



House of Commons
Science and Technology
Committee

**Scientific Advice, Risk and
Evidence Based Policy
Making: Government
Response to the
Committee's Seventh
Report of Session 2005–06**

First Special Report of Session 2006–07

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The Science and Technology Committee

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Committee staff

The current staff of the Committee are: Dr Lynn Gardner (Clerk); Celia Blacklock (Second Clerk); Dr Hayaatun Sillem (Committee Specialist); Dr Anne Simpson (Committee Specialist); Dr Sarah Bunn (Committee Specialist); Ana Ferreira (Committee Assistant); Robert Long (Senior Office Clerk); and Christine McGrane (Committee Secretary).

Contacts

All correspondence should be addressed to the Clerk of the Science and Technology Committee, Committee Office, 7 Millbank, London SW1P 3JA. The telephone number for general inquiries is: 020 7219 2793; the Committee's e-mail address is: scitechcom@parliament.uk

First Special Report

On 8 November 2006 the Science and Technology Committee published its Seventh Report of Session 2005–06, *Scientific Advice, Risk and Evidence Based Policy Making* [HC 900–I]. On 29 January 2007 the Committee received a memorandum from the Government which contained a response to the Report. The memorandum is published without comment as an appendix to this Report.

Appendix

Introduction

1. The Government welcomes the Committee's important and thoughtful Report. It is pleased by the Committee's endorsement of the work of the Office of Science and Innovation (OSI) and of the Government Chief Scientific Adviser (GCSA), Sir David King, since the Committee's predecessor reported in March 2002 on scientific evidence and policy-making. In particular, the Government endorses the Committee's positive comments on:

- progress in building a community of Departmental Chief Scientific Advisers (DCSAs) and embedding them more firmly in the policy-making process;
- improvements delivered for example through Departments' Science and Innovation Strategies, the GCSA's Science Reviews of departments and the Government's new Horizon Scanning Centre (HSC);
- the development of the role of Head of Scientific and Engineering Profession in Government (working with other analytical heads of profession and promoting Professional Skills for Government¹ (PSG)); and
- the role of the GCSA in promoting best practice through Codes, Guidance and the use of OSI resources to support DCSAs.

2. At the same time, the Government agrees with the Committee that there is much further still to go in ensuring that science is managed and used by Government to best effect. It agrees largely with the analysis in the Committee's Report, though in some cases it differs on the proposed course of action. The Government is committed to continuing to improve its use of scientific advice, its management of risk, and its use of evidence to support policy.

3. This response contains an overview followed by responses to the detailed recommendations. The response is structured under themes and makes clear which of the Committee's individual points are being responded to in each case.

4. The Government believes that many ambitions in the report can be met through judicious revision and extension of existing policy initiatives. Some recommendations require further research. At the time of HM Treasury's annual report on the *Science and Innovation Investment*

1 Professional Skills for Government (PSG) website: <http://psg.civilservice.gov.uk/>

*Framework 2004-2014*², the Government will report on progress to the Chairman of the Committee.

Overview

(a) Improving the impact and quality of scientific advice alongside other analytical inputs to evidence-based policy-making

5. As the Report sets out, the Government is now supported by a community of DCSAs that did not exist in 2002. Their principal role is to:

- support the use of scientific evidence in policy-making;
- ensure that their departments are intelligent customers for science;
- promote and support the interests of scientists and engineers in their departments;
- ensure the quality of the science used in their departments; and
- explain science inside government and engage with public opinion.

6. The Government welcomes the Report's recommendations for raising further the profile and impact of DCSAs. The Government further believes that more can be done to raise the profile and engagement of Chairs to Scientific Advisory Committees (SACs) in departmental policy-making processes. It also welcomes the recommendations that contribute to improved public understanding of the Government's use of scientific evidence. The proposed revision of the *Code of Practice for Scientific Advisory Committees*³ (CoPSAC) will take forward many of the Report's recommendations in this area.

7. The appointments of DCSAs have been spread over the period since 2002, so the maturity and development of the role differs in each department. Consequently, under the guidance and leadership of the GCSA, good practice from the more established DCSAs is being shared for example through networking and workshops. This includes support for:

- closer and more integrated working with other analytical disciplines;
- building a strong Head of Science and Engineering Profession (HoSEP) function in the main departments and agencies alongside the GCSA's Government HoSEP role;
- improving communication of evidence and risk in policy making;
- embedding the use of the *Government Chief Scientific Adviser's Guidelines on Scientific Analysis in Policy Making (2005)* (GCSA Guidelines)⁴; and
- improved working with SAC secretariats.

