the UK.

4. Extent of CSA influence over research spend

There is currently some discrepancy between CSA roles and authorities across the various departments e.g. not all CSAs have a budget to control. It would be helpful if all CSA roles and authorities could be aligned and more strictly defined. Ideally all CSAs should have an allocated budget for research. Under John Beddington, the CSA network meets on regular occasions and this enables research to be better coordinated across Government, ensuring overlap is minimised and gaps identified. At an international level, communications could be improved by the appointment of a CSA for the European Commission. This would facilitate access to scientific expertise in other EU nations, and would be a valuable means to ensure

our national interests are reflected in EU R&D spending strategy. The existence of the Carnegie Group of G8 science advisers and ministers demonstrates the value that other countries feel CSAs have to offer on an international level.

5. CSA range of expertise and authoritative standing

As a network, the departmental CSAs cover a broad range of scientific disciplines. Thanks to the control infrastructure set out in the Chief Scientific Adviser's Guidelines, and good communication across the CSA network there is coverage of most relevant technical disciplines. In the areas of chemistry and biology, where LGC's key interests lie, individual CSAs have directly relevant backgrounds and are well respected scientists in their own right. It is very important that these individuals remain in touch with fast-moving technologies and related market offerings and a good way to do this is through active dialogue with research organisations like our own. As a commercial provider of contract R&D services and because of our NMI status, LGC bridges the development gap between the latest technology advances from academia and their successful economic implementation. We have extensive networks with other scientists in academia, industry and other research organisations in the UK and internationally and can provide CSAs with access to these networks.

16 September 2011

LGC Science and Technology, Finmeccanica UK, Intelligent Transport Systems UK, and Serco Science—Oral evidence (QQ 234-246)

LGC Science and Technology, Finmeccanica UK, Intelligent Transport Systems UK, and Serco Science—Oral evidence (QQ 234-246)

[Transcript to b found under Finmeccanica](#)

Lord May of Oxford—Written evidence

Why We Need Chief Scientific Advisers (CSAs), And Why I Think They Should Invariably Be External Appointments

1. How can the Government best make policy decisions on issues which involve advice about potentially constraining scientific facts or – more commonly – uncertainties (here I interpret “science” broadly to include social science, medicine, engineering along with the more narrowly defined physical and biological sciences)? Sometimes the problems are related to health and/or safety issues, other times posed by ethical values or beliefs, and quite frequently by combinations of the two.

2. Such questions have always arisen, but given the increasing pace of scientific advance, I think they arise with increasing frequency these days. This is arguably especially true in the biological sciences, where our understanding is reaching down to the molecular machinery of life itself. These advances seem likely to pose increasingly difficult questions about the kind of world we want.

3. I am not suggesting that most policy questions raise issues as profound as those just indicated. Very many questions (about, for example, the safety of various chemicals) involve science that is very well understood. Here scientific members of the Civil Service, well trained and knowledgeable, are entirely fit for purpose. In other words, much – may be most – of the science advice needed in policy matters is straightforward.

4. But there always will be, and indeed in recent years there seems to have been in increasing numbers, problems that excite wide public interest and concern and which lie at or beyond the frontiers of the thoroughly well-known. In this event, there is real need for the very best research scientists, who are working on the frontiers of the subject in question. I am very fond of the following analogy: In the dolomites and elsewhere there are *via ferrata* – ladders and cables – such that a person with no technical skills can attach their harness to the cables, and thus experience the excitement of dizzying climbing without any danger or advanced technical skills. For questions in science that are really well understood, any well trained scientist can, as it were, use the *via ferrata* to give the correct answer. But when you are at or beyond the frontier you need the people who can climb the clean rock.

5. Such scientists are in general unlikely to be found within the Civil Service as such, and even if they are they are likely to be put in a difficult position if the well-founded advice they give is in conflict with ministerial wishes.

6. I am not for a moment suggesting that these externally appointed people themselves will have mastery of any area they are asked about. But they need to be sufficiently senior members of the academic community that they know who are the very best people to ask. Or, quite often, know who to ask about who is the best person to ask.

7. It can often be that in an area where different policy options contend there is – to one degree or another – a fairly confident correct scientific answer. In this case, the answer needs to be given very clearly and there should be no backing away from it if it seems politically inconvenient. Of course, if political considerations eventually give rise to a decision that, despite recognizing the advice, the decision lies in a different direction then the CSA in question needs to recognize that is the kind of outcome that democracy implies. But it should not and must not be confused with the CSA actually giving a spurious twist to the science advice (although there will be many cases when the disagreement can be softened by recognition that in this particular question there is nothing that is absolutely certain).

8. All this, however, harks back to my original statement that I regard it as essential that all departmental CSAs be external appointments. I therefore, for example, regard it as unfortunate that the long-sustained call for the appointment of a CSA in the Treasury was fulfilled by an internal appointment of a Civil Servant. I have not the slightest doubt that there are many absolutely first rate economists in the Treasury. But for some of the issues we are currently dealing with I think we really need one of the very top people in the profession, moreover one who can give the best advice without compromising their future career.

9. Of course, in many of these issues one has not merely uncertainty about the science itself, but these uncertainties are made further complicated by being entwined with ethical or value-related concerns. We are all familiar with recent examples where scientific facts (albeit with very minor uncertainties) conflict with firmly held fixed beliefs: GM crops; stem cell research; aspects of nuclear power; MMR vaccination. In all these issues it is really important that the scientific advice comes from a source which is clearly seen to be independent and authoritative.

10. Ultimately – and this is a really important point – the aim of advice in these contexts is to set a stage upon which a democratic process of choice can be played out. The stage-setting activity aims to set the constraints upon the discourse, ruling out cloud-cuckoo land, and for this purpose science has a special voice. But the democratic drama of decision that is then played out upon that stage is one in which science has no special voice, and is just one among many citizens. Ideally the role of the CSA is to help set the stage, and then step back and accept the decision (but not to accept a modification of the scientific stage itself without protest).

11. These basic principles were indeed set out in 1996 by John Major's Government in a set of "Protocols for Science Advice in Policy Making". They suggested that in such contentious issues one solicited dissident opinions actively, excluded no one from the process simply by virtue of their having "interests" (although such interests must be clearly declared), and that uncertainties should be freely acknowledged and indeed emphasized. And, above all, that everything should be done openly (not in a closed room coming to a consensus and then declaring it). These protocols have since been reviewed several times (understandably growing lengthier each time), and also subsequently reaffirmed by the Phillips Inquiry into BSE and in Lord Jenkins' Select Committee Report).

12. I think the principles are clear enough, although their implementation often is not. I have given a more detailed discussion of some of the difficulties in the attached paper on “*Science as Organized Scepticism*”.

13. It is important, in my experience, that any Chief Scientific Advisor have *direct* access to the department’s Secretary of State (and, of course, also to the Permanent Secretary). In addition, it is ideally desirable that the CSA have a sensitive and skillful awareness of the cultural anthropology of the Civil Service. This is easier said than done

November 2011

Lord May of Oxford—Oral evidence (QQ 160-184)

Evidence Session No. 7.

Heard in Public.

Questions 160 - 184

TUESDAY 15 NOVEMBER 2011

11.40 am

Witness: Lord May of Oxford

Members present

Lord Krebs (Chairman)
Lord Broers
Lord Crickhowell
Lord Cunningham of Felling
Baroness Hilton of Eggardon
Baroness Neuberger
Lord Patel
Baroness Perry of Southwark
Lord Rees of Ludlow
Earl of Selborne
Lord Wade of Chorlton
Lord Willis of Knaresborough
Lord Winston

Examination of Witness

Lord May of Oxford, Former Government Chief Scientific Adviser.

Q160 The Chairman: I would like to welcome our witness for our second session this morning, Lord May of Oxford, former Government Chief Scientific Adviser. In a second I will invite you, Lord May, to introduce yourself for the record. You are very familiar with the proceedings, and if you wish to make any opening statement, please do. We have received

your helpful written statement, but if you wish to embroider it please feel free to do so; otherwise we will lead off with questions. Perhaps you could introduce yourself for the record.

Lord May of Oxford: First let me say it is amusing to be back on this side of the table, particularly in that my first occasion of being here was shortly after I came to Britain when the chairman and I were asked to testify to the first, not the most recent, of the series of inquiries on taxonomy that you chaired the Science and Technology Select Committee held. I have one important thing to add to the written thing that you have all seen, which is that owing to confusion between my PA and me, which was entirely my fault, the single most important paragraph is not there. I will give it to the Secretariat. It was meant to say that the most important thing in my experience is that any CSA, departmental or chief SA, has direct access to the appropriate Secretary of State or Prime Minister, and of course also to the Permanent Secretary. Both those should be direct access, qualified with a common-sense understanding that this will often be through the intermediary of having good relations with the Private Secretary. One of the things that I personally found very valuable was the relations that I cultivated with the Private Secretaries, many of whom are tomorrow's Permanent Secretaries, of various people, particularly David North, who was the Environment PS in the Blair Administration. I also think it is helpful if among all the objective criteria that one looks for in a Chief Scientist, you have somebody who has the sensitivities to the cultural anthropology of the Civil Service.

Q161 The Chairman: That is very helpful. Perhaps I could just invite you to expand a bit on the written statement. Two things struck me. One was your via ferrata metaphor of what I have heard you call the agent-grade scientists who can do the routine advice, but then there are the questions that both are involved in that are at the frontiers of knowledge and where you need people who, as you say, can climb the clean rock. That is one point. The other point is how you describe the science setting the stage for scientific advice on which, as you put it, the democratic process of choice can be played out. Sometimes, of course, the play does not reflect the purely scientific advice, and other factors come into play.

Bearing in mind both those points, could you tell us what you think the key elements are of an effective system for ensuring that policy is appropriately informed by the right kind of scientific advice. What are the key pieces of the jigsaw that we need to put together?

Lord May of Oxford: Obviously the really important question is who decides what is routine and what is not. There are many excellent scientific people in the Civil Service. On the other hand there is a real difference in that the aim of the Civil Service is to provide advice and guidance to people in government who make the decisions. There can be tensions that have led to misunderstandings. There was a particularly notable one in recent times when there was a misunderstanding on the part of both Professor Nutt and the relevant Secretary of State. The science is there to guide what you need to talk about, but the conclusion that you come to might be overridden by political considerations. There is always the temptation to soften the science or to try and be obliging. I can think of lots of examples. I can give you one example of a current one: the recession has given our targets for climate change a very helpful down step. Should we put that in the bank or should we just treat it as though we had achieved that? There is a tension there between those who are looking at the process and must look at it objectively, and those who are caught between both the process and what is convenient for ministers. One of the great advantages of all CSAs being outsiders, and I believe they should be, despite the fact that you may find

excellent people within the system, is that they do not have to worry, consciously or unconsciously, about the future. That was a slightly rambling answer.

Q162 The Chairman: Maybe before turning to others who may wish to come in we should pick up on that last point about external/internal appointments. You made this very strong statement in paragraph 8: “I regard it as essential that all departmental CSAs be external appointments. I therefore, for example, regard it as unfortunate the long-sustained call for the appointment of a CSA to the Treasury was filled by an internal appointment of a civil servant.” As you will be aware, we have just been taking evidence from a pair of individuals, one of whom is external, Sir Mark Welland, and the other internal, Dr James Richardson. I just wonder whether, looking at the Treasury, if you had been in charge of the appointment, what kind of person you would have liked to have seen there. Dr Richardson is an economist and one of the questions we asked him was, “The Treasury is infested with economists, so why do you need a Chief Scientific Adviser who is an economist? Would it not be better to have somebody who comes from another discipline of science?”, if economics is a discipline of science. What is your view? What kind of person do you think—

Lord May of Oxford: I will answer with a specificity. If I had been the person making this appointment, I think there would have been a credible chance of getting Joe Stiglitz, who is very Europhilic. He has a house in Britain, he is frequently here and he was a superb adviser to Clinton. He was also the chair of the best report that I have ever seen on the returns to the public of investment in basic science, and he will never colour his answer to oblige you. Maybe one could have got this, maybe one could not have got it, but I would have aimed for a really distinguished, really senior, external person whose expertise was primarily in the sort of financial problems we have at the moment.

Q163 Lord Cunningham of Felling: Lord May, can I ask you to think aloud about why, as the Committee has discovered, there are such variations of opinion in Whitehall about internal or external appointments, the nature of the appointments, the quality of the appointments, and the access that Chief Scientific Advisers are given, or not given, to the people who are running their departments?

Lord May of Oxford: The first thing I should say is that we have always had a person called a Chief Scientist, or a Government Chief Scientist. Solly Zuckerman was immensely influential, and he did not relinquish his office in the Cabinet Office until 1988; one of the first things that Robin Butler had to do was to tactfully get him out. But his successors have drifted down with, as in most other countries, an ad hoc appointment. It was the manifesto commitment created by Jeremy Bray’s ideas, that grey eminence in the Labour Party, and William Waldegrave persuading John Major to implement it when he won the election.⁷⁵ That was the first time we really had, at least to the Prime Minister, somebody who was external, appointed at the Permanent Secretary level and with a real office of support. I would not say that one wants to have that in every department, but it underlines the fact

⁷⁵ Lord May provided additional detail to this statement after the session: “But in the 1960s and 1970s, his successors drifted down, to be more like most other countries, as ad hoc appointments. The present situation, where the GCSA is a Permanent Secretary level appointment, arose from a labour party manifesto commitment in the Kinnock election. This excellent commitment to creating a more structured mechanism for science advise in Government came from Jeremy Bray, a grey eminence in the Labour Party. William Waldegrave persuaded John Major to implement it when he won the election”.

that prior to that time, even the GCSA was a small appointment with a handful of people, and how influential they were—I think Robin Nicholson was—and dependent on their relations with the Prime Minister, in that case Mrs Thatcher. The system has changed remarkably, and I think entirely for the better—although it is still not perfect—over the subsequent 15 years and over my five-year term. I think Dave King took eight years, or seven years, and now John Beddington has been there three years. My own feeling is that given that this is still learning by doing, there has not been a strong hand at the centre saying, “This is the model”. I am not casting aspersions on anybody else, but if I had been Chief Scientist and had seen how, for example, in Defra the very able scientist who was its CSA none the less was kept from interfering in things and hardly ever saw the Secretary of State, I would have tried to intervene and explain to people this is not how it should be. John Beddington, on the other hand, has been, too, active like that.

Q164 Lord Cunningham of Felling: Do you think there should be if not a universal model then some set of principles guiding us in every department?

Lord May of Oxford: I do.

Q165 Lord Willis of Knaresborough: I was really interested in, and I was pleased that you had, paragraph 13, because I find it very difficult to understand how you can have a policy challenge as the departmental Chief Scientific Adviser without having direct access to the Minister responsible for the portfolio, and where possible to the Secretary of State. Yet we have seen huge variations. On one occasion a DCSA did not even know who the Secretary of State was, or appeared not to do. Others, as we have seen with Mark Welland, clearly meet both the Secretary of State and the ministers on a very regular basis. I wonder whether you could elaborate on why you feel that that direct contact is important, and is it therefore important that the departmental Chief Scientific Adviser appointment is at Board level, which gives them that access by right?

Lord May of Oxford: It depends on the issues, as I say. Many of the issues will be so straightforward you did not even need an outsider, because there will be good, sound people in the department. But when you have an issue, particularly one that has some complicated and not altogether certain science, as well as political implications that result in different people with different views playing to different areas of the uncertainty and amplifying them or dampening them, you cannot have somebody who will always themselves be familiar with the issue, but it is really important to have somebody of such stature that they know who to ask or if necessary who to ask who to ask, so that they can be informed. They also have to have the standing in the system so that they can implement that knowledge and convey it directly, and that means having direct action.⁷⁶ First of all, there is the strong connotation that you need an outsider, because no matter how good the insider, if someone is being put in the position where their future career conflicts with what they are doing, that is a tough call. There will be many people with the character to make the right call, but why put them in it? It is also likely that in the really difficult situations that require things that are at or beyond the frontier of the really known, you really are not likely to find that in the Civil Service. The direct access is part of that.

⁷⁶ Lord May clarified after the session that he meant to say access.

Q166 Lord Willis of Knaresborough: At Board level?

Lord May of Oxford: I do not fully understand the arcana because the arcana themselves evolve. I guess I in some sense knew that it was Board level for John Cadogan and I, but I just simply thought of it as a Monday morning meeting when everybody talked. I think I would want it stronger than Board level. I am confessing my ignorance, but I did not realise that Board level meant that everybody on the Board had direct access to the Minister.

Q167 Lord Wade of Chorlton: Lord May, do you think the role of a Scientific Adviser is to inform people of the sciences that they require to know—in other words, to influence ministers and decision-makers on the basis of known science which they need to be aware of, in which case they would probably need a group of people around them: a committee set up of various scientists to learn it that way—or do you think it is more that as scientists they see things in a certain way and bring that order of mind to the decision-making process and the reasons behind it? Perhaps this is rather like a businessman who is able to come into politics not because he is running it as a business, because you never run politics as a business, but because his experience as a businessman leads him to other avenues and other questions which politicians or bureaucrats would never ask.

Lord May of Oxford: That is a very interesting question. I would not draw the distinction quite so sharply, and I would answer by saying that I think the primary purpose is to bring the scientific knowledge, the scientific understanding and the ability to distinguish the things about which we are not certain and where we are certain. The secondary aspect of the question, “Do scientists have a different kind of skill in making decisions?”, is interesting. Frankly, I would say no, if I spoke of my wide acquaintance and the issues in their ordinary lives. I would not think they were very different from other people.

Q168 Lord Rees of Ludlow: You mentioned access to ministers being important. You also mentioned that the Private Secretaries were crucial in giving that access. What about the role of Special Advisers? Are they a benign influence or are they people who perhaps have too much influence in some ministries?