2 The Science & Innovation Investment Framework 2004-2014 can be viewed on-line at: http://www.hm-treasury.gov.uk/spending_review/spend_sr04/associated_documents/spending_sr04_science.cfm

3 Code of Practice for Scientific Advisory Committees (December 2001) can be viewed on-line at: <http://www.dti.gov.uk/science/science-in-govt/works/advice-policy-making/codeofpractice/page9483.html>

4 The Government Chief Scientific Adviser's Guidelines on Scientific Analysis In Policy Making (2005) can be viewed on-line at: <http://www.dti.gov.uk/files/file9767.pdf>

8. OSI has run several networking events, and further events are planned in 2007 on the use of horizon scanning in government, scientific peer review and how to engage the scientific community (both internal and external). OSI has also worked closely with the National School of Government to develop the scientific element of the 'Analysis and Use of Evidence' core skill from PSG. By continuing this process, the Government will address many of the Report's recommendations. The Government will also review the induction material, the CoPSAC³ and GCSA Guidelines⁴ provided for DCSAs in the light of the Committee's recommendations.

9. The Government agrees with the Committee that the work of DCSAs should be further embedded in departments in order to ensure the good use of scientific methods at every level of Government. There will however be differences in the position of DCSAs in departments according to their size and responsibilities [**Recs 6, 7, 9 and 10**].

10. The Government recognises the need to create an effective structure to support the development and integration of scientists in Government. It is seeking to deliver this through the PSG agenda and HoSEP roles. It is not convinced that formalising a single system across Government through a Government Scientific Service is the right action to take now [**Recs 17, 18, 19, 20, 30 and to some extent 21**].

(b) Machinery of Government

11. The location and responsibilities of the GCSA and the Minister responsible for the management and use of science in Government [**Recs 2, 3 and 4**] are a matter for the Prime Minister and will be kept under review.

(c) The standing of science and scientists in Government and the role of the 'intelligent customer' for R&D

12. The Report expresses concern about the status of science and its practitioners in Government [**Recs 12-21**]. The Government shares some, but not all, of the Committee's concerns. Many of the Committee's concerns are being addressed through HoSEP and PSG. The enhanced HoSEP role for the GCSA supports greater visibility and opportunity for scientists and engineers across Government. The use of science and a better understanding of risk have been built into the PSG core skills for civil servants [**Rec 58**].

13. Making the voice of scientific evidence heard in a balanced way alongside other professional analytical streams remains a challenge that is addressed through the GCSA's *Guidelines on Scientific Analysis in Policy Making* (2005)⁴.

14. DCSAs must ensure that departments retain sufficient scientific or analytical competence to act as 'intelligent customers', able to know when to seek and how to use expert advice from a variety of sources. The Government does not agree that its handling of Public Sector Research Establishments (PSREs) need result in a diminished 'intelligent customer' capability [**Rec 13**]. The current improvements in professionalism across the civil service will complement the identification of relevant experts through trusted sources including PSREs, Learned Societies, Research Councils, SACs, the Council for Science and Technology and others. The contribution, if any, of each organisation will differ with each issue, but in every case it will be important to embed the analysis and use of evidence skills that make it possible to ask the right questions and translate the answers into policies [**Recs 31 and 32**].

15. As part of its 2007 revision of the CoPSAC, the Government will look at how SAC secretariats obtain scientific, legal and administrative expertise [*Rec 23*]⁵—secondments may provide part of the answer.

16. The appointment of DCSAs marks a major step towards the better management and use of science in Government [*Recs 6-11*]. The Government welcomes the importance attached by the Committee to the use of external expertise [*Recs 22-33*] to inform and challenge policies and inform the public on the balance of evidence.

(d) Advisory structures and quality assurance

17. The Government agrees that DCSAs must be actively engaged with departmental policy-making. This will be considered further in the 2007 review of the CoPSAC (*Q1350*), which will also consider lay membership, chairmanship and scientists operating outside their specialism. While DCSAs may not always directly monitor advisory bodies, they should ensure that effective monitoring happens and that appropriate changes are made in response to monitoring [*Rec 52*].

18. Maintaining high standards of research is important for all departments [*Recs 26-32 and 46-49*].

19. The Government agrees it is essential that there is early engagement of DCSAs in policy development [*Rec 9*]. The Government believes that departmental Boards should include the most senior departmental analyst, and that the DCSA should have the right to advise Ministers directly on matters relating to his or her professional judgement whether or not he or she is on the Board.

20. The GCSA will continue to build capacity, leadership, and quality assurance—the reviews of departments' management and use of science provide an opportunity for more detailed intervention where necessary [*Rec 39*]. The annual reviews of departmental performance following up the *Science and Innovation Investment Framework 2004-2014*² also help promote improved quality. The GCSA regularly meets departmental Ministers and Permanent Secretaries when issues relating to the use of scientific evidence are raised.

21. The Government believes that the Prime Minister's Strategy Unit's recently announced policy reviews (*Pathways to the future*)⁵, the Strategy Unit's ongoing work, the newly established Civil Service Steering Board (which supersedes the Permanent Secretary Management Group) and the OSI's HSC are well placed to achieve the objectives identified by the Committee on the pilot use of peer reviews [*Rec 48*] and peer review of cross-government policies [*Rec 49*], as well as extending good practice across all analytical disciplines.

22. The Government agrees that it is important to assess trials objectively. But decisions are for Ministers who will take account of all relevant factors, not just of scientific evidence [*Rec 42*].

5 'Pathways to the Future' announcement of 24 November 2006 can be found on-line at: <http://www.pm.gov.uk/output/Page10478.asp>

(e) Balanced conversations with the public on the Government's use of science, risk and uncertainty

23. The importance of balanced conversations with the public, identified by the Committee [Recs 37, 38, 50 and 51], extends to the treatment of 'risk' [Recs 63-69]. The Government agrees that clarity is needed in communication on risk and the balance of evidence, and that this will sometimes point to using a chief adviser rather than a Minister to communicate [Rec 65]. Further discussion with the media to try to maximise public understanding is in hand [Rec 68].

24. The Government shares the Committee's presumption in favour of transparency of scientific evidence, including the remaining uncertainties. The Government seeks to be as open as possible when publishing the evidence base, particularly in explaining policies and the balance of argument to the public, subject to the law and necessary confidentiality recognised in the Freedom of Information⁶ (FoI) and Data Protection⁷ (DPA) Acts (Q1388-1400).

25. Inputs other than evidence—for example political judgement—will influence policy outcomes [Rec 35], this is acknowledged in the Cabinet Office publications *Modernising Government*⁸ and *Professional Policy Making for the 21st Century*⁹ as well as in academic literature. Nevertheless, where possible, the Government agrees that processes should be transparent and the balance of evidence exposed. Transparency may not be possible in reserved areas. Examples of reserved areas include advice that precedes a final policy outcome, information accessible by other means, information intended for future publication, security matters and defence⁶.

26. The Government draws the Committee's attention to a new work-stream led by the Cabinet Office on a *Code of Practice on Consultation*¹⁰ that will address many of the issues raised by the Report [Recs 54-57].

27. The Government welcomes the Committee's support for the language and analysis underpinning a precautionary approach in the business of government [Recs 60-62]. However, it would be impractical and unnecessary to avoid all use of the term 'precautionary principle' since the term is embedded in many international agreements. In practice, the precautionary principle is interpreted in Government as a flexible precautionary approach, which enables innovation and learning in circumstances of significant uncertainty, while not putting the public at unacceptable risk.

(f) Planning for the future

28. The Government has seen significant benefits to policy-making arising from the OSI HSC across a range of issues [Recs 43-45]. A valuable lesson learned as the HSC has evolved is the importance of balance between all evidential streams as they affect and are affected by science,

6 Guidance on Freedom of Information Act can be found on-line at: <http://www.foi.gov.uk/guidance/index.htm>

7 Guidance on data protection can be found on-line from the Information Commissioner's Office at: <http://www.ico.gov.uk/>

8 'Modernising Government' can be found on-line at: <http://www.policyhub.gov.uk/docs/modgov.pdf>

9 'Professional policy making for the 21st Century' can be found on-line at: <http://www.policyhub.gov.uk/docs/profpolicymaking.pdf>

10 Code of Practice on Consultation can be found on-line at: <http://www.cabinetoffice.gov.uk/regulation/consultation/code/index.asp>

technology, economics, society, and politics. The HSC made an important contribution to the Treasury document—*Long-term opportunities and challenges for the UK: analysis for the 2007 Comprehensive Spending Review (November 2006)*.¹¹ While it does not provide certainties, horizon scanning helps policy-makers test their assumptions and identify emerging issues that need further examination.

29. The work of the HSC will contribute to many of the areas of risk and communication identified by the Committee's Report [**Recs 58-69**].

30. The Government will continue to review as a matter of importance whether further steps are needed to overcome barriers to evidence-based cross-departmental working, and in doing so will take account of the Committee's proposal for a centrally held budget [**Rec 40**].