Lord May of Oxford: That is also a very amusing question. It depends on the Special Advisers. When I was Chief Scientist, at one point there were two Special Advisers.⁷⁷ One of them was an economist and one of them was basically a political adviser person. The economist had also been a junior international soccer player, and he had negotiated time off for the World Cup. He was very useful and very helpful. The other Special Adviser was very political and in fact had confided on one occasion to John Cadogan that she did not like scientists in general, particularly when they were elderly males. She was a real pain in the neck. I do not think there is a generalisation to be made.

Q169 Lord Rees of Ludlow: What about in other departments? For instance I think in the last Government DECC had some rather effective Special Advisers?

Lord May of Oxford: Again, some of these people are really very, very useful and some of them are not. On the whole I would tend to share the view of the civil servants in “Yes,

⁷⁷ In DTI.

Minister” that I would rather have people being advised about things by the Civil Service than by people they have brought in, with important exceptions.

Q170 Earl Selborne: Lord May, in your written evidence to us you very helpfully reminded us of the publication of 1996, which you wrote, of the protocols for science advice and policy making. I think we all recognise that they set the agenda, which is still becoming ever more relevant to science in society and has widened the debate. The principles that you enunciated were inclusiveness, openness, transparency, accountability. However, do you feel that Chief Scientific Advisers have the ability to engage in just that, or did you have occasion, for example when you were Government Chief Scientific Adviser, to defend departmental Chief Scientific Advisers who were under pressure from the Permanent Secretary or the Secretary of State for voicing publicly their independent challenge? In other words, no transparency and no openness. Was that the case in your time and do you think it continues?

Lord May of Oxford: I do not know that it continues. I do not remember a case in my time, but I am aware of cases subsequent to that in which people—not necessarily Chief Scientific Advisers but scientists who were engaged in various issues—had to go over the head of the Secretary of State to the Prime Minister to ask the Prime Minister to remind the Secretary of State of the guidelines. I am aware of one specific example of that.

Q171 Lord Broers: Can I ask a general question? I do not really know how to phrase it, and you will not be surprised at it coming from me perhaps. In the 20 years I worked in the States there was a big difference between research and development. In this country those two are elided and the first has disappeared from industry. Do you think that Science Advisers have a role in making sure that this country has sensible development strategies?

Lord May of Oxford: Yes, and one of the very first things I did was commission a study, which I do not think was as good as the one Joe Stiglitz has done, seeking to evaluate the GDP yield that emerged from science in its applications. Many of the foresight programmes were directed in that way. At the same time, I am more familiar with the science itself than the development, but I would agree with you that we should be doing a better job of it. I would also agree with you that it should be part of the remit. I have said in the notes that I construe science very broadly, and I should have added to social science and other things industrial and other development. That should be embraced within what I call science, and I would agree with you that we do not do it as well as we might.

If I can just add one more thing, the fact that we had someone like John Cadogan running the research councils was helpful, because the person running the research councils had run BP Research.

Q172 Lord Rees of Ludlow: I want to broaden this to the international context, because you have lots of experience of dealing with how science advice is done in the United States, European countries, Australia of course, and elsewhere. I wonder whether you could ruminate a bit about what we could learn—positive and negative—from the way things are done elsewhere.

Lord May of Oxford: The only country that I am aware of that has something as professional and very similar to us, and had it before we did, is Switzerland, which, not coincidentally I think, appears top in measures of scientific productivity and ownership of patents. It is the first country that I would think of, and all this myth about cuckoo clocks is so far from the truth.

The States, even now, has an excellent and appropriate Chief Scientist but with a tiny staff, and the thing to learn from that is that is not how to do it. Other countries I am not so familiar with, but apart from Switzerland I am not aware of any country that has made as determined and formal an arrangement as we have, at least for the Chief Scientific Adviser to the Government. In Australia, the most recent one just resigned because she could never see the Prime Minister, and it was anyhow just a one day a week job, and it will be interesting to see the person who has taken it over. The only Chief Scientist in Australia who worked well was the very first one. He was appointed as that and happened to have gone to school with the Prime Minister. It was Ralph Slatyer, a very distinguished scientist who had gone to school with Bob Hawke. Out of that—and you would like this—came the co-operative research centres that linked universities exclusively to industry.

Q173 Baroness Perry of Southwark: Lord May, obviously one of the things we are very interested in in this inquiry is how to maximise the effectiveness of the whole system of CSAs, and how government policy in all the relevant areas really is informed by good science and technological advice. If you were given the remit by Treasury, let us say, or more likely by the Cabinet Office, of advising on how to make the system more effective, what aspects of the job would you suggest should be improved?

Lord May of Oxford: I very much hope that your report will take a step in this direction and emphasise the desirability of making these appointments at Board level in such a way that they have direct access without going through intermediaries to speak to the Secretary of State. There are subsidiary bits to that, and in some sense we ought to have a handbook of hints from people who have done it. The advice to cultivate the Private Secretaries is not something that you are going to embody easily in a recommendation; yet I found that extraordinarily effective, and I know other people who have.

The second thing is that there has to be a very deliberate and serious search to find a really good and appropriate person, because it is going to depend on the people, and you are looking for a curious combination of attributes. You are looking for somebody who is fairly intellectually agile, who is reasonably widely connected and is going to be tough enough not to back down on the science but sensible enough to realise that not all decisions will be governed by the science. It is asking a lot to find people like that, but that comes down to how you appoint the committees that appoint people. The Chief Scientist, I think, is still appointed by the Cabinet Secretary, with a couple of civil servants and a couple of distinguished people from outside, and I think that is the model of what all the appointment committees ought to look like. They ought to be the Permanent Secretary in the relevant department, with some senior officials who understand things, and a couple of outside people—preferably one who is more academic and one who is more applied industrial—who are wise people. You can make the job. I think it is a great, fun job for the right kind of person.

Q174 The Chairman: Would you apply that appointment model to departmental CSAs as well?

Lord May of Oxford: Yes, that is what I meant: to all the appointments. No matter how you say what is going to go on, it is the people you get who are ultimately going to matter.

Q175 Baroness Neuberger: In a sense you have answered half of this, but you have been watching what has been happening with the CSAs since you left. What changes that you have not already mentioned do you observe, and are you in favour of them?

Lord May of Oxford: No one is to be blamed. Some things have gone downhill and quite a few things have gone uphill. I never understood one of the things that went downhill, but I was bemused a month or two into the office to get a list that the people who the Cabinet sub-committee on the Budget met. It was all the Secretaries of State and the Chief Scientific Adviser, which I found quite astonishing and very pleasing. I wrote a little paper for them—it was all full of publicly available information—that came back stamped “Top Secret”. I said to my Private Secretary, “Top secret means lives are at risk. This is nonsense” and he said, “It is the Budget. Lives are at risk”. That privilege has been lost, as I understand it, and that was a really important privilege, because that gave one the chance to make the case that one was not asking for money to play with but for things that were core to the mission, and it prompted me to do these various bibliometric analyses to answer the question and allocate the money more efficiently and show that no country got more out of it in relation to what it spent. There is no model to do it more efficiently. That is an important loss.⁷⁸

Other things have got better. I would say that the infectious spread of creating Chief Scientists in all departments has gone on apace under the current Chief Scientist, John Beddington. I regularly met all the CSAs—the designated people—the majority of whom were civil servants, and some of them were very good, very nice. John has his own version of the Wednesday morning Permanent Secretary’s meeting where he weekly gets together with all the CSAs and they share their problems and so on. I think that is an extraordinarily effective thing, and I think John is very likely the best CSA we have had.

Also, it ultimately depends simply on cultivating things and being aware of things before they happen. One of the things that John Beddington confronted before he took over was an attempt by people in the relevant department to seize the position of the Director General of the Research Councils to make it another career opportunity for a civil servant. That was well intentioned and you can see why people would do it. It is natural and it is human, but it is stupid. You need people who have the toughness to fight and to recognise when something is not worth fighting for and when you cannot afford not to fight for something.

Q176 Baroness Neuberger: As you watched it in the last few years, has the toughness changed? Has it become better or less good?

Lord May of Oxford: The one thing that is certainly true is that we got an excellent outsider to be the Director General of the Research Councils, and the score there was one to John, nil to the Permanent Secretary.

Baroness Neuberger: Yes.

⁷⁸ Lord May clarified after the session that this statement referred to the Budget Committee.

Q177 Lord Wade of Chorlton: Following on from your last answer, what in your view is the attitude of senior civil servants to the Scientific Advisers?

Lord May of Oxford: My experience was a very happy one. In my time the GCSAs were so few they were just called CSAs; the MoD called them Chief Scientists. At the Permanent Secretaries' meetings on Wednesday morning, I found them a really bright, lively bunch of people who were always interested in sideways opinions. Then there can be specific areas of awkwardness.

Q178 Lord Wade of Chorlton: Did they welcome the views of the scientific community? Do you think they were open to these views, do you think they listened to them because they feel they should do, or do you think they really want to know?

Lord May of Oxford: I think it is like any aggregation of humans. On most occasions most people welcomed them, but there were people who just found them irritating or who had particular ideas of how they wanted to do things. I can think of one example where, having appointed a good person to be Chief Scientific Adviser in a particular department, the civil servant who was assigned to run his office was determined to keep him away from the Secretary of State and make sure that he was cocooned. I never saw that as institutional; I just saw that as a particular person who was at the unfortunate end of the inevitable spectrum of behaviours. On the whole, I would say that as long as you pick good people they will be welcomed. If you pick somebody who is not so good and supplies you with inappropriate things, they will not be welcomed.

Q179 Lord Willis of Knaresborough: I was interested in the research councils. Indeed, this Committee played a part in highlighting the fact that we had John Beddington with us but he had not even been asked about the structural change. We were able to at least alert and give him some support on that.

My question to you is that we have had two versions. This really comes from Earl Selborne's question about evidence and policy making. In the summary of what their role is, the report mentioned that the departmental Chief Scientific Advisers should be providing evidence to support policy. What we have heard, particularly from the civil servants who have this role, is that they see that one of their key jobs is to find the evidence to support the policy, rather than the evidence to inform the policy. If you were making a recommendation in this report, would you feel that one should be encouraged and the other should be discouraged?

Lord May of Oxford: Absolutely. I think I have said in the paper that you need somebody who realises that there will be times when the politics overrides what the science says. In that case, one must not succumb to the temptation to colour the science to be obliging, but at the same time one must recognise that ultimately the job of the Chief Scientist is to inform what we know and what we do not know, and what the constraining facts are. But if politics motivates a decision that goes against the optimum way of doing things, as long as it is clear that this decision has been made on political grounds, do it. There are issues surrounding the question of whether the best way to deal with bovine TB is to kill badgers. The science is not certain, but it is fairly certain, and I think there are instances where there are temptations towards policy-based science.

Q180 The Chairman: I come back to the question of the role of the CSA and the Treasury. As we have already mentioned, we took evidence from Dr Richardson earlier on. He explained to us that he has a number of other jobs. He is the Chief Microeconomist and maybe something else as well, and this is a kind of add-on. He was asked whether this was a tenable position. In your experience do you think that the role of a departmental CSA stacks up to a full-time or very significant part-time job, or can it be tacked on in the last hour of the day?

Lord May of Oxford: I think it would be a very small and uninteresting department where it can be just tacked on.

Q181 Lord Willis of Knaresborough: Not the Treasury?

Lord May of Oxford: Not the Treasury, and not now. I am sure this individual, whom I am not familiar with, is very good and possibly outstandingly good. But with the magnitude of the crisis, I would like to see us looking for somebody with an international reputation in an area. Not all of you will know this, but I have become accidentally involved with the people in the Bank of England and the more I learn about this the more I realise that so much economics is a mixture of something that has elements of evidence-based science, but for a lot of it Socrates would be more comfortable with the kind of discussions that go on.

Q182 Baroness Neuberger: Just because I think we want this for the record, you answered a question about the changes since you left the post of GCSA and the issue of how some of the departmental Scientific Advisers have been at a very senior level and how we are now seeing a couple of those posts being downgraded. Could you just give us your view on that?

Lord May of Oxford: I do not see how such people can function. First of all, if you downgrade them you are less likely to get really good people, and if you downgrade them it is going to be more awkward. If they are to be appointed at Board level, they ought to be people of at least the quality of the excellent Civil Service people for whom that is a high grade in a very competitive structure. If you are going to appoint people lower down, you might just as well not bother to do it.

Baroness Neuberger: Thank you very much indeed.

Q183 Lord Wade of Chorlton: Could I ask one final question? You mentioned economists. How as a scientist would you measure the difference between a good one and a bad one?

Lord May of Oxford: I will give you an evasive answer. That is just a matter of judgment, and that is why I went into perhaps rather tedious detail on how I would put the committee together.

Q184 Lord Wade of Chorlton: Would the judgment come before he makes the decision or afterwards?

Lord May of Oxford: If you have a good committee that is a mixture of people who understand what is required from the position that the job is going to have, and people who are knowledgeable about who this person is and where he or she stands in the community, you are likely to get a good person.

The process of appointing the person is really important as well, and of course the standing that the person will have is going to be connected to the kind of person that you are going to attract, and if you do not make that high enough, it is not worth bothering.

The Chairman: I would like to thank you very much indeed for your evidence. We have had a very informative session, and as you well know from your experience in this process, you will receive a draft transcript to comment on in the next week or so. Thank you very much. It has been extremely helpful to us.

Lord May of Oxford: Thank you. I look forward to getting the transcript and as usual reading it and being horrified.

Ministry of Defence—Written evidence

Grade	Permanent Under Secretary (PUS) level
Tenure	Professor Sir Mark Welland was appointed in April 2008 for a period of three years. This period was subsequently extended and now ends on 31 December 2011.
Full time/part time (quantified)	Part-time (full-time equivalent of 0.8)
Qualifications and Background	<p>BSc in Physics from the University of Leeds in 1979; a PhD in Physics from the University of Bristol in 1984 and an MA from the University of Cambridge in 1988.</p> <p>After a position as World Trade Visiting Scientist at IBM Research Division in USA from 1985 to 1986 Sir Mark was appointed to a Lectureship in Electrical Engineering at the University of Cambridge where he is currently Professor of Nanotechnology researching into a broad range of both fundamental and applied problems. These include protein mis-folding problems related to human disease, nanostructured materials for solar cells, biologically inspired functional nanomaterials, nanoelectronics and developing tools for fabrication and characterisation of nanostructures.</p> <p>Sir Mark established the Nanoscience Centre at the University of Cambridge in 2003 and was made Director of the Interdisciplinary Research Collaboration (IRC) in Nanotechnology funded through the Government’s Research Councils in 2002. Sir Mark has been involved in a number of National and International reports on nanotechnology including the highly cited Royal Society and Royal Academy of Engineering report: “Nanoscience and nanotechnologies: opportunities and uncertainties,” published in 1994. He has substantive International connections in the USA, Japan, Europe, India and the Middle East; he has established and now co-directs the Science and Technology Research Centre at the American University in Cairo, Egypt and is International principal investigator of the recently established £100 million World Premier Research Institute in nanomaterials based in Tsukuba, Japan. He has given a number of prestigious lectures that include the Turing Lecture, Institution of Electrical Engineers and British Computing Society, 2002; the Sterling Lecturer, Annual Appointment made by the Sterling group of Universities, 2003; The Annual Materials Research Society of India Lecture , Mumbai, India, 2006 and the Max Planck Society Lecture 2007, Max Planck Institute, Stuttgart, Germany, 2007.</p> <p>Sir Mark was elected a Fellow of the Royal Society, a Fellow of the Royal Academy of Engineering, and a Fellow of the Institute of Physics in 2002. He is also a Member of Council of</p>

	<p>the Royal United Services Institute and Member of the Danish Academy of Sciences. In 2008 Sir Mark was elected to the National Academy of Sciences, India as a Foreign Fellow in recognition of his contributions to science and engineering both generally and specifically in relation to his work in India. In 2011, Sir Mark was awarded the US Secretary of Defense's Award for Exceptional Public Service and the National Nuclear Security Administration (NNSA) Gold Medal for Distinguished Service.</p>
Reporting Line	Reports to the departmental PUS.
Relationship with policy makers and involvement with policy decisions	<p>The Chief Scientific Adviser (CSA) occupies one of the most senior and influential positions within the Ministry of Defence (MOD) with the post holder being directly accountable to ministers and to the departmental PUS. CSA leads a Science and Technology (S&T) community across defence that supports the front line in countering Improvised Explosive Devices (IEDs) and contributes to our intelligence effort in respect of this and other current and future technological challenges. This crucial role is most important for providing high quality scientific advice to ministers and other senior officials. The CSA also supports decisions on current military operations, future equipment acquisitions and the nuclear deterrent and assisting the delivery of future battle-winning technologies.</p> <p>Considerable influence is exercised through membership of the Defence Council, Investment Approvals Board, Defence Research and Development Board and as the UK Principal for the 1958 UK-US Mutual Defence Agreement.</p>
Access to ministers – frequency of meetings	The CSA has regular access to and meetings with MOD and other ministers.
Relationship with other CSAs, the GCSA and Departmental SACs	Through membership of the Chief Scientific Adviser's Committee (CSAC) that is the principal committee at official level dealing with issues relating to science, engineering and technology (SET). Its membership consists of the Government Chief Scientific Adviser, Professor Sir John Beddington, acting as the Chair, and the Chief Scientific Advisers or their equivalent from all government departments and devolved administrations.
Whether on the Departmental Management Board	No.