11 'Long-term opportunities and challenges for the UK: analysis for the 2007 Comprehensive Spending Review (November 2006)' can be viewed on-line at:http://www.hm-treasury.gov.uk/media/298/55/csr_longterm271106.pdf

Responses to the Committee's Recommendations

Sources of advice and expertise

1. (Recommendation 1) We support the current arrangement whereby the Government Chief Scientific Adviser's remit encompasses the natural, physical and social sciences, as well as engineering and technology, but we note that it is a challenge for one individual to cover such a disparate range of subject areas and disciplines. It is therefore vital that the Government Chief Scientific Adviser works closely with the Government Chiefs of Profession in the social sciences, including economics, to establish higher profiles for these disciplines. (Paragraph 16)

Agreed. The Government Chief Scientific Adviser (GCSA) works closely with other Heads of Profession including through groups such as the Chief Scientific Advisers' Committee (CSAC), the Permanent Secretary Management Group's Strategy Sub-Group (PSMG-SSG) (whose functions will be superseded by the newly established Civil Service Steering Board that is currently considering how the strategy work can best inform its decision-making), and the Analysis & Use of Evidence Working Group. In addition the GCSA has bilateral meetings with other heads of profession.

Recommendations 2, 3, 4 and 5—Embedding and enhancing the role of Departmental Chief Scientific Advisers

2. (Recommendation 2) We recommend that the posts of Government Chief Scientific Adviser and Head of the Office of Science and Innovation be separated. The Director General of Science and Innovation at the DTI should become the new Head of OSI. (Paragraph 18)

3. (Recommendation 3) In view of the cross-cutting nature of science and the cross-departmental responsibilities of the Government CSA, it would make sense for the post to be based in a department with a similarly cross-cutting remit. (Paragraph 19)

4. (Recommendation 4) A long term solution is required for the post of Government Chief Scientific Adviser, not just one which happens to suit the strengths of present incumbent. On balance, we recommend the relocation of the GCSA's office to the Cabinet Office. In addition, the GCSA should be given a seat on the board of the Treasury to ensure that the crucial work of this department benefits from a scientific perspective at the highest level. The changes we have recommended seek to strengthen the influence and effectiveness of the GCSA. It is therefore essential that the resources available to the GCSA to support his work do not diminish as a result of these changes. (Paragraph 25)

5. (Recommendation 5) We are of the view that clear leadership can be valuable for improving accountability and providing a driver for implementation of good practice across departments. We recommend the Government clarify the lines of ministerial responsibility for the scientific advisory system. For example, whilst ultimate responsibility must rest with the Prime Minister, day-to-day responsibility might best be assumed by the Cabinet Office led by the Government Chief Scientific Adviser. (Paragraph 26)

The location and responsibilities of Ministerial and GCSA posts [*Recs 2, 3 and 4*] are a matter for the Prime Minister and will be kept under review.

Wherever the GCSA post is located, the Government is committed to further embedding and enhancing its role and impact.

Recommendations 6, 7 and 8—Appointment of DCSAs

6. (Recommendation 6) We recommend that the presumption should be that all future departmental Chief Scientific Advisers should be external appointments who have occupied senior positions in their scientific community and command the respect of their peers. (Paragraph 31)

7. (Recommendation 7) We support the use of part-time and fixed-term contracts for departmental CSAs with the caveat that departments must provide adequate support and resources for these appointments. We recognise that appropriate staffing levels will vary between departments but it seems unlikely that a DCSA can operate effectively with just one or two officials. (Paragraph 34)

8. (Recommendation 8) We commend to other departments the Department for Transport’s model whereby an externally appointed DCSA is supported by a senior scientist, drawn from the civil service, who acts as both deputy CSA and Head of Profession for Scientists and Engineers in the department. (Paragraph 35)

Departmental Chief Scientific Advisers (DCSAs) are likely to be external appointments. The Government agrees that DCSAs should be experienced and highly reputable scientists who command the respect of their peers through their scientific contributions [*Rec 6*]. However it would be wrong, and could be unlawful, to rule out the possibility that in some cases the best qualified candidate might be working, within the civil service. The Government also agrees that it is usually desirable that the deputy to a DCSA should have prior experience of working in, or closely with, Government [*Rec 8*]. This is likely to mean that the field for Deputy DCSAs will, in some cases, be confined to serving civil servants. The question of who is best suited to fill the role of Head of Profession within each department should be considered on its merits and is likely to vary.

The Government agrees that in many cases part-time and/or fixed term contracts will be appropriate for DCSAs. It also accepts the importance of providing adequate resource to support DCSAs; this will differ depending on the size, structure and circumstances of the department [*Rec 7*].

Recommendations 9, 10 and 14—DCSA contributions to policy formation

9. (Recommendation 9) The introduction of departmental CSAs has been most welcome but they must be able to contribute fully to strategic decision making and high level policy development within the department if their contribution is to be maximised. Departmental CSAs must be given the opportunity to play a full and active and yet independent role at board level, and be in a position to identify where their involvement is required, rather than being brought in where others have decided that there is a need for their input. DCSAs must be in the stream of policy development, not watching from the bank. The misconception that

scientists in the civil service should be ‘on tap, not on top’ must be laid to rest once and for all. (Paragraph 39)

10. (Recommendation 10) We acknowledge the potential difficulty facing departmental CSAs in balancing the demands and expectations of their permanent secretary, minister and the Government CSA. DCSAs should report to the Secretary of State but retain the independence necessary not to restrict their freedom to speak out internally or publicly when required and to avoid any politicisation of their advice. (Paragraph 40)

11. (Recommendation 14) It seems to us necessary that all senior officials and policy makers should have a basic understanding of the scientific method, the role and importance of peer review, the relevance of different types of evidence, and the way to evaluate it. (Paragraph 48)

The Government accepts the main thrust of the Committee’s analysis on these points. DCSAs should be fully and effectively engaged in the policy-making process at all levels, and be able to put their advice directly to departmental Boards and Ministers. Equally, senior civil servants and policy makers need to understand the input science can make to policy, and how that can most effectively be achieved.

The Forestry Commission has, since 2002, brought departmental specialists in social science, natural sciences, economics and statistics into a single Division (Corporate and Forestry Support) to improve delivery of analytical advice into policy. The same Division also deals directly with legal advisors in the Department for Environment, Food and Rural Affairs (Defra) and contains specialist advisors with direct experience of forest management.

MoD is a major investor in R&D in support of policy; consequently, its Chief Scientific Adviser sits on the Defence Council (chaired by the Secretary of State) and the Defence Management Board (the Executive Board of the Defence Council). They also chair the Investment Approvals Board, MoD’s senior Approving Authority for investment in new defence capability, and the Defence Science and Technology Board, which directs the MoD’s Research Programme.

The Government’s position is that each departmental Board should include the department’s senior analyst. That may be the DCSA or another analyst. The senior analyst should represent all analytical disciplines at Board level, without prejudice to the right of other departmental Chief Advisers to put advice directly to the Board or Ministers when they think necessary [**Rec 9**].

In relation to **Recommendation 10**, the DCSA should normally report through the Permanent Head of Department, but should have the right of direct access to Ministers on matters subject to his/her professional advice.

The right of DCSAs to speak publicly and independently on matters involving professional judgement is important, but should be exercised carefully if the DCSA is to be a full and trusted participant in internal policy discussions.

The Government accepts *Recommendation 14*, and is asking Government-wide Heads of Profession to work with the Cabinet Office and the National School of Government to ensure that it is fully reflected in the development of Professional Skills for Government (PSG)¹.

12. (Recommendation 11) It is good that the Government CSA is able to go directly to senior officials and ministers in departments in cases where he believes his intervention is essential. In so doing he must be careful not to undermine the position of the relevant departmental CSA and recognise those areas in which their expertise should hold sway. He should, wherever possible, include the departmental CSA in his discussions with ministers and senior officials. By the same token, we believe that departmental CSAs should be free to publicly disagree with the Government CSA in instances where there is, for example, a difference in their interpretation of scientific evidence, but urge departmental CSAs and the Government CSA to co-operate closely to deliver an active network of scientific support and advice to every department. The scientific advisory system will be most effective when the departmental and Government CSAs work together collaboratively. (Paragraph 41)

Agreed in principle. The Government has asked the GCSA to lead further discussion through CSAC of the role of DCSAs, how they work together and, if necessary, to amend the GCSA's *Guidelines on Scientific Analysis in Policy Making*^A in the light of that discussion.

Recommendations 12, 15, 16 and 20—Development and support for scientists within government

13. (Recommendation 12) It is worrying and regrettable that there is a perception that not only has there been a decline in scientific expertise within the civil service, but civil servants perceive specialist skills to be a hindrance to career progression. We recommend that the Government implement the 2002 recommendation of the Cross-Cutting Review of Science and Research to maintain records on specialist staff in order to identify their qualities and experience and to investigate, and if necessary tackle, negative attitudes towards scientific qualifications. (Paragraph 45)