September 2011

Ministry of Defence and Her Majesty's Treasury— Oral Evidence

Ministry of Defence and Her Majesty's Treasury— Oral Evidence

[Transcript to be found under HM Treasury](#)

Ministry of Defence Scientific Advisory Council, Department of Energy and Climate Change Science Advisory Group, and Home Office Science Advisory Committee (QQ247-277)

Ministry of Defence Scientific Advisory Council, Department of Energy and Climate Change Science Advisory Group, and Home Office Science Advisory Committee (QQ247-277)

[Transcript to be found under Department of Energy and Climate Change Science Advisory Group](#)

Ministry of Justice—Written evidence

Name of department: Ministry of Justice (MoJ)

Name of CSA: Rebecca Endean

Employment arrangements

Grade: Senior Civil Service PB2

Tenure: Permanent

Full time/part time: Full time (FTE 1). Rebecca carries out the Chief Scientific Adviser role alongside her role as the Director of Analytical Services for MoJ.

Qualifications and background: BSc (Hons) in Economics and Economic History from the London School of Economics and an MA in Economics from Warwick University. Prior to joining the Ministry of Justice, Rebecca had considerable analytical and policy expertise as a policy advisor and analyst.

Relationships within the department

The CSA's reporting line: Rebecca reports to Ann Beasley, Director General of Finance and Corporate Group, who reports to Suma Chakrabarti, Permanent Secretary.

Whether he or she is on the departmental Management Board: Rebecca is not on the departmental Management Board, as membership of that Board consists of ministers, Permanent Secretary, external members and a small number of Directors General. However, she is on a number of key sub-groups of the Board including the Transforming Justice (leading on the MOJ change programme) and Financial Management committees.

How his or her relationship with policy makers and involvement with policy decisions can be characterised: Rebecca works extensively with policy colleagues and ministers to ensure robust, joined-up evidence is at the core of decisions within MoJ and across government, and that it underpins policy formulation, delivery and evaluation. She also collaborates with other departmental CSAs, Research Councils and similar bodies to address and advise on issues which cut across government. Rebecca is involved in an extensive programme of real-world visits to maintain good links with the external analytical community, academics and research institutes. This includes speaking engagements, through which she promotes the need for independent, high quality evidence that is targeted at the needs of policy makers.

Whether the CSA is involved in the development of departmental research strategies and decisions on research spend and, if so, to what extent: Rebecca oversees the development of the Departmental Analytical Programme and the Evidence & Analysis Strategy. She clears submissions to ministers seeking their approval for analytical spend. Rebecca also influences the need for analytical work and appropriate financial resourcing by chairing the Analytical Services Board.

Frequency of meetings with ministers (and, specifically, how many meetings has the CSA had with the relevant minister in the period from beginning of September 2010 until end of August 2011):

We have reviewed the information held in the Chief Scientific Adviser's diary about formal meetings that occurred, and used this as a basis for this answer. Rebecca has held 8 formal meetings with the Secretary of State during the period. It is important to note that we do not keep an accurate record of meetings arranged or cancelled verbally or at short notice. In addition, the departmental Chief Scientific Adviser is also the Director of Analytical Services. Therefore issues relating to both remits could have been discussed at the meetings.

How access to ministers is controlled: Access to ministers is controlled via appointments agreed with their Private Office.

The CSA's relationship with the departmental scientific advisory committee: MoJ does not have a departmental Scientific Advisory Committee.

Relationships across the department

Rebecca is a member of the wider community of CSAs across Government that are supported by GO-Science. Go-Science has provided information separately on the relationships across the departments.

September 2011

Lord O'Donnell, (then) Cabinet Secretary and Head of the Civil Service—Oral evidence (QQ 185 – 209)

Evidence Session No. 8.

Heard in Public.

Questions 185 - 209

WEDNESDAY 23 NOVEMBER 2011

Members present

Lord Krebs (Chairman)
Lord Broers
Baroness Hilton of Eggardon
Baroness Neuberger
Baroness Perry of Southwark
Lord Rees of Ludlow
Lord Wade of Chorlton
Lord Willis of Knaresborough
Lord Winston

Examination of Witness

Lord O'Donnell, (then) Cabinet Secretary and Head of the Civil Service⁷⁹

Q185 The Chairman: I would like to welcome our witness for the first half of the session, Sir Gus O'Donnell, and in a moment I will invite Sir Gus to introduce himself for the record. If you wish to make an opening statement, please feel free to do so, otherwise we will go straight into the questioning. I should remind all of us that the session is being televised, so be careful about what you say as it is there on the public record.

For those who are observing, there should be a sheet that describes the purpose of the inquiry and the declared conflicts of interest of the Members of the Committee.

⁷⁹ The Committee address Lord O'Donnell as Sir Gus in this evidence session as it took place before Lord O'Donnell's elevation to the House of Lords, when he was still Cabinet Secretary and Head of the Civil Service.

Lord O'Donnell, (then) Cabinet Secretary and Head of the Civil Service—Oral evidence (QQ 185 – 209)

Lord O'Donnell: Thank you, Mr Chairman. I am Gus O'Donnell, the Cabinet Secretary and the Head of the Civil Service. I would like to make a short opening statement as this will be my last appearance, I would think, in front of this Committee.

So, first, I would like to put on record my thanks and appreciation for the work you have done on this Committee to support evidence-based policy. I think that is a passion we share and I am very pleased with the work you have done. Having read the transcripts of the evidence you have had so far, I find an enormous amount with which I agree from your earlier witnesses. I am very fortunate to have worked with some superb Chief Scientific Advisers; Dave King, John Beddington and Bob May, who has helped me in various respects, not least in his work previously on the Science Honours Committee and, indeed, Mr Chairman, your own work in that respect. In addition, I would say that I have been very fortunate in the Chief Scientific Advisers I have worked with in a number of departments. Ones I would pick out would be Ministry of Defence and Defra—particularly Ministry of Defence on some nuclear and technical matters, and with Defra on climate change issues.

As I said, we probably share a passion for evidence-based policy making. Eleven years ago, I chaired a steering group which produced a report entitled *Adding It Up*, which called for better analysis modelling and data. Since then, I have seen some very significant advances, like the establishment of an independent statistics authority, ably chaired by Michael Scholar and innovations like the Office for Budget Responsibility. More recently, I have chaired the Behavioural Insights Group, which I know came up in some of your discussions and we might touch on that. I have seen the influence of Chief Scientific Advisers spread across the whole of Government, from where it used to be very concentrated in one place and now broader. I put that down to the work of John Beddington, I was very pleased with the comments that Bob May made about him.

I would like to make one more detailed point that I think the Committee might find of mutual interest. I refer to the issue of how to attract the best scientists and researchers to the UK from around the world. High-calibre scientists have a number of routes into the UK. I understand that these routes are currently under-subscribed, which may be a question of just not enough publicity. So if it would help the Committee, I could send a more detailed note about that point—

The Chairman: That would be very helpful.

Lord O'Donnell: —which I think would help us in the issue. Because it is not just about established scientists, it is also about those with potential. We have decided that the approach of not putting in guidance of how to do these things but saying, “You have to be endorsed by some eminent bodies”, allows you to tell us who to allow into the country. I think that is a very favourable thing. Thank you, Mr Chairman.

Q186 The Chairman: Thank you very much, Sir Gus. Perhaps I could kick off with a very general question, perhaps you could give us your thoughts on what you think the role of a departmental Chief Scientific Adviser is and how you think that role could be best achieved.

Lord O'Donnell: Certainly. I think the Chief Scientific Advisers in general need to be champions of evidence-based policy. I share with Bob May his view that you need to take a very broad definition of science there. So it is not just about engineers, but it does vary by departments. For example, in the Ministry of Defence it is absolutely crucial to have someone who is internationally credible in certain areas and is able to be an interlocutor with our American partners on some of the nuclear issues. That is crucial, whereas in other

Lord O'Donnell, (then) Cabinet Secretary and Head of the Civil Service—Oral evidence (QQ 185 – 209)

departments it might well be that one of the roles of the Chief Scientific Adviser is to work with the different disciplines and to get them to work more closely together. One of the lessons I have learnt is that nearly all of the different sciences, and I would include social science here, have an enormous amount to learn from other disciplines. In particular—I can say this as a former economics lecturer—I think the economists really need to learn from psychologists. That is my number one point. I recently had a very useful meeting with Danny Kahneman to go over that and he has given a number of talks around government now, which I am pleased about—well, I could come back to that.

So, on chief scientists, I would put the emphasis on evidence-base, making sure that the work that is going on is credible, and good databases. I think that data are basically a very neglected subject. I do not think we do enough in terms of thinking about the data needs, and in particular in those areas of policy where it takes a long time for things to happen. A good example would be social mobility. Social mobility is not going to change overnight, this is decades long. We must make sure that we are putting in place the provision of data which will allow us to test whether policies are making a difference. Those are the key things, I would say.

Q187 The Chairman: Before I hand over to Lord Willis, there is just one point I would like to pick up on, which is about the international credibility, particularly you mentioned in MoD, of the Chief Scientific Adviser. Indeed, you may know that when we took evidence from Sir Mark Welland he said something very similar, particularly in relationships with the United States. Therefore, there is some concern that the post has been downgraded from four-star to three-star in the recruitment of Sir Mark's successor. Is that a concern that you have?

Lord O'Donnell: No, it is not. I read through the evidence and I might say you are very gradist on this Committee. My own personal experience is somewhat different. Let me explain. I remember that when I came back into the Treasury I was asked to work on macroeconomic policy and international finance. Previously there had been two Second Permanent Secretaries; one had done macroeconomic policy, one had done international finance. Alan Budden and Nigel Wicks were both very distinguished individuals. Those two posts were amalgamated into one at the DG level. This was at a time when it was very important to be influential because we were thinking about doing the five tests for the euro, which I am very pleased to say came out with what I think was a very good piece of evidence-based analysis, which came up with the right answer.

Those two Second Permanent Secretaries posts were done by one DG and I do not think that reduced the influence. In fact, since I was the DG in question, I felt that it worked all right. So I do not think that you should get over-obsessed about grades. I think that what is really important is international credibility of the person in that place. The MoD has changed, as Mark pointed out to you, its structures at the top. Its Board is much smaller and we changed Boards. Indeed, we need to come back to Boards because I have some issues there, and the chiefs of staff are not on that Board. The importance is international credibility. I do not think you should worry about what grade you give this person.

Q188 Baroness Neuberger: Sir Gus, could I just press that a little? Although I completely take the point that people gain influence by virtue of what they do and often how well known they are and all of that, I think the Civil Service—and I am the daughter of one

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civil servant and my husband was a civil servant until he became an economist—is fairly grade obsessed and has historically been fairly grade obsessed. I therefore wonder what messages are being sent out through departments by moving the grade down from four-star to three-star. I think there is something there that you have not quite picked up.

Lord O'Donnell: Just to respond, my illustrious predecessor, Lord Turnbull, when he was Permanent Secretary at the Treasury, carried out a cull of Permanent Secretaries in the Treasury. We used to have an enormous number and part of the story I explained to you was reducing that number. I do not think that changed the influence of the Treasury. I do not think that changed the influence of the individuals. Personally, I think you are right about the culture and it is a culture that I would like to change and have tried very hard to change. If you look around the system, you will see some eminent individuals in the Civil Service. I look at someone like Louise Casey who has made an enormous impact. I do not even know what grade Louise is half the time, and I do not think she cares. It is not about grades. The more we can do move it away from grades towards international credibility—I think for the MoD case it is really about international credibility in specific areas.

Q189 Lord Willis of Knaresborough: First, thank you, Sir Gus, for the very kind comments you made about the Committee. In particular, your very strong statement about evidence-based policy is something which the Committee supports, and certainly the Committee in the other House supports. I take your point about not being gradist. I have never been called gradist before but that is quite an exciting title. But I do take the point about influence—influence is important. If you look at the Boards of each of the major departments, you will see that 13 that have a Chief Scientific Adviser. Only in two of those does the Chief Scientific Adviser operate at Board level. Interestingly, both Bob Watson and Sally Davies in Health and in Defra are hugely influential, not only in government but in international circles—exactly the things you say. Yet in other departments, we took evidence that the departmental Chief Scientific Adviser had not even met the Secretary of State or ministers but that everything was done at a much lower level. So I would ask you quite directly: do you think that the DCSA should operate at Board level?

Lord O'Donnell: No, and let me explain why. This is to do with the nature of Boards, which has changed radically. They are now chaired by Secretaries of State and they are required not to do policy. So I think you want them on there, we talked about evidence-based policy, yes, I see your looks of—well, let me read out to you from the Cabinet Office, “Policy will be decided by ministers alone with advice from officials. Boards will give advice and support on the operational implications and effectiveness of policy proposals”. So they do not do policy. It is absolutely crucial to get this across. Within departments, you may well have other areas where there are key policy committees or whatever, but it is not Boards. So you should not get obsessed with Boards. These are different things. These are areas where the Government have decided to bring in lead non-executive directors. They are very high-level businessmen who bring in their commercial skills, and it is a lot about operational delivery, not about policy. ministers are very clear that ministers are accountable for policy, and I support that. Policy decisions are theirs alone. So Boards do not do that. That is why you will find that the route for someone to be influential is not being on the Board.

Q190 Lord Willis of Knaresborough: Going back, Sir Gus, to your very strong point about evidence-based policy, if you do not have access at least to ministers and to

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Secretaries of State, how on earth do you challenge policy which is not evidence-based and which has the potential to go disastrously wrong as clearly some policy has?

Lord O'Donnell: I think the importance of that is getting involved in understanding, quite rightly, how you are influential; how you work within the Civil Service machine to influence policy. I thought the Bob May quote had it spot on: that you need Chief Scientific Advisers who are “sensitive to the cultural anthropology of the civil service”. I thought that was a wonderful chief-scientist-style quote. I would say, “Speak Mandarin, but know how to be influential”. On being influential, it might well be that your best route in to influencing a policy is talking to the policy lead. This is where I think there is a bit of a difference between this Committee and where I would come from. I think it is partly my background having joined as a specialist economist to the Treasury. You put an enormous amount of emphasis on the individual, the chief scientist; I put an enormous amount of emphasis on evidence-based policy. So we economists infiltrated—we invaded, we taught all of the policy people in the Treasury economics. So we basically got through the whole system. We did not rely on a great man, a great chief economist, much as I love Bob May's idea of bring Joe Stiglitz in as a Chief Scientific Adviser. Fantastic economist who taught me when I was at Nuffield. So I think there is a bit of a difference there. I think you see this person as being the great man who stands up and says great things. I see the real importance as being evidence-based policy. Great chief scientists will make science and evidence-based policy work across the whole of the department. It does not require them to be in a room at a specific time with a given Secretary of State because the evidence base coming up is based on good policy.

Now, you are right, it is not perfect by any means, but it is also that important you have a good chief scientist that they are the sort of person that Secretaries of State would want to have in the room. I think it is up to them to be influential, be credible and be the kind of person whose advice is sought by ministers.

Q191 Lord Willis of Knaresborough: But surely you would not see a departmental Chief Scientific Adviser as being someone who simply then provides evidence once a policy has been decided.

Lord O'Donnell: No, I am saying that it is about infiltrating the whole system—get in early. Do not wait for a policy to come along and say, “I want to have my independent say on this policy”. Frankly, it is way too late. That is a bit like the communications people saying, “We have done a policy, now we are going to think about a comms strategy”—totally wrong.

Q192 Lord Willis of Knaresborough: So how then can a departmental Chief Scientific Adviser, who is a grade three civil servant in the Treasury, who has two incredibly busy roles, pick up this additional responsibility without any extra time, without any extra resource and do that effectively? Is that not just simply ticking a box in the Treasury so that, in fact, that conforms to a pattern?

Lord O'Donnell: He has the great advantage—we are now talking about James Richardson—of being completely part of the system.

Lord Willis of Knaresborough: He is a civil servant.

Lord O'Donnell: Absolutely he is a civil servant. This is another thing where I am afraid I have strong disagreement with you, where you have this view that he is a civil servant and

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therefore he cannot be independent. That is the complete opposite of my view. The values of the Civil Service are honesty, objectivity, integrity and impartiality. It is our job to be completely independent and to give objective advice to ministers. The idea that someone has to come in from outside, you cannot rely on civil servants to give independent advice, I find very insulting.

Q193 Lord Willis of Knaresborough: Bob May said exactly that and you prayed in aid of him just a few moments. I do not think anyone on the Committee is in any way impugning the integrity of the Civil Service. I think if you took that, Sir Gus, that would be quite wrong and that is certainly not what was intended at all. But inevitably there is a conflict between servicing, if you like, your political masters as a civil servant, which clearly you have to do, and in fact being able to raise your head above the parapet in order to have that independent challenge which might affect your career. Surely you can see that that is a dilemma.

Lord O'Donnell: I would say there are certain aspects and principles. Do not get me wrong, I am in favour of there being Chief Scientific Advisers just like chief medical officers and the like, where you want someone to give an authoritative, independent opinion based on their credibility as a professional, as a scientist or as a medic. So that is where I think they have an important role, but they also have another role which is working within the system and you have to balance off those two things.

The Treasury is so strongly an economic department that it makes sense for there to be an economist as its chief adviser. Bob May's example of someone he would put in as Chief Scientific Adviser was an incredibly eminent economist, a Nobel Prize winner, who, like I say, taught me information theory when I was a kid.

Q194 Lord Broers: I would like to ask you to expand upon your difference between the responsibilities of a Board where you have senior independent businessmen and what they can advise on compared to the CSAs. Because if you look at policies such as energy or communications or transport, you will see that they are an interlinked, totally linked, combination of business and science and engineering feasibility. The reason many of our large industries have failed is that the chief executives of those companies have not had that skill. So how can you separate these things. That is a complete misconception in my mind. If you are trying to set policy, you still have the tame scientist over here who you bring in on a leash occasionally to say things but the real decision-maker is going to be this big senior businessman on the Board; is that your concept?

Lord O'Donnell: No. I am sorry, you have me wrong. Can I read it again? "Policy will be decided by ministers alone with advice from officials." That would include advice from their Chief Scientific Adviser. Policy is not decided by the Board with the non-execs on—not decided by them. That is because of the accountability structure.

Q195 Lord Broers: So what do the Boards do, then?

Lord O'Donnell: Let me read it again. "Boards will give advice and support on the operational implications and effectiveness of policy proposals focusing on getting policy translated into results."

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Lord Broers: Exactly what I was saying. The only way you can do that is balance the business and financial side with the technical risks that are highly complex. If you do not do that, if you separate those things, you are heading for some of the ridiculous strategies that have been produced, for example with energy, where the CSA said his one failure was that he could not be heard on the basis of offshore wind.

Lord O'Donnell: Like I say, the ministers in the end have to be accountable. They have to make the policy decisions. What I am trying to get across is that you had this image that the only place that people are discussing these things is on the Boards. That is so not the way it operates. Lots of policy submissions will go up to ministers. If all the big policy decisions had to wait for a Board, government would not function very well. It does not work that way because it is not the Boards making the policy decisions. They are looking at implementation. So the important thing for the Chief Scientific Adviser, what you should be concerned about, is whether the Chief Scientific Adviser and the others are getting involved in the submissions and the work that goes to ministers? I completely agree that it is really important for us that when you are looking at a policy decision you factor in all the issues to do with whether it is deliverable. So you cannot separate out these two things and I think when they have been separated out mistakes have been made—someone has made a decision on a policy without thinking about the operational delivery aspects to it. So it is really important. The idea that that happens in a Board is completely wrong. That happens with ministers looking at submissions, having meetings with their staff, hopefully including the Chief Scientific Advisers on that. So I just wanted to get it clear because you have this idea that this is happening in Boards. It is not.

Q196 Lord Wade of Chorlton: Sir Gus, my concerns about the way these decisions are and have been made by government that involved scientific issues, or should do, is that they are driven not by the science but by the politics. So we have had enormous influence on government decisions by pressure groups that are really not science-based but emotional-based and so forth. Clearly, GM crops is an issue of that area, as is the attitude to disease in cattle and TB. So I like to believe that when government make those decisions at least they know the difference between what scientifically would be the sensible long-term solution to a problem, even if they end up taking the short-term political solution, which in the end turns out to be against everybody's interest. I can give you plenty examples of those but you know what they are.

Does this situation that you are now explaining to me suggest that might even be worse? At the end of the day, government are going to be politically driven by their decisions. So are you satisfied that there is enough opportunity within this final decision-making process for the long-term sensible implications of these short-term political things to be understood by Government before they finally decide?

Lord O'Donnell: Again, I think this may be an area where we come at it from a slightly different place. I come at it as a lifelong civil servant who came in as a specialist and we are now observing around Europe the growth of so-called technocratic Governments. Indeed, I know I was put in a certain position in a fantasy technocratic Government. I am a really strong believer that it is important that we have democratic government; that these decisions are made by democratically elected politicians. I do not believe in this idea that somehow technocrats should rule the world. Much as there is great temptation that way, I think it is wrong. I think it is really important that we put the evidence before our politically elected ministers in a democracy, as I think Bob May mentioned. The science should have an

enormous say in this and I will be the one who will be pushing the stronger weight for the longer term issues. That is one reason why I think Governments, if anything, really need to emphasise the long-term issues. That is why I think moving to five-year Parliaments rather than four-year Parliaments is a small step that might give us a bit more long-termism rather than short-termism. So I totally agree with you.

The interesting thing for me is that, if you look back on it, Governments have on occasion taken some very long-term issues; for example, some of the infrastructure developments to the Underground. The Stern report is really looking at a long-term set of issues on climate change and the science community is really pushing us to do some things that are not problems possibly today but certainly will be down the track. So I am saying that I think in the end we all have to accept the fact these decisions are and should be political decisions and our job is to make sure that voice of the evidence is as loud as possible.

Q197 Lord Wade of Chorlton: I think that is the point I am making because, if that is the case, it has to be something that you create. Your department is there to ensure that government are well advised on the implications of what they are doing.

Lord O'Donnell: Absolutely, which is why I welcome the fact that we have probably got more Chief Scientific Advisers than we have ever had spread around departments, and their influence is stronger than it has ever been.

To give you an example, I have sat through COBRAs where most recently, discussing the events at Fukushima in Japan and all of that, the Prime Minister has turned to John Beddington as Chief Scientific Adviser and said, “Right, John, tell us what science tells us about this problem”. It has been very driven by what the science is saying. In that case, it made some decisions that were really quite brave in the sense that a lot of people wanted to do much more dramatic things and take a very risk-averse position, but the science led us to some very sensible decisions about what to do in Japan.

Q198 Lord Rees of Ludlow: Perhaps my question should have come earlier. It is about the question of grading. You mentioned Ms Casey and clearly she has influence but that is because she is known publicly. I think the view would be that you would not want the chief scientists to be public figures. So I would just question whether that is an appropriate example and whether it supports your case that the grading does not matter.

Lord O'Donnell: You are absolutely right, Louise combines two things: that she is more of a public figure and she is a certain sort of individual, if I can put it that way. But I could give you plenty of names of people who are very influential and not public but you probably would not know who they are by definition. So someone like Jon Cunliffe within Number 10, the adviser to the Prime Minister on European issues, is a very influential person who has very good contacts around what is relevant in the eurozone area. You do not know him. He has been doing that sort of job at various grades. I do not think his degree of influence has been affected by his grade. If you talk to the Prime ministers, I think they would say that some of the most influential people have been private secretaries, who have not been Permanent Secretaries. Some potential future Permanent Secretaries, I would like to think.

Q199 Lord Willis of Knaresborough: But they have had direct access.

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Lord O'Donnell: Yes, indeed. I think the access point is an important one. Sometimes you need the direct access on a personal basis, but you can achieve your aims as well by getting that direct access through getting to the person who does have direct access. I think Bob May talked about the importance of being close to private secretaries, and I think he is definitely culturally and anthropologically sensitive to how to get to be influential.

Q200 Baroness Hilton of Eggardon: Yes, we have already covered some of the problems with the Chief Scientific Adviser providing independent advice to ministers and it seems to me it is a particular problem for those who are so imbedded in the anthropology of the Civil Service, to use your expression, that they are running a department or part of a department and do not have that ability, the status or the grading to advise ministers. That I think is a particular concern to us, particularly as regards those who are in-service appointments.

Lord O'Donnell: Yes, I will just go back to what I said about civil servants. I think it depends on the quality of the individuals. If you have serious, credible individuals who have something to say, you have to balance it. As regards, for example, the Ministry of Defence Chief Scientist, I would say that given the nature of what you need from that person I would be very surprised if anyone came up through the MoD—if we had a civil servant who could take that job. Similarly if you wanted someone to be really influential for the key decisions the Treasury makes, I would say insiders have been rather more influential than external people. I say this as someone who has brought in lots of external people on economic issues. When we had the financial crisis back in 2008, we brought in a whole range, including Joe Stiglitz, Nouriel Roubini, who had rather countercultural views on the nature of that crisis, to advise ministers. I think there is absolutely no reason why someone who is really good, a good civil servant, should not say, “Okay, for this specific issue I need to get the very best people in the world together”. One of the reasons why we get people like Danny Kahneman to come in is to teach us about some of the behavioural stuff. You get them in and you use them and exploit their knowledge and get that transfer of knowledge to the people who are going to be there day in, day out advising ministers on policy.

Q201 Baroness Hilton of Eggardon: But that is rather begging the question that assume you have the right people in the right places. Part of the problem for the career civil servant—I speak having worked in a hierarchy for over 30 years—is that they are inevitably concerned about their career, their position, their next promotion and so on. I hear what you are saying about the good civil servant having to be independent and willing to stand up and be counted and so on, but it becomes very much more difficult for someone who is part of the structure, part of the anthropology. Even though they may understand how the whole thing functions rather better than an outsider, it is much more difficult for them to be independent and to tell ministers they are wrong.

Lord O'Donnell: If you think that is a problem, you should think about institutional change rather than individuals. You have this great man theory, and I just do not buy it, I am afraid.

On the statistics side, for example, the establishment of an independent statistical body was really important. As an economist who started life in the Treasury trying to advise Chancellors on what the level of interest rates should be, I am pleased that we have a monetary policy committee with professional experts doing that job. If I look at whether the credibility in the independence of economic forecast, I see that we now have the Office for

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Budget Responsibility, something I think other countries are looking to copy—institutional changes where independence really matters.

On climate change, we can look at the things that have been done on the Climate Change Committee, for example. I think this really matters and for some reason you need something very strong. In this case, we have taken it out of the political arena—Lord Wade was referring to this—to give it to technocrats but democratically elected politicians have decided to cede power to those groups. I think that is a really useful way of going forward. I think, as I say, the chief scientists are in that kind of in-between area where we need them around all the time because there will be occasions when they need to give us very public, external advice; for instance, chief medical officers advising during flu epidemics. But if you think there is a really big issue, sometimes you need to be thinking about institutional change rather than just bringing in a great man or woman.

Q202 The Chairman: Could I just go back, Sir Gus, over a couple of points that we touched on earlier? We referred to the example of the Chief Scientific Adviser in the Treasury who has a number of other roles, really important big jobs. I would like just to get the clarity from you on what you think of people who are acting as Chief Scientific Adviser in a department as well as operating other major functions that up until that time were full-time jobs. Until James Richardson was appointed as CSA, he had a full-time job in the Treasury. So is it possible to do three jobs at once, as he appears to be doing?

My other question, linked to that, in your view looking across Government, is: do all the CSAs in the departments have the resources, for example staff and budgets, to fulfil the functions that you have described so eloquently? We have seen quite a lot of variability: some people have research budgets and a lot of staff while others have a much smaller operation. So it is the time and the resources to deliver the function.

Lord O'Donnell: I think people can do more than one job at once, and you would expect me to say that. My second Select Committee of the day will go into that in more detail, I think, this afternoon. These things can help. I have to say that in my time spent in the Treasury from 1979, so over 30 years, we never had a Chief Scientific Adviser. So the fact that there someone who has that title is a step forward. I am sure it will evolve through time, particularly when we observe how it is happening now. I can certainly see a case for us moving towards something different—that might evolve.

I particularly come back to my point about the behavioural work. I think there may well be a case for us thinking about it in Treasury or in Cabinet Office. At the moment, we have David Halpern who does a great job but the fact that a lot of the behavioural work is starting to be pervasive across government rather than being specific small things means that there is scope there.

In terms of resources, it is interesting, yes. Some people have a lot more than others. I think it is important that we look at this on an issue-by-issue basis. If you are chief scientist, it may well be that you feel you need researchers on hand all the time, but others can operate through influencing research councils to try to get outside bodies to that research for them. I do not think you can generalise too much about that.

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Q203 Lord Rees of Ludlow: Yes, I suppose that the reason we are concerned about these issues is that there is probably a greater asymmetry between the amount of expertise in the Civil Service and in academia in the science area than in other areas. So we have concerns about whether in the Civil Service there are enough people with expertise to even know the right people to ask. That, I think, is the reason why we are especially concerned in the area of science. So I do not think it is the same as it might be in economics and other areas.

Lord O'Donnell: No, and if we treat science quite narrowly in that sense, I started off by saying Bob May had included social sciences, but if we take science—

Lord Rees of Ludlow: Science and engineering.

Lord O'Donnell: Engineering, exactly. If we take that, I completely agree with you. That is why I said what I did about the MoD Chief Scientist and I would expect that as we look for a Chief Scientist, the majority of them we will be looking outside, most certainly.

Q204 Lord Rees of Ludlow: Will the committees appointing them have outside people on them?

Lord O'Donnell: Yes. I am very strongly of the view that, first of all, you should have the head of profession, so John Beddington should be on the panels for all of them. That is what we do for heads of profession across the professions. Ideally, you get an eminent, independent, external person on that committee. I would envisage—I have spoken to Jeremy Heywood about this and I know that he would envisage—that when we come to appointing the next Chief Scientific Adviser across the whole of Government we would have a panel with a Cabinet Secretary on it and eminent, independent, external people.

Q205 Lord Broers: Is transparency in the scientific advisory process important, and should CSAs express their disagreement publicly with government policy decisions if they feel their advice is being misinterpreted or ignored? If not, what should they do instead?

Lord O'Donnell: On transparency on research, I would always, as John Beddington has taught me to do, go to my principles and look to be sure that we go in line with the principles. It is a really big step forward. I think we should note that the principles are referred to in the *Ministerial Code*, and that has, I think, really cemented those principles. So in terms of transparency, this Government are very keen on pushing more transparency and publishing as much as we can. I personally think that being as transparent as possible is a good idea in areas of data. If there is a body of scientific evidence, it is as well to get that out there, so I am quite in favour. I think the status quo should be that we will be as transparent as possible. There may be reasons why you cannot be, but you would want them to be the exception.

In terms of the whether you go public, it is an interesting case. I think having been a Permanent Secretary in the Treasury and Cabinet Office, we have the capacity to go public when we feel that ministers are making an incorrect decision. The vehicle for that is an Accounting Officer direction, where you say, “I disagree. I think this is not good value for money, but the Minister has decided to do it anyway,” and they then have to defend that. Again, there is reference to how to use that in the *Cabinet Manual*. I think there is a kind of

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equivalent for Chief Scientific Advisers; that there may be cases where they need to say to their ministers, “Look, I really feel there is an issue here of scientific credibility”. They should try as hard as possible to operate within the system, but there may be an occasion where they say, “I need to say something publicly about this”.

Q206 Lord Broers: Would you go as far as to think or suggest that it might be better if one adopted a technocrat approach to some of this decision-making? I was very interested that you quoted the Monetary Policy Committee. That is a transparent process.

Lord O'Donnell: Absolutely.

Lord Broers: The community of economists, even only two-handed economists, can look at that thing and understand who is on the committee and know how they voted.

Lord O'Donnell: Absolutely.

Lord Broers: Now, our big problem as engineers, and I of course speak as an engineer, is that some of these policies come out and I have no idea which engineer that I might respect or not respect that suggested that or agreed with it. It comes out of the blue and leaves us gasping on the dock with our mouths open. We have just sort of been pulled out of our environment where we do discuss things, and we disagree with each other, like any technical people, but engineers have to come to a conclusion; usually we are quite good at doing it. But we are left mystified, “Where on earth could this have come from?”. So it might be better either to turn to the national academies, as the Americans do very often in these instances, or have a transparent committee, which might be headed by a CSA.

Lord O'Donnell: Well, all I would say is I think you have proved my point. As I said to you about the importance of influence and understanding the system, the economists got into the system, understood it and decided there were certain ways to enhance their influence. Some of those were about institutional change and not putting a great man in. I think by that they have institutionalised things in a very transparent way. I was involved in advising on the setting up of the Monetary Policy Committee. If you remember, we were edging towards it by publishing minutes of what was known as the Ken and Eddie show. We have moved to a very transparent process. Whatever you think about the results, it is incredibly transparent and people are accountable for their individual votes. It would be interesting to know whether you could do in the science area.

Like I say, I think what you have concentrated on is the great person—you get the Chief Scientist in and then it is all going to be fine. Make sure that they see the Secretary of State and it is all going to be fine. I would suggest that you might want to think a bit more broadly about areas, picking up the point that Lord Wade made. How do you get the transparency and the long-term influence and accountability that you have achieved in some of these economic areas in other areas, in the more scientific areas?

Lord Broers: I hope you do not think that all of us have this “great person” complex, because I am entirely with you on that. I think it is a huge mistake we make and, speaking as an engineer again, I know that most great engineering accomplishments could not have been accomplished by one person, and have not been. There is always a team involved, because the technologies and the science is so diverse, and it is that that is the problem—

Lord O'Donnell: Yes, I strongly agree with that.

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Lord Broers: —because Government, particularly the last Government, liked getting high-profile individuals to lead studies on transport policy, which in my mind was entirely incorrect. So I agree with you on that issue.

Lord O'Donnell: Thank you.

The Chairman: A final question from Lord Willis.

Q207 Lord Willis of Knaresborough: Yes. I, too, take a little exception to this great person, because I do not think we have ever mentioned that as part of our Committee deliberations. I think, sir, that you have traduced our comments.

Lord O'Donnell: I apologise. I just got that impression from some of the questions.

Lord Willis of Knaresborough: It is a convenient deflection. But I was interested in your comments to Lord Broers about your aim being to be as transparent as possible, and I do think that under the previous Government, and indeed under this Government, we have seen a level of transparency the like of which we have not seen before. I think you, sir, have had a great deal of influence over that.

But one of the things I was interested in in this inquiry was whether departments and scientific advisers had influence with ministers; in other words, did they meet them? I put down a whole series of questions which did not get answers. I went to freedom of information, which I think is an appalling thing to have to do, and I found that 12 out of 13 departments have now answered the questions about how many times the DCSA has met ministers. One, the DECC, has refused to do so because this would prejudice the effective running of government. As the Permanent Secretary, is this advice that you have given to Permanent Secretaries? How can it possibly be a threat to government, and a threat to transparency, to say how many times a person has met a Secretary of State?

Lord O'Donnell: It is not something that came from me, I can assure you, but the one thing I would say is that Chief Scientists can be very influential. From an evidence-based point of view, I would not judge their influence by numbers of meetings held with the Secretary of State. I think we have heard some of that.

Q208 Lord Willis of Knaresborough: I would not disagree with that. I am just asking whether it is unreasonable to ask that question. As the Permanent Secretary, do you think that it is reasonable to get an answer?

Lord O'Donnell: I think that it is a perfectly reasonable question. I will investigate why it was decided not to give you that. It may be that they do not want to get into—the comment you made about FOI I can completely understand—having to list every single Minister's meeting in case you asked me how many times a Minister met A or B or C. The problem with freedom of information is that, it is quite often, you think, “Why won't they answer this question?”. The answer is the lawyers are saying, “Well, if you answer this question, then you have to answer any question about ministers meeting with anyone, because why would you not?”. Then we are in a situation where a Minister cannot have a meeting with someone without making it public, and I think that will be a bad situation.