14. (Recommendation 15) We are encouraged by the emphasis in the Professional Skills for Government framework on the use and analysis of evidence. A basic understanding of the scientific method and the interpretation of different types of evidence, together with the development of an informed demand for scientific input and analysis amongst generalist civil servants, particularly those at senior levels, are important prerequisites for effective policy making. We recommend that the Government put in place the necessary reward systems and incentives to support its ambitions in this area. (Paragraph 51)

15. (Recommendation 16) In policy-making, scientific literacy must be given equal value to economic knowledge and drafting ability, while further reform of the civil service is essential to bring about a cultural shift: specialist skills must be given equal value to generalist skills and this should be reflected in rewards structures. It is also essential that more opportunities are created for scientists to progress to the most senior positions without being required to sideline their specialist skills. (Paragraph 53)

16. (Recommendation 20) Departments must collect comprehensive data, in a manner which is consistent and comparable between departments, regarding the numbers of scientists and engineers which they employ. (Paragraph 61)

The Government believes that the position of scientists and engineers along with other professional groupings in departments has been significantly enhanced since 2002 through the development of the DCSA and Head of Science and Engineering Profession (HoSEP) communities as well as through PSG. PSG will help civil service specialists develop other relevant professional skills to progress their careers. There is no reason why specialists should not reach the highest levels of the service, recognising that for most senior posts a range of non-specialist skills will also be needed [Recs 12 and 16]. There is no bias against specialists in the reward structure.

Future work to develop the science and engineering profession within government will promote a positive set of expectations for scientists and engineers and build their awareness of policy issues. This will contribute to enhancing the status and prospects of specialists.

The use of science has been included in the PSG¹ core skills of ‘Analysis and Use of Evidence’ and ‘Policy Delivery’.

Periodic research by Government Skills¹² (the Sector Skills Council for central Government, the Armed Forces and Non-Departmental Public Bodies) will provide information (at Civil Service aggregate levels) on numbers of scientists and levels of qualifications. Government Skills also holds individual data on science and engineering staff at Senior Civil Service (SCS) level, but not on all civil servants [Recs 12 and 20].

From 2007, the Common Employee Record (CER) is likely to provide data on professional categories and PSG career grouping. At present plans for rollout of the CER does not include collecting data on qualifications but this might be added once the CER has been successfully implemented. This data should help achieve parity and comparability between different departments and their scientists and engineers in delivering wider PSG ambitions.

Departmental Heads of Profession are looking at the most useful ways to collect and use information on the specialists they lead, to help ensure their professional development.

17. (Recommendation 13) The Government’s failure to do enough to address the implications of the privatisation of Public Sector Research Establishments for the scientific capacity of the civil service has been damaging. Remedial action is now required to redress the effect of the loss of, and restriction of access to, expertise in establishments such as the Laboratory of the Government Chemist, Forensic Science Service and QinetiQ. Future plans for changing the status of such Establishments must also take greater account of the potential detrimental impact of these changes on the scientific advisory system supporting Government policy making. (Paragraph 46)

The Government agrees that the implications of changes in the status of Public Sector Research Establishments (PSREs) for the scientific advisory system in Government need to be taken into account, but it does not accept that these implications have generally been ignored in the past. For example, the division of the Defence, Evaluation and Research Agency (DERA) into QinetiQ and the Defence Science and Technology Laboratory (DSTL) reflected

¹² Government Skills (the Sector Skills Council for central government, the Armed Forces and Non-Departmental Public Bodies) can be found on-line at: <http://www.government-skills.gov.uk/>

such considerations amongst others. The important factors under any arrangements are that departments should have the capabilities to identify, commission and use the advice they need, and that their sources of relevant advice should be available, whether in the public or private sector. In many cases, privatisation has actually helped broaden the range of advice sought and used by Government. But we fully accept that Government must be an intelligent customer for scientific advice.

The *Science and Innovation Investment Framework 2004–2014*², published in July 2004, sets out the Government’s continued commitment to the sustainability of the UK research base, including both universities and PSREs. The report on the Government’s first annual monitoring exercise on PSRE long-term sustainability was published earlier in 2006. This report noted that maintaining appropriate levels of staffing and skills were an element of PSREs’ long-term sustainability. PSREs will be regularly monitored on all elements of their sustainability, including staffing, with the results of this monitoring being reviewed by a forum bringing together PSRE parent departments to discuss policy on sustainability.