Lord Willis of Knaresborough: Sir Gus, 12 departments have done it. One does not.

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Lord O'Donnell: Yes, I know. I was not defending this specific case. I said I am very happy to go away and look at that.

Lord Willis of Knaresborough: Thanks very much.

Lord O'Donnell: I just wanted to make the point about FOI that sometimes it is to do with precedent.

Q209 The Chairman: Sir Gus, you have been extremely helpful to us and given us some very interesting evidence, so we thank you very much indeed. This probably will be your last appearance before us, so we thank you for making time in your final few weeks in office to come and give evidence to us. We wish you well in your future ventures after you have stepped down from your current role. You did offer, very kindly, to send us in writing some thoughts about attracting scientists to the UK. If there are any other points that you would like to make in addition to those you made, do please feel free to write in. As you well know, in due course you will receive a transcript to correct or edit, and we will publish our report in the first part of next year.

Lord O'Donnell: Thank you.

The Chairman: So thank you very much indeed, and enjoy your future.

Lord O'Donnell: Thank you. I look forward to being on the other side.

Research Councils UK—Written evidence

I am writing in my capacity as Chair of the Research Councils UK Executive Group in response to your Committee's recently launched inquiry into the role and function of departmental Chief Scientific Advisers (CSAs). While we are not planning to submit detailed evidence to this inquiry, I thought it would be helpful to write highlighting some general points from the perspective of RCUK. The two annexes provide further input from the Economic and Social Research Council (**Annex A**) and specific examples of good practice relating to our Global Food Security programme (**Annex B**).

RCUK welcomes your inquiry, which is particularly timely. Over recent years there has been a steady increase in the number of CSAs in Whitehall. With the announcement of the appointment of a CSA in the Treasury, there will soon be a CSA in every major Whitehall department. There is therefore an opportunity to review the roles and responsibilities of CSAs with a view to identifying best practice and ensuring consistency. One particular aspect the Committee may wish to look at is the speed at which CSAs are reappointed; for example RCUK is concerned that, at the time of writing, there has been a lengthy delay in the appointment of a replacement CSA in the Department for Culture, Media and Sport.

RCUK is strongly supportive of the presence of CSAs in Government Departments. The role of CSAs individually, and as a group, to champion cross-departmental research issues also chimes well with the cross-disciplinary nature of much of what the Research Councils do. The appointment of senior figures from the research community within Departments ensures that research and evidence are higher on departmental agendas, and provides for strong links between departments and the research base. The latter ensures an important two-way flow both informing the nation's research by the evidence needs of Government and feeding knowledge and thinking from the leading edge of research into policy making. Interactions with Research Councils are a component of this and we welcome the regular interactions between the Research Council Chief Executives and CSAs that are organised by Sir John Beddington's office. The roles that a number of CSAs play as members of our Councils or advisory bodies are also extremely valuable, as are their interaction with RCUK themes, for example Living With Environmental Change (LWEC) and the RCUK Energy Programme.

To make the most of their position and relationship with the Research Councils, as well as the ring-fenced and departmental science budgets, a key activity for CSAs should be to encourage collaborative working and good science policy mechanisms through, for example, partnership programmes such as Living with Environmental Change (LWEC), which is built on an ethos of researchers working together in partnership with users, through co-design, co-delivery and co-production. CSA support is also important for fora such as the UK Collaborative on Development Sciences, which similarly helps collaboration and strategic sharing of funders' research with policy makers.

The importance and value of the CSA role is significant, as they bring their personal expertise and disciplinary specialism to their department. But no single individual, however eminent, can be expected to provide expert advice across the whole range of issues that concern each department. A key role that CSAs play is in ensuring their respective departments have access to all relevant expertise. The Government Chief Scientific Adviser's

guidelines for the use of scientific advice in policy making are a useful means of quality assurance and it is important that CSAs ensure their department observes these guidelines; for example, departments should use the range of relevant scientific sources available rather than going to those they know. When recruiting CSAs, experience at working across disciplines and in collaborating with others should be an important criterion; the ability of CSAs to work across disciplines being important than ensuring all disciplines are well represented.

In order to be effective CSAs must be appropriately embedded into departments to ensure influence whilst at the same time providing an independent voice. Each department is different and has a different structure; similarly, the role of the CSA, their level of budgetary control and time commitment varies. In the Natural Environment Research Council's (NERC) experience the Defra CSA model is a good one with the CSA having budgetary control, without which the CSAs can otherwise be out on a limb. The Department of Health and DFID also have proportionate budgets and we would welcome a view from the Committee on the visibility and comparability of CSA R&D budgets across departments.

An additional issue that the committee may wish to consider, in the context of the influence of CSAs over research spend, is the extent to which (especially in the current climate) they are able to defend their departmental research budgets against reductions. While we welcome constructive dialogue with CSAs, in our view it would not be appropriate for CSAs to seek to influence the Research Councils' priorities to attempt to compensate for reductions in research spend by departments. In order to be independent, or at very least perceived to be independent, the way in which CSAs are recruited can be an important consideration, for example, the in-house appointment of the Treasury CSA may raise questions regarding ability to provide independent challenge.

Finally, Research Council CEOs used to engage on a formal and regular basis with CSAs via the Core Issues Group (CIG) which we understand has recently been dissolved. CIG was created by Professor John Beddington with the aim of identifying and driving progress based on excellent science at a strategic level on key priority issues on which CSAs acting jointly can expect to add value. While Research Councils continue to engage with CSAs, we would welcome the reinstatement of a more formal type of engagement, such as CIG offered, as we believe this would provide an important strategic overview of relevant issues across the entire research base.

15 September 2011

Annex A: ESRC specific response

The social science community is particularly keen to ensure that the role of the CSA fully reflects the central importance of social science to the policy making process. This view was strongly reflected in a well attended event in June jointly organised by the Government Heads of Analysis, the Economic and Social Research Council (ESRC) and the British Academy. The event was opened by Sir John Beddington himself and the organisers wish to acknowledge the very positive view Sir John has taken since his appointment regarding the importance of social science in the advice and policy making process. We also recognise that there is an important role for the social science community itself and the main national funders of social science research to help bring about further change.

In relation to this particular inquiry, the two key points that the ESRC would wish to emphasise are:

- There remains a concern in the social science community that since the departure of Paul Wiles at the Home Office the representation of social science at the most senior levels within government has been weakened. This, of course, implies no criticism of the current joint heads of the Government Social Research Service. We would however see a distinction between a head of profession role which represents the work and interests of a coherent group of professionals (social scientists, economists, statisticians) within government and the policy advice role of the CSA. We would not wish these functions to become blurred or wholly combined within a single role.
- Following on from this point, we note that the number of CSAs that are not natural/physical scientists (or occasionally economists) has been very limited and the ESRC's Chief Executive Professor Paul Boyle has been in dialogue with John Beddington and Adrian Smith about this. In contrast to the recommendations of your committee in its recent report on Behaviour Change, we would argue that rather than creating a separate role of Chief Social Scientist, we would prefer that there was a more wide-ranging definition of the role of the CSA allowing social scientists and indeed those in the arts and humanities to be considered for these positions. This would reflect more closely the current philosophy and way of working of the UK Research Councils, based on an interdisciplinary and collective approach to major research questions in which disciplinary affiliations are not the major consideration.

The Arts and Humanities Research Council also fully endorses these points made by ESRC in relation to both the social sciences and arts and humanities.

Annex B: Example of good practice for Global Food Security

An example of the valuable cross-departmental role of the CSAs can be seen in developments around food security. The Government CSA Sir John Beddington has been instrumental in raising the profile of the challenges around global food security and in championing the development of the Global Food Security (GFS) programme (a partnership across research councils and government departments). Central to this was his widely publicised warning of a ‘perfect storm’ – simultaneous shortages of food, water and energy by 2030 – and advocating the need for multidisciplinary research to tackle the many challenges. He also set up the Food Research Group and Food Research Partnership to ensure cross-government policy coordination around food security.

The departmental CSAs played an important role in the inception of the GFS programme by agreeing that food security should be a high priority at a meeting of the former Core Issues Group. It is important that CSAs have influence and success in bringing together cross-Departmental research interests around issues of national and international importance such as Global Food Security and other RCUK priorities. There should also be regular meetings of CSAs to ensure this coordination continues.

At least two CSAs have been involved in the ongoing development of the Global Food Security programme: the recently retired CSA to the Scottish Government Rural and Environment Research and Analysis Directorate, Prof. Maggie Gill, was a member of the Programme Development Board. She was also a member of the interview panel for the recruitment of the GFS Champion, alongside the Deputy CSA for DFID, Prof. Tim Wheeler.

Royal Academy of Engineering—Written evidence

Royal Academy of Engineering—Written evidence

[Submission to be found under Engineering the Future](#)

The Royal Academy of Engineering, British Academy, The Royal Society—Oral evidence (QQ85-106)

The Royal Academy of Engineering, British Academy, The Royal Society—Oral evidence (QQ85-106)

[Please see under British Academy](#)

The Royal Society—Written evidence

1. The Royal Society has long supported the appointment of Chief Scientific Advisers (CSAs) in all departments of Government. As the House of Commons IJSS Select Committee noted in 2009, the appointment of these posts has strengthened Government's links with the scientific community and led to an improvement in the use of science across Whitehall.⁸⁰
2. The role of the CSA in the UK has parallels with other parts of the world. Under President Barack Obama, the role of the US Office for Science and Technology Policy has been bolstered by the appointment of John Holdren ForMemRS as Director. Similar posts exist in Australia, New Zealand and India, and this autumn we expect the appointment of a CSA for the European Commission.
3. The notion of the formal scientific adviser is well established in the UK government, with departmental CSAs predating the post of Government CSA. Lord Zuckerman, the first Government CSA appointed in 1964, took on the role in conjunction with his responsibilities at the Ministry of Defence, a post which had existed since the 1940s. Today there are 15 departmental CSAs (of which 3 posts are currently vacant), 3 agency CSAs and the Government CSA.
4. The 1971 Rothschild Report outlined the role of departments as intelligent customers of science; departmental CSAs ensure that this intelligence is up to date and applied across the full range of portfolios covered by government departments.
5. The architecture of science advice has since developed, both inside and outside of government. Today the role of scientific advice at departmental level is crucially important. Many of the issues dealt with by public policy – healthcare, environmental protection, energy sustainability, for example – have obvious scientific dimensions. Many others are driven by developments in technology, and others require input from a number of evidence bases. Robust, independent and expert scientific advice is essential to ensure well informed policy responses.

In response to the Committee's specific questions, the Royal Society welcomes the opportunity to comment on the range of roles and responsibilities of departmental Chief Scientific Advisers. This response has been approved by the Royal Society's Physical Secretary and Vice President on behalf of the Council of the Royal Society.

The ability of CSAs to provide independent advice to ministers and policy makers within their departments, and their role in providing independent challenge and ensuring that departmental policies are evidenced-based

6. The key role of the Chief Scientific Adviser is to ensure that the most up to date and reliable evidence is available and, where possible, applied to departmental policy making. Each departmental CSA requires a strong understanding of the main issues dealt with by the department, access to and ability to assimilate broad scientific expertise, and a sensitivity to the wider policy environment.
7. This will often require a CSA to act beyond the scope of their individual science and technology expertise, and to engage with a wider set of issues as required by the department. In such cases, the CSA is unlikely to be the sole source of advice to the department, but instead acts as a convenor of experts and a spokesperson for the information that is provided to the policy makers. The CSAs therefore draw significantly on national and international networks of experts in providing specific advice. This

⁸⁰ House of Commons Innovation, Universities, Science and Skills Committee (2009). *Putting Science and Engineering at the Heart of Government Policy, Eighth Report of Session 2008-09, Volume I*. The Stationary Office: London, UK.

requires the CSA to command the respect and support of the domestic and global scientific communities.

8. To deliver the necessary scientific advice, a CSA requires adequate resources to ensure that they can cover all appropriate issues for that department.⁸¹ This would include having a team of civil servants to help co-ordinate activities, and a budget to spend at their discretion.
9. It is essential that the CSA should hold a suitably senior position in a department to allow them proper access to senior civil servants, ministers and Secretaries of State. This should include attendance (and preferably membership) of the department Board, to ensure that scientific evidence is fed in to the highest decision making processes.
10. The Royal Society's recommendations in its policy report, *The Scientific Century*, included a call for the appointment of a CSA to the Treasury.⁸² The appointment of Dr James Richardson, the Treasury's Director of Public Spending, and Chief Microeconomist, to the new post was announced in June 2011. The Royal Society welcomes the appointment of a Treasury CSA, and looks forward to working with Dr Richardson in this role.

The extent of CSA influence over research spend

11. The remit of the CSA, and the resources allocated, vary significantly between departments and agencies. Within the Ministry of Defence, the CSA is responsible for the research budget of over £400 million per annum, and also has access to a discretionary budget for CSA research activity; at the Treasury, the new CSA has explained to the House of Commons Science and Technology Select Committee that the Treasury will spend £500,000 on externally commissioned research over the whole spending review period.⁸³
12. The GO Science introduction to CSAs, published in November 2010,⁸⁴ indicates that the main activities of a typical CSA are to provide independent advice to ministers and within the Ministry; to provide a challenge function ensuring the use of robust evidence to underpin policy; leading the department on science and engineering issues; and managing the development, delivery and implementation of the departmental science and engineering strategy.
13. There is currently no cross cutting objective for departmental CSAs to manage, influence or lobby for research spending, either in their individual department or across government.
14. Figures prepared by the GCSA, Sir John Beddington, show that in June 2011, only the CSAs in each of the Department of Health, the Ministry of Defence, the Department for International Development and the Department for Education were directly responsible for the research budgets in their department.
15. Given the diverse range of issues dealt with by individual departments, and the differing remits for research budgets, the Royal Society does not consider it to be a requirement that the CSA should control or manage the entire department research budget.

⁸¹ The Royal Society (2010) *The Scientific Century*. The Royal Society: London, UK.

⁸² The Royal Society (2010) *The Scientific Century*. The Royal Society: London, UK.

⁸³ Dr James Richardson evidence to the House of Commons Science and Technology Select Committee, Wednesday 7 September 2011:

<http://www.publications.parliament.uk/pa/cm201012/cmselect/cmsctech/uc1461-i/uc146101.htm>

⁸⁴ Government Office for Science (2010). *Chief Scientific Advisers and Officials: an introduction*. Department for Business, Innovation and Skills: London, UK.

16. Much more important is their capacity to engage with senior civil servants and ministers to ensure that research spend is well stewarded (for example, that it is subject to rigorous peer review).
17. However, it is crucial that a CSA is suitably resourced to carry out the tasks required of that role (see also point 8 above).⁸⁵ This resourcing could usefully include a discretionary research budget for each CSA, ringfenced from the general departmental research spend. This would allow each CSA to commission research and activities in emerging areas, allowing consideration of longer range horizons. This flexibility would also allow for engagement with the wider scientific community, leveraging resources to address research and policy concerns.

The range of expertise provided by the network of CSAs

18. The Royal Society has commented previously on the successful work undertaken by the Government CSA in bringing together the departmental CSAs to address areas of cross-departmental and cross disciplinary concern.⁸⁶
19. The current cohort of departmental CSAs covers a wide range of individual academic expertise, ranging from mathematics and nanotechnology to atmospheric science, from epidemiology to quantum chemistry.
20. The CSAs have links with both academia and industry and bring these experiences to bear on departmental issues and cross cutting areas of concern for public policy. The access to these different sectors of expertise, the exposure and connection to international networks, and the ability to assimilate these, are each essential in determining the CSA's capacity to deliver high quality scientific advice to government.
21. In many departments the CSAs have close relationships with Chief Economists, Heads of Analysis, and Heads of Profession. However, there is scope for enhancing this range of expertise by introducing more social science expertise amongst the CSA group where appropriate.⁸⁷ It is essential that the CSAs are in a position to offer natural, social, and engineering scientific advice to their respective departments to ensure that policies are informed by the most up to date and relevant research and expertise.

The extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities

22. In the recent advertisement for the post of CSA at the Department for Business, Innovation and Skills, the candidate brief⁸⁸ describes a successful applicant as one who has:

‘the knowledge, skills, networks and relationships to draw on the experience of the scientific, engineering and academic communities to make a real difference to BIS; this is likely to require a FRS or FREng, or equivalent standing in a commercial/industrial field, such as Chief Technology Officer or Chief Engineer.’
23. Of the 12 departmental CSAs currently in post, five are Fellows of the Royal Society, two are Fellows of the Academy of Medical Sciences, one is a Fellow of the Royal Academy of Engineering, and one a Fellow of the Royal Society for the encouragement of the Arts. As elected members of these national academies, these Fellows have each been recognised by their peers as being excellent practitioners in their careers.

⁸⁵ The Royal Society (2010) *The Scientific Century*. The Royal Society: London, UK.

⁸⁶ <http://royalsociety.org/submission-to-the-IUSS/> January 2009.

⁸⁷ Lords S&T Com Behaviour change report.

⁸⁸ <http://apply.odgers.com/Stream.aspx?doc=8C971BF6-2D34-4858-BADF-B5FFA9055AF8.pdf>.

24. In many countries, the national Academy is part of the formal advisory structure in government (the NRC in the USA and the Chinese Academy of Sciences are notable examples). Although this is not the case in the UK, the Academies are well placed to provide expertise for the CSAs and government to draw upon.
25. The Chief Scientific Advisers Committee (CSAC) has met periodically with the President of the Royal Society and other Academies and learned societies, to discuss areas where the Advisers require external evidence, and to contribute to their horizon scanning for forthcoming cross cutting issues.
26. There is, perhaps, scope for more interaction between the Academies, learned societies and other professional bodies with the CSAs both collectively and individually. The Royal Society would welcome an opportunity to engage with current and future departmental CSAs to discuss ways in which the Society might support their activities.
27. There is also a role for the Royal Society and other Academies to play in helping to identify and recruit future CSAs, by promoting awareness of opportunities for senior scientists to engage in public policy. In 2010 the Royal Society hosted a meeting with the Government Office for Science, chaired by the Government CSA to raise the awareness among senior academics of the work of departmental CSAs and the opportunities for working with Government.

The contribution of CSAs in promoting public trust in the independence and authority of science advice to government

28. That there is a CSA in each Government department, with a role to provide independent scientific advice to that department and in cross-cutting issues, should be recognised as a source of external expert contribution to policy making. However, the departmental CSAs, on the whole do not have a sufficiently significant public profile for this role to be acknowledged.
29. CSAs should, perhaps, seek to engage with the public more openly on individual issues, thereby not only increasing awareness of the role, but more importantly of some of the scientific issues which can impact on public policy. This is an example of an area where collaboration with other agencies might enhance the CSAs scope of activity.

16 September 2011

The Royal Society, British Academy and The Royal Academy of Engineering—Oral evidence (QQ85-106)

The Royal Society, British Academy and The Royal Academy of Engineering—Oral evidence (QQ85-106)

[Please see under British Academy](#)

Royal Society of Chemistry—Written evidence

The Royal Society of Chemistry (RSC) welcomes the opportunity to respond to the House of Lord's SELECT COMMITTEE ON SCIENCE AND TECHNOLOGY on the role and function of departmental Chief Scientific Advisers.

The RSC is the largest organisation in Europe for advancing the chemical sciences. Supported by a network of 47,000 members worldwide and an internationally acclaimed publishing business, its activities span education and training, conferences and science policy, and the promotion of the chemical sciences to the public. This document represents the views of the RSC. The RSC has a duty under its Royal Charter "to serve the public interest" by acting in an independent advisory capacity, and it is in this spirit that this submission is made.

Key Recommendations

- The Government should provide a cross-departmental framework for the role of CSAs outlining the role of CSAs with clear distinctions between the responsibility of the CSA to provide advice, and the responsibilities of departments to implement policy decisions. Training on the importance of robust evidence and advice in policy making should be provided to all policy makers across government departments to ensure a positive two-way relationship between CSAs and policy makers.
- GO-Science should establish an open access website containing full and transparent information on ALL scientific advisers within government; how they can be contacted, information on the advice they have given and the policy decisions and research spend they have helped to influence.
- The RSC proposes that the relationship between CSAs and relevant Research Councils should be made transparent. In addition, information regarding CSAs' responsibility, management or influence over departmental research budgets should be established per department.
- The House of Lords Science and Technology Committee should consult all current CSAs to solicit their own views and experiences as CSAs.
- The RSC welcomes the introduction of a CSA at the Treasury but expresses concern regarding the failure of Department of Transport and Department of Business, Innovation and Skills to fill their vacant posts, these posts need to be filled as a matter of urgency.
- CSAs should be encouraged to utilize professional and learned bodies as they can act as a source of independent advice and provide access to specialists from a range of fields.

The ability of CSAs to provide independent advice to ministers and policy makers within their departments;

1. The ability of departmental Chief Scientific Advisers (CSAs) to provide independent advice is a central component in the policy making process, needed to formulate solid Government decisions and legislation. Policy making is an iterative cyclic process where scientific advice should contribute to evaluation, development, implementation and review of policy options⁸⁹.

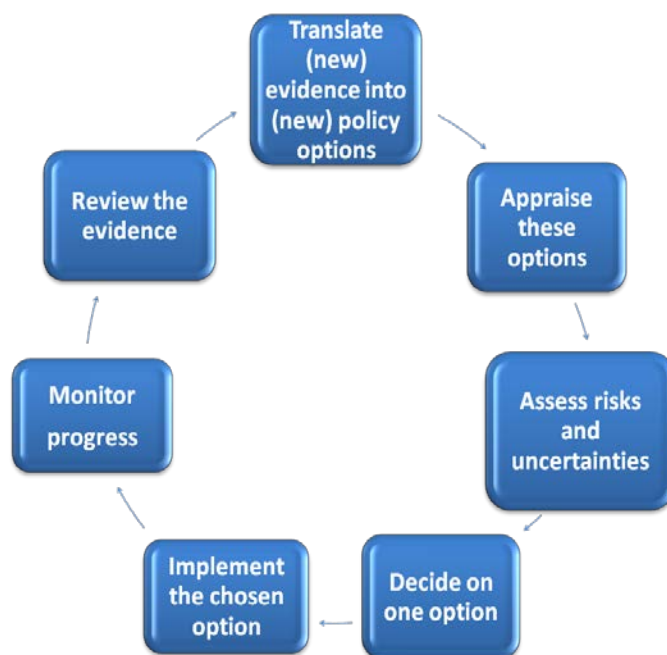


Figure 1 Policy making is an ongoing process; it commonly involves an iterative cycle⁹⁰.

2. There should be a clear understanding of what role the CSA is being asked to perform within the policy making process⁹¹. These roles can range from review of existing data, interpretation of commissioned research to the application of expert judgment where data is lacking or inconclusive. To facilitate this, the Government should provide a cross-departmental framework outlining the role of CSAs with clear distinctions between the responsibility of the CSA to provide advice; and the responsibilities of departments to implement policy decisions.
3. The professionalism and independence of CSAs should be respected by ministers and policy makers within their departments and across government. Training on the importance and value of robust evidence and advice in policy making should be provided to all policy makers across government departments to ensure a positive two-way relationship between CSAs and policy makers.

⁸⁹ *Science into Policy*, NERC, February 2011.

⁹⁰ *Science into Policy*, NERC, February 2011.

⁹¹ *Guidelines on the use of science and engineering advice in policy making*, Government Office of Science, June 2010.

4. Since scientific advice may come from the CSA, or through them from scientific staff within the relevant department; it is essential that CSAs should have extensive grounding in the scientific process and preferably have a scientific background. This is also important; since it is the responsibility of CSAs in consultation with GO-Science to advise on possible membership of advisory committees.
5. The CSA should maintain regular communication with Chairs of Scientific Advisory councils (SA councils) and Scientific Advisory Committees (SACs) to coordinate delivery of advice to the sponsoring department and/or ministers sponsored by departments; this could be done informally, in addition to bi-yearly meetings. CSAs should also be aware of what SACs are sponsored by their department and cultivate good working relationships with them.
6. GO-Science should establish an open access website containing full and transparent information on ALL scientific advisers and SACs within government; how they can be contacted, information on the advice they have given and the policy decisions they have helped to influence.
7. CSAs should openly declare any potential conflict of interest within the topic area and/or any political allegiance that may sway the independence of their advice. In addition, advice given should be open to unbiased critical assessment.
8. The RSC recommends that the House of Lords Science and Technology committee should consult all current CSAs to solicit their views and experiences in providing independent advice to ministers and policy makers within their departments. This could also be used to measure their effectiveness in the role of CSA.

the extent of their influence over research spend;

9. In addition, to working within departments and across government; CSAs also work with Research Councils and others, under the GCSA's leadership⁹². The RSC proposes that the relationship between CSAs and relevant Research Councils should be made transparent. Additionally information regarding CSAs' responsibility, management or influence over departmental research budgets should be established per department.
10. Scientific advice should always be sought by decision makers where they require an economic cost benefit analysis and where there may be an impact on scientific funding.
11. The advice provided by CSAs should be made publically available detailing how the scientific advice was used. Furthermore, it is essential that Government publish the reasons why they reject advice that has influence on research spend.

⁹² Chief Scientific Advisers and their Officials: an Introduction, Government Office of Science,

their role in providing independent challenge and ensuring that departmental policies are evidenced-based;

12. The integrity of CSAs independence is dependent on them not being bound by Ministerial collective responsibility. The use of the best current evidence from science and engineering should be central to the development and appraisal of departmental policy making; Science and Engineering Assurance (SEA) Reviews are one of the mechanisms that aim to improve the use of science in policy and government strategy⁹³.
13. The process by which advice is turned into or used in the policy making process also needs to be more transparent. This could be achieved by the establishment of an open access website by GO-Science as outlined in Point 6.
14. CSAs are obligated to ensure that a full spectrum of evidence is used in the development of departmental policies. In particular, CSAs need to consider evidence from different sources to elicit a broad spectrum of expertise and advice which can feed into the advisory process, see Figure 1. CSAs should be encouraged to utilize professional and learned bodies as they can act a source of independent advice and provide access to specialists from a range of fields.
15. It is essential that CSAs are fully acquainted with the fact that scientific information can be interpreted differently according to both viewpoint and the analytical methods applied; this is a major limitation when policy makers demand certainties. CSA's also need to highlight the clear distinction between evidence based scientific advice and personal opinion. Therefore, departmental CSAs should be scientifically experienced, technically knowledgeable, with a proven ability in interpreting scientific data and risk assessment of policy options.
16. In July 2011, the House of Commons Science & Technology Select Committee published its report highlighting issues concerning the integrity of analytical work in the UK⁹⁴. This report raises a number of points relating to forensic science R&D and criticizes the closure of Forensic Science Services (FSS). The RSC is concerned over the apparent exclusion of the CSA to the Home Office, Professor Bernard Silvermann, from the decision-making process. The is particularly concerning the report published by House of Commons Science and Technology Select Committee, to which Professor Silvermann provided oral evidence, appears to have been sidelined. This lack of engagement with the CSA and the Science and Technology Select Committee raises concerns regarding the use of scientific evidence in development of government strategies; the RSC would be happy to discuss this further.

the range of expertise provided by the network of CSAs;

⁹³ Chief Scientific Advisers and their Officials: an Introduction, Government Office of Science.

⁹⁴ Science and Technology Committee - Seventh Report, The Forensic Science Service, July 2011.

17. The RSC welcomes that every government department now has a departmental CSA working together under the GCSA addressing issues which cut across departments. The introduction of a CSA at the Treasury is a welcome step. This should ensure an understanding of evidence in a scientific context and the wider need for long term investment in science and engineering within the Treasury. The RSC expresses concern regarding the failure of Department of Transport and Department of Business, Innovation and Skills to fill their vacant posts. This is in direct conflict to the Government's commitment to the importance of science and engineering in underpinning economic success and innovation;⁹⁵ BIS should address this situation as a matter of urgency.
18. It is essential that all departments receive the best scientific advice in policy making. Therefore, it is essential that CSAs are appointed who are scientifically experienced, technically knowledgeable, with a proven ability in interpreting scientific data and risk assessment of policy options. This is vitally important as CSAs engage with all stakeholders (including internal and external experts); ensuring that advice is evaluated using their experience and also increasing the capacity of departments to raise issues of scientific importance quickly.
19. CSAs should also have access to a strong team of scientifically trained civil servants to support them in the decision making process: to evaluate the information put before them, to highlight where further research is needed, to quantify the degree of uncertainty and to suggest an appropriate course of action.

the extent to which CSAs have authoritative standing within relevant academic, industrial or business communities, including whether they have effective networks within those communities;

20. As already stated, CSAs should have extensive grounding in the scientific process and preferably have a scientific background. It is vital that CSAs keep abreast of developments in their specialist field as well as keeping up to date with new breakthroughs affecting their department's interests. This could be achieved through continued professional development programmes provided via GO-science from relevant academic, industrial and business contacts.
21. Recruitment of CSAs who already possess authoritative standing within academic, industrial or business communities ensures that the individual already has a network of contacts. This provides a foundation for extensive networks of external contacts that could be drawn upon to provide relevant, balanced and weighted advice. The role of professional and learned bodies who work within this area can provide a locus of essential communication between CSAs and relevant academic, industrial and business communities.

the contribution of CSAs in promoting public trust in the independence and authority of science advice to government.

⁹⁵ Science & Engineering in Government, Government Office for Science, October 2001.

22. Public trust is the responsibility of Government, policy-makers and scientists. Its cultivation requires increased transparency of the process. CSAs have a crucial role to play here; they can provide balanced and independent argument. Media training should be offered to all CSAs, enabling them to maintain an independent profile in the media. In addition, the media need to be more informed about science and appreciate long term approaches – issues cannot be solved overnight.
23. Advice provided by CSAs should be made publically available detailing how the evidence was accumulated and the scientific advice used, Foresights - Future of Food and Farming⁹⁶ is a good example of this. It is the responsibility of the government to put as much information into the public domain as possible and address instances of misinformation. CSAs should respond openly to changes in the balance of evidence, to enable the public to recognize that decisions are made according to the best available advice at the time. New scientific evidence should lead to transparent discussions about any change in policy, and these discussions should be held in the public domain.

September 2011

⁹⁶ Foresight. The Future of Food and Farming. Executive Summary. Government Office for Science, 2011.

The Royal Society of Edinburgh—Written evidence

Summary

- Modern governments require scientific advice in order to be in a position to respond to the fast moving pace of scientific knowledge – knowledge that cannot routinely be found within traditional governmental structures.
- The independence of the adviser is paramount to maintain credibility within the scientific community and the public.
- CSAs should have a role in advising and liaising with the Research Councils and others with research budgets, but should not direct their spend. CSAs should though have the resource to commission research where gaps are identified in the evidence base to inform policy.
- Normally where significant advice is given this should be published, along with the evidence base and the response from government should also be made public, whether accepting the advice or not.
- Across government there should be a spread of advisers that adequately represents the disciplinary knowledge base that government requires to make informed decisions.
- CSAs when considered for appointment should be able to demonstrate that they have access to a network of peers in the scientific and engineering community whose expertise they can draw upon.

Introduction

1. The Royal Society of Edinburgh (RSE), Scotland's National Academy welcomes the initiative of the House of Lords Select Committee on Science and Technology in investigating the role and function of departmental Chief Scientific Advisers (CSAs). The RSE is in a strong position to comment on these issues as within its Fellowship it has many experts who have contributed to scientific advice to Government at Scottish, UK and European levels, as CSAs, members of the Scottish Science Advisory Council (SSAC) and as members of the Council for Science and Technology (CST). The RSE brought together a short-life working group of individuals with relevant knowledge and experience to prepare this response.
2. It should be taken as read that where reference is made to scientific advice this encompasses all engineering and technology disciplines.
3. The submission will seek to respond to the key aspects that the Select Committee is looking at, but will also introduce some issues related to the devolved Scottish Government and European Union.

Principles

4. In considering the role and function of CSAs there are certain key principles that need to be agreed between Government and the CSAs. These include: the reasons why government needs scientific advice; a recognition that tensions can exist between scientific knowledge and public values; and acceptance from government

that the independence of the advice provided by the CSA is central to the credibility and value of the advice.

5. Government needs independent scientific advice as it needs access to a wider knowledge base than that which is available through career civil servants. Whilst the civil service will have scientists employed in a range of positions, those scientists with knowledge of the key advances in recent decades will be found in the academic or business sectors predominantly. The advances in many technologies has been so rapid in recent decades that it is essential for government to access advice from individuals with direct knowledge or with networks of contacts who can provide that knowledge.
6. In a democratic society it is inevitable that there will be occasions where the possibilities of the application of a new scientific breakthrough run counter to the values of society. CSAs have a role to play here in informing government of the opportunities and risks of accepting advice, whilst also performing a role in enhancing the public understanding of science. Ultimately though it has to be accepted that there will be occasions that due to societal pressures that elected governments will choose not to accept the advice of CSAs.
7. It is therefore all the more important that the independence of the CSAs is embedded in the relationship. In order as to recruit people of the highest calibre for these posts and for their credibility within their peer groups to be maintained their advice has to be delivered based on the current scientific evidence and knowledge, even when this may be uncomfortable for the government.

Effectiveness

8. The function of a CSA needs to be both proactive and reactive. Of course there will be many issues that require advice which respond to events at home and abroad, with examples in recent years including: Foot & Mouth disease; the H1N1 flu virus; and the implications of the Fukushima nuclear emergency following the earthquake and tsunami.
9. In addition though an effective CSA should also be providing horizon scanning for government, keeping in touch with emerging knowledge in order to provide government to be in a position to nurture emerging technologies, harnessing the opportunity to contribute to societal or economic benefit.
10. In recognising the tensions that can exist between scientific advice and the pressures from society (often fuelled by the media) an effective CSA needs to deal with these sensitively. To give confidence within and without government ideally advice should normally be published, as should the response from government. This helps to ensure that the access to political power is used responsibly, whilst also maintaining the credibility of the adviser in the scientific community. Whilst publishing advice may lead to interest from the media, a CSA should seek not to develop too high a media profile as this can often reduce the likelihood that government will be receptive to the advice.

11. No CSA can be an expert in every aspect of science and this is why it is important that people appointed to the roles have a network of contacts that can be drawn upon to provide accurate and well informed advice in areas where the CSA requires this.
12. Direct access to the most senior ministers is essential to enable a CSA to perform his or her job effectively. In the case of the Chief Scientific Adviser to the UK or Scottish Government, this should include direct access to the Prime Minister or First Minister. In the case of the departmental advisers this link should be to the relevant cabinet rank minister.

Influencing Research Spending

13. It is appropriate that from time to time a CSA identifies strategic scientific requirements within their area of concern and particularly identifies gaps in research that is needed to support Government policy. The Research Councils should be able to access this advice but their primary role is to support quality. If appropriate research is not emerging through established Research Council routes then CSAs should have the resource and the ability to commission such research from an appropriate body.