Recommendations 17, 18, 19, 20, 21 and 30—Creation of and functions for a Government Scientific Service

18. (Recommendation 17) We recommend the establishment of a Government Scientific Service. This would provide a stronger professional identity and a focal point for specialists from across the physical and natural sciences and engineering working within Government. (Paragraph 56)

19. (Recommendation 18) The proposed Government Scientific Service should take the lead in identifying good practice in professional development for scientists and engineers, including the use of secondments, and promoting its adoption across Government (Paragraph 59)

20. (Recommendation 19) Determining which expertise should be retained in-house and which sought externally is of critical importance (Paragraph 60)

21. (Recommendation 20) Departments must collect comprehensive data, in a manner which is consistent and comparable between departments, regarding the numbers of scientists and engineers which they employ. (Paragraph 61). [see paragraphs 42–47 for earlier comments on Recs 12, 16 and 20].

22. (Recommendation 21) We recommend that the Government Chief Scientific Adviser commission a study of the way in which departments should assess their need for scientific skills and determine whether these needs are being met. (Paragraph 61)

23. (Recommendation 30) The efficiency measures taken as a result of the Gershon Review have increased the Government’s dependence on consultants as sources of scientific and technical advice. This gives cause for concern. The Government must have sufficient expertise to ensure that it both asks the right questions and does not become an uncritical, unquestioning consumer of the advice it receives. We believe that improved auditing of skills within the Government and a strong Government Scientific Service would enable the Government to make more efficient use of the existing expertise within the civil service and, ultimately, to obtain better scientific advice. (Paragraph 79)

The Government recognises the issues raised in this group of recommendations and is seeking to address them in particular through PSG and HoSEP. It is not persuaded that a Government Scientific Service needs to be established in order to address the Committee's concerns, but will keep this under review [Rec 17].

Examples of relevant good practice are OSI's support for the GCSA's HoSEP role through hosting workshops and seminars on communication of evidence and the use of the Guidelines on Scientific Analysis in Policy Making. OSI has also hosted networking events on evidence and risk in policy-making and to bring together Science Advisory Committee (SAC) Secretariats. Further events are planned in 2007 on the use of horizon scanning in Government, scientific peer review and how to engage the scientific community (both internal and external). OSI has worked closely with the National School of Government to develop the scientific element of the 'Analysis and Use of Evidence' PSG core skill. OSI also publishes a newsletter in support of the science and engineering community in Government.

The Government recognises the importance of sourcing professional expertise appropriately [Rec 19]. PSG and the Gershon Review form integral parts of the Public Sector reform programme [Rec 30]. *The Leitch Review of Skills*¹³ provides an opportunity to refocus recruitment to ensure the Government maintains the scientific and technical capability it needs. Government Skills¹² is about to conduct a Sector Needs Analysis that will provide the evidence needed to develop and implement the skills strategy for the wider civil service. This will address any skills gaps in science and engineering, taking account of comments from the OSI and relevant Heads of Profession.

Within that, each department will remain responsible for determining its own preferred skills mix and ensuring it is achieved [Rec 21].

24. (Recommendation 22) DEFRA's decision to introduce an independent Scientific Advisory Council to support the work of the departmental CSA is sensible and should be emulated by other departments. It is critical that these Advisory Councils are independent and are seen to be so. (Paragraph 68)

Accept in principle. This is a matter for individual departments and their DCSAs in the light of their particular situations. However the use of independent, high quality scientific advice and challenge to departments through SACs, both in specific areas and department-wide, are in many cases important means of helping the DCSA carry out his or her role effectively. CSAC will review and discuss the use of SACs across Government during 2007, to promote best practice.

The recent selection of eleven National Institute for Health Research (NIHR) Biomedical Research Centres demonstrates the Department of Health's ability to obtain and use high quality, external advice. An independent international Selection Panel selected the Centres through open competition, in a two-stage process. The Panel comprised internationally renowned experts in relevant research fields, with substantial experience in translational clinical research. To ensure independence, and to provide the necessary international perspective on the standing of the partnerships and their proposals, none of the members of the

13 *The Leitch Review of Skills* can be found on-line at: http://www.hm-treasury.gov.uk/independent_reviews/leitch_review/review_leitch_index.cfm;

Selection Panel work in England. The Panel also included observers from HEFCE and MRC to ensure that the perspectives of two of its key funding partners were taken into account.

The Forestry Commission, since 2002, has brought policy end-users directly into the setting of strategic priorities for research. It set up a Research Strategy Management Board of policy leads from the Forestry Commission in England, Scotland and Wales and the Northern Ireland Forest Service. The Board is supported by the Research Director from their Research Agency and the Head of the Specialist Advisors Unit, responsible for commissioning research.