Devolution

14. Since the establishment of the Scottish Parliament in 1999 and the devolved assemblies in Wales and Northern Ireland there is an additional dimension to scientific advice to government, in that different administrations may adopt a different policy position from each other, sometimes based on the same body of scientific advice. The divergent positions of the Scottish and UK Governments on energy policy being a case in point.
15. In Scotland the position of a Chief Scientific Adviser to the Scottish Government has been established and there are also positions of Chief Scientists in several departments, although not comprehensively across all departments. The current CSA is due to come to the end of her appointment later this year, while vacancies currently exist for two other posts. The RSE believes that it is essential that these posts are advertised and filled at the earliest opportunity as without this there will be a gap in the scientific advice being provided to the Scottish Government.
16. The Scottish Science Advisory Council has also been established, however as this operates out with the government machinery the level of access to ministers and opportunity to influence policy is not as strong as exists with the more comprehensive system of CSAs in Whitehall. The RSE produces a series of Advice Papers from its multi-disciplinary Fellowship and a closer relationship between the SSAC and RSE could help maximise the value of these papers in influencing policy.
17. The CSA to the Scottish Government attends the departmental CSA meetings organised on a UK basis, however given that many issues of scientific advice will involve cross border issues, even where the policy responsibility is devolved, e.g. human and animal health issues, it is important that there is effective co-operation

between the governments on such policies. This makes it all the more important that a full cohort of advisers is maintained in position in the key departments in Scotland.

European Union

18. As well as recognising that many issues are of a cross border nature within the UK it is of course also the case that many issues require involvement on an international basis. The most immediate area of focus beyond our own shores being the European Union. An example where EU wide action was recently of importance was the spread of blue-tongue disease – an animal disease that until recently had been regarded as a tropical or exotic condition. The RSE submitted advice to the European Commission on blue tongue, much of which was taken on board.
19. With the increased globalised movement of people and goods, along with a changing climate it is likely to be increasing the case that we will need to respond to such challenges on an international basis. The current system of scientific advice to the European Union is not as advanced as we would wish it to be and it may be an issue that the Select Committee may wish to recommend that the UK Government and Chief Scientific Adviser pursue further.

Additional Information and References

Advice papers are produced on behalf of RSE Council by an appropriately diverse working group in whose expertise and judgement the Council has confidence. This Advice Paper has been signed off by the General Secretary.

September 2011

Professor Pamela Sammons—Written evidence

A Comment on the Evidence Base for the Free Schools Policy

1. The Government outlined the purposes of its Free Schools policy in 'The Importance of Teaching The Schools White Paper' DfE (2010) indicating that it would act to 'support teachers and parents to set up new Free Schools to meet parental demand, especially in areas of deprivation.' It is implied that greater autonomy promotes higher standards and several examples are cited of Charter Schools in the US and Free Schools in Sweden.
2. In para 5.2 of the White paper it was claimed that:
In many of the highest performing jurisdictions, school autonomy is central. In high-performing US States, Charter Schools – publicly funded independent schools set up by a legal 'charter' – have been engines of progress. For example, over 85 per cent of young people from deprived urban communities who attended one of the national network of Knowledge is Power Programme (KIPP) charter schools go on to college. In Alberta, Canada all schools are afforded significant autonomy in relation to how they teach and how they manage themselves. In Sweden, pupils who attend state-funded independent Free Schools outperform those in other state schools and a higher proportion (eight per cent more) go on to higher education. (DfE 2010,p51)
3. In addition, an example of evidence from Charter Schools in the US is provided as an insert on p 57.

In the US, networks of charter schools have made some remarkable progress in raising attainment, especially in deprived urban areas.

Green Dot Charter schools in Los Angeles are designed to be small, safe personalised schools with high expectations for all pupils, local control with extensive professional development and parent participation, maximum funding focused on the classroom and a longer school day. Pupil performance in standardised tests is significantly higher than for other schools serving the same areas .

Uncommon Schools is a not-for-profit organisation managing 24 Charter Schools in New York City, New York State, Newark, New Jersey and Boston. They have a mission to prepare all students for higher education, high standards for academic attainment and developing students' character, a highly structured learning environment, a longer school day and longer school year, a focus on accountability and an emphasis on recruiting committed and talented leaders and teachers. In 2010, Uncommon Schools in New York State outperformed the state average and also closed the racial achievement gap – 82 per cent of pupils were found to be advanced or proficient in mathematics, well above the state average of 61 per cent, and the state average for white students of 71 per cent .(DfE, 2010, p 57)

3. Despite these claims it does not appear that the Government's Free Schools policy is based on robust evidence and it is not clear whether the DfE has provided an impartial review of the evidence base for the policy, and if so whether this was taken into account or ignored in developing the White Paper and in the subsequent implementation of the policy. A wider body of evidence provides a much less clear cut picture of the impact of Free Schools in Sweden and of Charter Schools in the US.
4. Wiborg's (2010) review of research on the development and impact of the Swedish Free School policy examined the results of research studies on achievement and concluded that, although some studies suggested there might have been a short term boost there was little long term benefit on attainment especially for disadvantaged groups of students.

'However, they do not find any impact on medium or long-term educational outcomes, such as upper secondary level, university attainment or years of schooling. Therefore, the short-term effect is too small to yield any long-term positive effects for young people. In other words, the advantage that children schooled in areas with free schools have by the age of 16 is not translated into greater achievements later in life as they score no better in the final exams in upper secondary education at the age of 18/19. They are also no more likely to participate in higher education than those who were schooled in areas without free schools. The children from highly educated families gain mostly from education in free schools, but the impact on families and immigrants who had received a low level of education is hardly visible.' (Wiborg, 2010, p 14).

5. Moreover, in Sweden there is evidence that Free Schools seem to have led to increased social segregation of school intakes. Wiborg's (2010) review also argued: *'In conclusion, the evidence from a number of studies is that school choice in the Swedish school system has augmented social and ethnic segregation, particularly in relation to schools in deprived areas. Some researchers suggest that this has been enhanced by the extreme tendency to individualize teaching in schools by transferring the responsibility for learning from teachers to pupils. This so-called strategy of equity of learning based on a child-driven curriculum, free choice, and educational flexibility, is likely to increase the differences in pupils' academic achievements between different groups instead of reducing them.'* (Wiborg, 2010, p15).
6. The Swedish Minister of Education likewise concluded that the policy had led to increases in the extent to which socio-economic profiles of student intakes diverge in Sweden and that they mainly benefited advantaged students. In an English newspaper interview in 2010 the Swedish Education Minister, Bertil Ostberg, warned against the planned adoption of Free Schools in England, stating: *"We have actually seen a fall in the quality of Swedish schools since the Free Schools were introduced". "The Free Schools are generally attended by children of better educated and wealthy families making things even more difficult for children attending ordinary schools in poor areas."* He added that the priority for policy makers should be: *"...improving the quality of teaching across the board"*. (Anderson, 2010)
<http://www.mirror.co.uk/news/politics/2010/05/30/flagship-tory-free-schools-doomed-115875-22296075/>
7. Another summary of the current evidence on free School reforms in Sweden argued that due to differences in policy context Sweden's experience is limited in the extent to which it can predict the impact of comparable school reforms in England (Allen, 2010, p 4).
8. DfE White Paper (2010) implies that Free Schools will raise standards and narrow the equity gap but, in contrast to many earlier policies where DfE instituted and evaluated a pilot scheme, there has been little attempt to pilot the introduction of Free Schools to investigate their impact on these aspects. Nor has the cost effectiveness of the policy been evaluated in relation to estimated benefits.
9. As noted above, the White Paper cited some small scale US evidence in relation to Charter Schools, particularly those in the KIPP programme but the wider body of research on the positive impact of Charter Schools from research in the US, provides much less convincing evidence to support the White Paper policy aims and claims. The CREDO (2009) research has 70% coverage of pupils in US Charter schools and is one of the most widely cited multi-state evaluations with a rigorous methodology. It matches pupils who transfer to Charter schools to a pupil who remains in a traditional public school using information on their basic socio-demographic and prior attainment characteristics The study finds no significant or even marginally negative overall impacts on attainment of attending Charter schools, on average. The impact of Charter schools in individual states in the study, whether slightly positive or negative, is never large. The study notes that Charter effects vary by different student background characteristics, students who are from low-income backgrounds or who

not speak English at home do slightly better in the Charter school system than more affluent students but Black and Hispanic students do somewhat worse.

10. Overall the CREDO (2009) study concluded that: *'The group portrait shows wide variation in performance. The study reveals that a decent fraction of charter schools, 17 percent, provide superior education opportunities for their students. Nearly half of the charter schools nationwide have results that are no different from the local public school options and over a third, 37 percent, deliver learning results that are significantly worse than their student would have realized had they remained in traditional public schools. These findings underlie the parallel findings of significant state-by-state differences in charter school performance and in the national aggregate performance of charter schools. The policy challenge is how to deal constructively with varying levels of performance today and into the future.'* (CREDO, 2009, p1)

11. The key findings of the CREDO research are shown below.

The analysis of total charter school effects, pooled student-level data from all of the participating states and examined the aggregate effect of charter schools on student learning. The national pooled analysis of charter school impacts showed the following results: The Quality Curve results are sobering:

- *Of the 2403 charter schools reflected on the curve, 46 percent of charter schools have math gains that are statistically indistinguishable from the average growth among their TPS comparisons.*
 - *Charters whose math growth exceeded their TPS equivalent growth by a significant amount account for 17 percent of the total.*
 - *The remaining group, 37 percent of charter schools, posted math gains that were significantly below what their students would have seen if they enrolled in local traditional public schools instead.*
 - *Charter school students on average see a decrease in their academic growth in reading of .01 standard deviations compared to their traditional school peers. In math, their learning lags by .03 standard deviations on average. While the magnitude of these effects is small, they are both statistically significant.*
 - *The effects for charter school students are consistent across the spectrum of starting positions. In reading, charter school learning gains are smaller for all students but those whose starting scores are in the lowest or highest deciles. For math, the effect is consistent across the entire range.*
 - *Charter students in elementary and middle school grades have significantly higher rates of learning than their peers in traditional public schools, but students in charter high schools and charter multi-level schools have significantly worse results.*
 - *Charter schools have different impacts on students based on their family backgrounds. For Blacks and Hispanics, their learning gains are significantly worse than that of their traditional school twins. However, charter schools are found to have better academic growth results for students in poverty.*
- English Language Learners realize significantly better learning gains in charter schools. Students in Special Education programs have about the same outcomes.*
- *Students do better in charter schools over time. First year charter students on average experience a decline in learning, which may reflect a combination of mobility effects and the experience of a charter school in its early years. Second and third years in charter schools see a significant reversal to positive gains. (CREDO, 2009, p 3)*

Research by Zimmer et al J. (2009) *Charter schools in eight states: effects on achievement, attainment, integration, and competition*, produced broadly similar results to the CREDO study finding that in every location, Charter effects were either zero or marginally negative.

12. A major meta-analysis review by Betts & Tang (2011) built on their earlier review and provides a comprehensive summary of current knowledge on charter school effects on attainment using a variety of approaches. The authors summarise their findings which, like

the CREDO (2009) review, clearly point to the **extent of variation in charter school effects**. Moreover, the average effect sizes are found to be very small and are mostly only significant in elementary schools. They argue that much more study is required to establish why charter school effects are so varied, what factors contribute to positive effects and what to negative ones..

Focusing on math and reading scores, the authors find compelling evidence that charters underperform traditional public schools in some locations, grades, and subjects, and out-perform traditional public schools in other locations, grades, and subjects. However, important exceptions include elementary school reading and middle school math and reading, where evidence suggests no negative effects of charter schools and, in some cases, evidence of positive effects. Meta-analytic methods are used to obtain overall estimates on the effect of charter schools on reading and math achievement. The authors find an overall effect size for elementary school reading and math of 0.02 and 0.05, respectively, and for middle school math of 0.055. Effects are not statistically meaningful for middle school reading and for high school math and reading. Studies that focus on urban areas tend to find larger effects than do studies that examine wider areas. (Betts & Tang, 2011, p 1)

These results suggest that in some instances charter school students learn less than they would in traditional public schools, and that in other instances, charter school students learn more. Our analyses of the patterns of statistical significance and of effect sizes will echo this finding of heterogeneity across locations. (Betts & Tang, 2011, p13)

13. Key findings from a study of 36 Charter Middle schools in 15 states by Gleason et al (2010) revealed that : **‘On average, charter middle schools that hold lotteries are neither more nor less successful than traditional public schools in improving student achievement, behavior, and school progress’**. It was also shown that *‘The impact of charter middle schools on student achievement varies significantly across schools. study charter schools serving more low income or low achieving students had statistically significant positive effects on math test scores, while charter schools serving more advantaged students—those with higher income and prior achievement—had significant negative effects on math test scores’*. (Gleason et al, 2010, p xvii).
14. Nonetheless, there is some evidence of significant positive effects for particular kinds of Charter schools in urban areas especially for the KIPPS programme. Studies of KIPP charter middle schools suggest positive effects of 0.096 and 0.223 for reading and math respectively (Gleason et al, 2010). This research notes that New York City and Boston charter schools also appeared to deliver achievement gains larger than charter schools in most other locations. Three other studies also involving randomisation style designs to analyse Charter school effects focussing only on schools that (a) use a lottery for oversubscription; and, importantly that (b) are actually oversubscribed find positive impacts of attending Charter schools and in some cases the impacts are moderate and sometimes large (see Hoxby and Rockoff, 2004; Hoxby et al, 2009; Abdulkadiroglu et al, 2009; Tuttle et al, 2010). In Boston , Abdulkadiroglu et al (2009) summarised their results

‘we estimate that Charter Schools raise student achievement .09 to .17 standard deviations in English Language Arts and .18 to .54 standard deviations in math relative to those attending traditional schools in the Boston Public Schools. (Abdulkadiroglu et al, 2009, p 9).
15. In interpreting such findings it is important to note that effects are more evident in over-subscribed (popular) schools, for schools serving low income students. Abdulkadiroglu et al. (2009) shows that the oversubscribed schools they study in Boston are more effective than those not oversubscribed; the research involves relatively small numbers of schools in

particular areas and in many cases they essentially study KIPP/'no excuses' style schools. All the studies tell us is that 'no excuses' approaches seem to work well for students from chaotic home backgrounds. Such schools also often have significant extra resources, and can have high exclusion rates. The KIPP type approaches echo findings from many studies of improving and turnaround schools that suggest that they adopt many of the practices identified in the improving and effective schools literature. Thus it may be more likely that it is the processes of effective leadership and teaching combined with high expectations that make a difference rather than merely the status of being a Charter school. This would fit well with the mixed broader evidence on Charter school effects discussed earlier.

16. Abdulkadiroglu et al. (2009) also provide caveats and caution that their research only seeks to identify effects rather than the factors responsible for any positive benefits. *Rather we focus on the narrower though still important question of whether different types of schools produce significant achievement gains. For the moment, we cannot say which educational strategies or characteristics are most valuable in each school setting, though that is a question we hope to address in future work. Thus, it's important to keep in mind the fact that there might be many reasons for a school's success: instructional focus, student/teacher ratios, staff qualifications or background, use of tutors, and length of school day, to name a few. (Abdulkadiroglu et al, 2009,p6).*
17. Overall, the claimed benefits for a significant policy shift to invest significant extra resources into increasing school provision and creating extra capacity at a time of major public sector budget constraints by establishing Free Schools in England uses a relatively narrow and unrepresentative evidence base. Also, the absence of a discussion of the cost effectiveness of the policy (given the likely size of effects found in international research) compared with the costs of other school improvement interventions requires further research. A process of thorough review of the evidence, careful piloting and a focus on testing promising models (such as KIPPS) where evidence is more convincing, would be appropriate before large scale expansion and would fit with the proper use of evidence informed policy development and implementation.

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1st December 2011

References

- Abdulkadiroglu, A., Angrist, J., Cohodes, S., Dynarski, S., Fullerton, J., Kane, T., Pathak, P. (2009) *Informing the Debate: Comparing Boston's Charter, Pilot and Traditional Schools*, Boston, MA: The Boston Foundation. Available at: http://www.tbf.org/uploadedFiles/tbforg/Utility_Navigation/Multimedia_Library/Reports/InformingTheDebate_Final.pdf
- Allen, R. (2010) Replicating Swedish 'free school' reforms in England, *Research in Public Policy*, Summer 2010 pp 4-7.
- Betts, J.R. and Tang, Y.E. (2011) *The Effect of Charter Schools on Student Achievement: A meta-analysis of the literature*, Washington: National Charter School Research Project.

http://www.crpe.org/cs/crpe/download/csr_files/pub_NCSRP_BettsTang_Oct11.pdf

Center for Research on Education Outcomes (2009) *Multiple choice: Charter school performance in 16 states*, Stanford, CA: Stanford University. :

http://credo.stanford.edu/reports/MULTIPLE_CHOICE_CREDO.pdf

Gleason, P., Clark, M., Tuttle, C. C., and Dwoyer, E. (2010). *The Evaluation of Charter School Impacts: Final Report* (NCEE 2010-4029). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. :

http://www.mathematica-mpr.com/publications/pdfs/education/charter_school_impacts.pdf

Hoxby, Kang, J.L., Murarka, S. (2009) *Technical report: how New York City Charter schools affect achievement*, Boston, MA: NBER.

http://www.nber.org/~schools/charterschoolseval/how_nyc_charter_schools_affect_achievement_technical_report_2009.pdf

Hoxby, C. And Rockoff, J. (2004) *The Impact of Charter Schools on Student Achievement: A Study of Students Who Attend Schools Chartered by the Chicago Charter School Foundation*, Boston, MA: NBER.

<http://www.innovations.harvard.edu/cache/documents/4992.pdf>

Tuttle, C.C., Teh, B., Nichols-Barrer, I. Gill, B.P., Gleason, P. (2010) *Student Characteristics and Achievement in 22 KIPP Middle Schools: Final Report*, Washington D.C.: Mathematica Policy Research. http://www.mathematica-mpr.com/publications/pdfs/education/kipp_fnlrpt.pdf

Wiborg,S (2010) *Swedish Free Schools: Do they work?* published by the Centre for Learning and Life Chances in Knowledge Economies and Societies at: <http://www.llakes.org>

Zimmer, R., Gill, B., Booker, K., Lavertu, S., Sass, T.R., Witte, J. (2009) *Charter schools in eight states: effects on achievement, attainment, integration, and competition*, Santa Monica, CA: RAND. http://www.rand.org/content/dam/rand/pubs/monographs/2009/RAND_MG869.pdf

Serco Science, Finmeccanica UK, LGC Science and Technology, and ITS UK—Oral evidence (QQ 234-246)

Serco Science, Finmeccanica UK, LGC Science and Technology, and ITS UK—Oral evidence (QQ 234-246)

[Transcript to b found under Finmeccanica](#)

Dr Chris Tyler and Dr Robert Doubleday—Written evidence

1. Much has been made of the appointment of a Chief Scientific Adviser at the Treasury because it means that, for the first time, every major government department has one. The Government Chief Scientific Adviser, Sir John Beddington, should be applauded for his efforts to establish the principle that every government department should have a Chief Scientific Adviser. Having established this principle and completed the set, it is now time to begin a more detailed consideration of the roles of departmental Chief Scientific Advisers; the Committee's inquiry is timely and welcome.

2. In the following submission the authors, writing in a personal capacity, recommend a number of points for the Committee's inquiry to consider. These include:

- whether Chief Scientific Advisers should play a role in the policy sign-off systems of government departments
- whether Chief Scientific Advisers should sit on their departmental Boards
- whether Chief Scientific Advisers should be external, fixed-term appointments
- whether Chief Scientific Advisers are appropriately resourced and their roles well designed.

The role of departmental Chief Scientific Advisers

3. The UK's scientific advisory system is widely recognised for its excellence. The departmental Chief Scientific Advisers (DCSAs) are an important part of that system, providing a number of key functions in government departments.

4. **Advice:** DCSAs provide advice to officials on technical and evidential matters in a policy context. Such advice is intended to be impartial and clear about its inherent level of uncertainty. In order to provide advice on the full range of issues in a department's portfolio, DCSAs combine their own expertise with that from a wide range of sources.

5. **The Challenge Function:** The policy making process is not as neatly linear as it is often portrayed. DCSAs provide a challenge function throughout the policy making process, checking that proposals, from policy positions to implementation plans, are consistent with scientific and technical evidence.

6. **Research:** DCSAs frequently control research budgets. Some manage small research budgets that are used to support their advisory role. Others also manage much larger research budgets that support the work of the department more generally. The former fits into the core remit of all DCSAs, and the latter only applies to some DCSAs (such as those in DH and MoD).

The position of Chief Scientific Advisers in the Department

7. The role of DCSAs varies across departments. Some are full time, Board-level posts with control of significant budgets, others are part time posts without direct access to the most senior decision makers in the department.

Making their advice heard

8. DCSAs provide advice on complex and often contentious issues in a challenging environment. In order to provide the highest quality advice, Chief Scientific Advisers should be experts in their field and have access to a wide range of expertise that complements their own. In addition, to ensure that their advice is heard by a wide range of policy makers, at all levels of seniority, they need to be good communicators, with gravitas and a skill for navigating the policy landscape.

9. However, it is not all about the personality, credentials and skills of the DCSA: there are management practices that departments can adopt to ensure that the advice of DCSAs is heard. Looking at such practices could provide useful indicators of the effectiveness of departmental scientific advice. Clearly, access to senior decision makers is necessary for the work of DCSAs. An example of a relevant indicator could be the frequency of meetings between DCSAs, their Permanent Secretaries and their ministers. Another is whether DCSAs sit on their departmental Board. Taking a cross-departmental comparative view of these factors would provide potentially valuable insights. Whether or not they will lead to a firm recommendation such as all DCSA should sit on their departmental Boards, is a matter the Committee may wish to consider.

DCSAs in the policy process

10. There is an important and unresolved question about how far advice and the challenge function of DCSAs should extend. Is their role restricted to advice, or should it relate more explicitly to the decision-making process of policy making? By way of comparison and example, it is noteworthy that departmental chief economists are part of the sign-off process for policy proposals; DCSAs generally are not.

11. There is an extensive literature on the importance of technical and evidential information in making good policy decisions, although the role that Chief Scientific Advisers play in this remains under-researched. It is likely that some play a key role, while others do not. For the UK to develop further its already excellent scientific advisory system, all Chief Scientific Advisers need to be active players in the policy making process.

12. A strong case could be made for making Chief Scientific Advisers part of the policy sign-off system in government departments. This is not a suggestion that DCSAs should in any sense have a veto over policy proposals – this would be unworkable and undesirable – but that Chief Scientific Advisers should be formally consulted on proposals prior to them becoming policy.

Independence

13. Playing an effective challenge role in the policy process requires a degree of independence. Indeed, DCSAs frequently refer to their independence as a requisite for doing their job. One model for ensuring appropriate independence is that Chief Scientific Advisers should be external appointments on fixed term contracts (preferably seconded). This helps ensure that they are inclined to robust challenge and independent advice at least in part because of their continuing connections with their home institution and the wider scientific community.

The relationship between DCSAs and other advisers

Government economists, lawyers, social researchers and statisticians

14. DCSAs are not the only advisers in the policy making process. Economic and legal advisers are important and well-established posts in the civil service. Political advisers (normally referred to as special advisers) are a special case, reporting directly to their ministers. It is noteworthy that social research and statistics exist as advisory streams independent of the DCSA role, even though social research and statistical advice are part of the technical and evidential advice that an effective DCSA provides. Consideration should be given to the organisational relationship between analytical advice within departments to ensure appropriate co-ordination.

Terminology

15. Chief Scientific Advisers cover an astonishingly wide range of disciplines, “scientific” being used in the broadest sense of the word, to include natural sciences, social sciences, engineering and humanities. In most departments a combination of natural scientific, social scientific and engineering advice is required to provide comprehensive service. The government has understandably resisted a proliferation of different kinds Chief Advisers (Scientific, Social Scientific and Engineering, preferring a catch-all title). But clear use of the terms “social science/research” and “engineering” in the offices of the DCSAs would more accurately portray the comprehensive remit that they manage.

Management

16. Some people act as DCSAs full-time in one department, some full-time in more than one department (where the role is part time in those departments), some part time combined with another departmental function (such as a Head of Analysis or Chief Medical Officer) and some part time with some other institutional connection (such as an academic post in a university). Every bit as varied as the approaches to the DCSA role is the level of resourcing that DCSAs receive, from a handful to scores of support staff. Such variety in the design of DCSA roles and in the support that they receive may point to a positive (flexibility of approach; horses for courses) or a weakness (not thinking through the best way to perform the function; a lack of learning from best practice). Consideration of the differing roles and resources of DCSAs across government is important.

September 2011

Wellcome Trust—Written evidence

The Wellcome Trust welcomes the opportunity to respond to the inquiry on the role and function of departmental Chief Scientific Advisers (CSAs). By way of background, the Wellcome Trust is a global charitable foundation dedicated to achieving extraordinary improvements in human and animal health. We support the brightest minds in biomedical research and the medical humanities. Our breadth of support includes public engagement, education and the application of research to improve health. We are independent of both political and commercial interests.

The key messages of our response are:

- the importance of ensuring that the best available scientific evidence informs policy making, both at an early stage and throughout the process;
- the need to continue to engender a culture of evidence-based policy making by building in-house expertise to ensure scientific advice can be appropriately sought, interpreted and implemented;
- the necessity for CSAs to consult a wide range of relevant stakeholders when seeking advice, including funding agencies and research charities;
- the importance of making public the evidence on which decisions are based; and
- the role of CSAs in highlighting priorities and gaps in scientific knowledge.

Best available evidence: It is essential that Government policy is informed by the best available evidence. The appointment of CSAs to all departments was a positive step towards increasing scientific capacity within these departments. In considering how these roles can be employed most effectively, it is critical to ensure that the CSAs have the capacity and resources to seek the best available evidence and timely advice on particular issues throughout the policy making process.

Clear processes must be in place to ensure that independent scientific advice is used in the most effective way possible to inform policy making. Advisers, policy makers and the public must all have confidence in the system. Transparency is a key consideration in this regard, so that it is clear how and when evidence has been used to form a policy. Where a policy decision does not follow scientific evidence, clear reasons should be provided as to why evidence has not been followed.

Led by CSAs, in-house scientific expertise can assist in horizon scanning for proposed or revised European Union regulations which might have implications for science and research. The UK needs to engage much earlier in the EU regulatory process. Impacts on research from regulatory changes are not always immediately clear to departmental policy units in time to prepare an optimal response, as was the case for the European Union's Physical Agents Directive, which has the potential to seriously limit use of Magnetic Resonance Imaging for research, diagnosis and treatment. CSAs have an important role to play in highlighting revisions to regulations, or proposed, new regulations which may limit the scientific research endeavour.

Culture of evidence-based policy making and building in-house expertise: The Government must be encouraged to first consult with appropriate CSAs and in-house experts before seeking external input when important decisions are made concerning scientific issues. Building in-house expertise will ensure that the relevant experts are identified and undue reliance is not placed on a limited number of external specialists. It will also ensure that the right questions are asked and advice is interpreted appropriately. In this regard, there is also a greater need for cross-departmental working by CSAs, such that full use is made of the knowledge and experience available across Government departments.

It is important for CSAs to foster a culture of ‘evidence based policy making across government’. Of concern, for example, are the conclusions of successive Committees on Science and Technology of a “weak scientific culture” within the Home Office⁹⁷. This point was in response to the failure to consult the Home Office CSA (which he did not challenge) in the process of deciding to close the Forensic Science Service.

Chief Scientific Advisers should act as champions of an evidence-based approach to policy making across government. For example, we are concerned that the recent changes to immigration policy implemented by the UK Border Agency were not well informed by evidence that could have been sourced from across government departments. Important decisions, such as the closure of the Tier I (General) immigration category, were made on the basis of limited data.

On some occasions, we have found that the Government response to emergencies may have been more effective had it been more thoroughly informed by scientific advice. A House of Commons Science and Technology Report published in February 2011 identified reluctance on the part of the Government to consult with its scientific advisers in dealing with emergencies, citing the H1N1 influenza outbreak in 2009 and the volcanic ash cloud in 2010 as examples⁹⁸. Of concern also was the neglect of the Government to seek expert advice in good time to address concerns about nuclear fallout from the Fukushima disaster in March 2011. This led to the requirement for rapid revision of the Government’s prediction of the “worse case scenario” to the public, potentially undermining public faith in such advice.

Access to external advice: There is a need for CSAs to develop more robust mechanisms for accessing external advice from the wider scientific community, including from funding agencies and research charities. This should be done as soon as an issue surfaces and, where appropriate, continue throughout the life of the process. We suggest that funding agencies and research charities should be considered more consistently as sources from which expert advice can be found. These groups not only offer valuable perspectives, but have access to wide networks of researchers, patient groups and links to the user community that may help identify appropriate experts.

The Trust welcomed the opportunity to attend the meeting of CSAs and the Wider Scientific Community on 19 July 2011, which covered scientific areas of topical policy relevance. Future meetings and similar opportunities to engage should be encouraged.

Public Trust: Promoting public trust in the independence and authority of science advice to Government is a critically important role for CSAs. It is important that the role of CSAs

⁹⁷ House of Commons Science and Technology Committee, *The Forensic Science Service*, July 2011, p. 171.

⁹⁸ House of Commons Science and Technology Committee, *Scientific Advice and Evidence in Emergencies*, February 2011.

in policy making, and their position as independent scientific advisers, is clear to the public. This should build on the trust the public has in their advice. A survey by the Wellcome Trust⁹⁹ in 2009 sought the views of a random sample of 1,179 adults on various aspects of biomedical research. The survey found that the public consider individuals and organisations directly connected with medicine or research, such as university scientists, to be much more trustworthy sources of accurate and reliable scientific information than the Government or the media in general. As such, CSAs should make use of their unique roles to promote public consultation and engagement in policy making.

Public trust can also be augmented through publication of CSA advice to ministers. In cases where ministers have chosen not to act on CSA advice, CSAs should ensure that the reasons for doing so are accessible to the public.

Identifying scientific gaps and priorities: The knowledge and experience of CSAs, and that of their departments, should be assets in influencing research spend and priorities. Chief Scientific Advisers are in a unique position to highlight gaps in scientific knowledge. Sir John Beddington's role in drawing attention to research on food security exemplified the potential of this role to champion key areas of scientific endeavour.

At the same time, the role of CSAs must be treated as distinct from that of policy makers, recognising that it may not be appropriate or achievable for CSAs and the Government to reach a common position on a specific policy. Scientific advisers must remain true to the scientific evidence, while recognising that policy makers will need to take into account a wider range of factors when reaching a policy decision.

15 September 2011

⁹⁹ The Wellcome Trust Monitor Survey Report: Tracking Public Views on Medical Research. September 2009 (p 9, p 87).

Professor Paul Wiles—Written evidence

I was CSA at the Home Office from 1999 to 2010. Unlike some CSAs I was responsible for both advise and the line management of all science and technology, social research, economics, modeling and statistics in the Home Office group. I was also responsible for the Animal Scientific Procedures licensing and Inspectorate and the Forensic Science Regulator. The Home Office covers policing, counter terrorism, migration and border control, crime prevention and illegal drugs. During my time as CSA it also covered ID cards, prisons, probation, the Fire Service and community policy.

From 2007 to 2010 I also acted as Head of Profession for social research across the four governments of the UK and had a small professional team in the Treasury. I was a member of the Heads of Profession Group, chaired the departmental Heads of Analysis Group and sat on the government statistics committee of the UK Statistics Authority.

To briefly answer your questions in order:

1. As far as ministers are concerned my experience was that it varied depending on different ministers. Some ministers would insist on having my advice, in addition to any other advice from officials, on any issue where research-based evidence was an issue. Mostly ministers would want evidential advice to be included within a single submission from officials. Officials mainly put into their submissions whatever I, or my scientific colleagues, advised but sometimes there were robust discussions as to what form this should take. Some ministers only really wanted evidential advice after a policy had been decided in order to support its implementation. Generally officials did take scientific advice but I saw it as my job to ensure that they did.
2. This varied by scientific area. I had control of the budget for the Home Office Scientific Development Branch and its work (mainly applied science and technology); the statistical series; economics and modeling; Animal Scientific Procedures and the Forensic Regulator. The budget for social research and science and technology for major new areas had to be provided by the relevant Home Office business. Over the years I tried various ways to bring all this together as a science strategy and at least an annual budget. However, this remained problematic mainly because of the short-term and rapidly changing nature of HO policy making and therefore the difficulty that policy colleagues had in identifying longer-term evidential or technological needs.
3. Apart from as outlined in (1) this became progressively more difficult during my time at the Home Office. During the early period I was a member of the HO Board and able both to challenge and identify scientific needs at the early stages of policy development. My experience is that the challenge function is only likely to be effective and accepted at the early stages of policy development. During the latter part of my time at the HO the Board was re-configured and non-executive directors added with the result that I was no longer on the Board and no longer directly involved in early policy development. This meant that either I had to provide challenge much later in the process when persuading colleagues and ministers that challenge played an important risk management function was always going to be more difficult. Apart from challenge from myself, or my scientific colleagues, we also created in the HO external

advisory groups (e.g. on Chemical & Biological Weapons or Drugs) part of whose function was to provide challenge and also sought external reviews from academics or learned societies.

4. I always found the CSA network very supportive and sometimes a means of getting things done more quickly than would otherwise have been the case - the clearest example of that being the creation of a cross-government counter terrorism research budget post 9/11. I also always received strong support from both the GCSAs I worked with - Sir David King and Sir John Beddington. The range of expertise of the CSAs was, however, limited simply because it was the outcome of a number of separate departmental appointments. I was the only social science CSA even though social science probably covers the greatest range of government policy making. Probably as a result most CSA discussions were about issues of physical science or technology. The alternative evidential network in government - the Departmental Heads of Analysis - was made up entirely of economists apart from myself. There is the issue of the range of expertise amongst CSAs but also the separate networks of Departmental Heads of Analysis, and the separate Heads of Profession for Social Research, Economics, Operational Research and Statistics who only really come together at the Heads of Analysis Group, chaired by the Perm Sec of the Treasury.
5. To a degree this is for others to judge. I can only report that the scientific and engineering learned societies provided the right degree of external critical pressure, combined with a willingness to work cooperatively with the Home Office, and I was always grateful for their support, especially that of the Royal Society. On the social science side the British Society of Criminology was similarly both critical and supportive but the British Academy and the Academy of Social Sciences was invisible in the Home Office work. In my role as Head of Profession for Social Research I did find the individual subject social science learned societies helpful and supportive and the Academy of Social Sciences did work hard to develop its support capability. The research councils were similarly supportive and, as a CSA, I had annual bilateral meetings with them. The Home Office had good links to the academic and business communities but mainly through its permanent research and scientific establishments. I felt that this was the correct balance with the departmental CSA focusing on those links that especially provide external challenge and the departmental research and scientific staff on longer-term links with those who will help deliver the departmental R&D programme.
6. The CSAs do have an obligation to promote public trust but this has to be seen in a context in which trust in government and public institutions in general has been in decline. I found it easier to build trust in HO science with other institutions - e.g. learned societies, key stakeholders, or select committees - than with the public at large. A frustration of my time as CSA was the constant argument about trust in crime statistics. Whilst there were issues about improving statistical coverage (there always will be in response to social change) I was never persuaded that this was in fact a problem about statistical quality or independence rather than a broader political issue.

29th August 2011

Professor Paul Wiles and Professor Brian Collins—Oral evidence (QQ1-20)

Professor Paul Wiles and Professor Brian Collins—Oral evidence (QQ1-20)

[Please see under Professor Brian Collins](#)