25. (Recommendation 23) Wherever possible, the secretariat of scientific advisory committees should include secondees from appropriate scientific establishments, to both enhance the specialist knowledge within the secretariat and safeguard its independence. (Paragraph 69)

The Government welcomes secondments to SAC secretariats to provide specialist knowledge. OSI recently hosted a workshop for secretariats of SACs, aimed at networking and sharing best practice. The Spongiform Encephalopathy Advisory Committee (SEAC) Secretariat has set up a cross-departmental networking group for SAC secretariats. The membership of this group has doubled in two years.

26. (Recommendation 24) We urge the Government to update the Code of Practice for Scientific Advisory Committees and the list of code committees as a matter of urgency. (Paragraph 70)

Accepted. The GCSA told the Committee (**Q1350**) that the *Code of Practice for Scientific Advisory Committees*³ (CoPSAC) would be reviewed and updated during 2007. The review will take into account the Committee's **Recommendations 25 to 33**. The Government would welcome any further proposals from the Committee for changes to the CoPSAC. The list of code committees will also be updated during 2007.

Recommendations 25–29, 31–32, and 48—Updating the Code of Practice for Scientific Advisory Committees

27. (Recommendation 25) We recommend that the revised Code of Practice for Scientific Advisory Committees provide explicit guidance on how the performance of these committees should be monitored. It should give departmental CSAs clear responsibility for overseeing the performance of scientific advisory committees sponsored by their Department and advise them to commission light-touch independent reviews every five years to ensure that committees are functioning as required and to identify innovations in working practices that could usefully be applied by other committees. (Paragraph 72)

28. (Recommendation 26) We recommend that committees not designated as ‘scientific advisory committees’ but which play a significant role in the provision of scientific advice, or whose advice to Government relies heavily on scientific input, be required to comply with the Code of Practice for Scientific Advisory Committees. (Paragraph 73)

29. (Recommendation 27) Industry members of scientific advisory committees can be important sources of expertise and experience but are frequently perceived to be less trustworthy than NGO representatives. This is unfair and illogical: the same standards and expectations should be applied to both categories of representative. (Paragraph 74)

30. (Recommendation 28) It is important not to allow the ‘double counting’ of non-scientific opinion or advice. (Paragraph 75)

31. (Recommendation 29) There is an urgent need for greater clarity regarding the role of lay members on scientific advisory committees and the status of their contribution. Clearly, where a committee has been tasked with providing purely technical advice, it would be inappropriate to give the views of lay members equal weight to advice from experts: scientific advice must be based on science. In view of the many potential problems identified in having lay membership of scientific advisory committees (as opposed to policy commissions where they play a vital role), we recommend that scientific advisory committees dealing with technical advice to Government should not routinely have lay membership. (Paragraph 76)

32. (Recommendation 31) We find the institutional structure of the scientific advisory system in the US attractive and encourage the Government to discuss with the learned societies the extent to which similar arrangements could be adopted in the UK and the changes that this would necessitate. (Paragraph 81)

33. (Recommendation 32) There is ample room for greater involvement of the learned societies and professional bodies in the UK scientific advisory system. We recommend that the Government take up the offer by the Science Council to coordinate a scientific advisory network comprising all the professional bodies. (Paragraph 82)

34. (Recommendation 48) Peer review of the extent to which Government policies are evidence-based by learned societies, professional bodies and researchers can play a useful role in stimulating debate and refining policy makers’ thinking and should, therefore, be welcomed by the Government. We recommend that the Government commission such reviews, on a trial basis, of selected key policies after a reasonable period of time as part of the policy review process. (Paragraph 120)

Subject to the consultation on revisions to the CoPSAC³, the Government’s provisional views are:

- The CoPSAC should propose light-touch reviews of SAC performance. We agree with the Committee that such reviews should identify best practice that can be shared with other SACs [Rec 25].
- Departments will be encouraged to apply the CoPSAC to non-code Committees as far as relevant. The fact that they are non-Code Committees may be because application of the CoPSAC is inappropriate in some respects [Rec 26]. This would however need proper justification in each case.
- SAC Chairs should remain vigilant for any evidence of bias, whether from industrial advisers, advisers from NGOs, or elsewhere [Rec 27].
- The issue of ‘double counting’ will be addressed in the updating of the CoPSAC [Rec 28].

- The question of lay membership of SACs will also be addressed in the updating of the CoPSAC. The Government is not inclined to introduce a general presumption against lay membership. Lay membership can bring important skills and experience including legal and communication skills. There are many examples where the presence of lay members has worked well: the alternate vice-Chair of the Gene Therapy Advisory Committee is a barrister; all nine independent SACs for the Food Standards Agency have lay membership. In each case, it is important that the role of the lay membership is clearly defined and understood; for example to ensure the right questions are asked, or that the wider context is taken properly into account. Where detailed technical or scientific advice is needed, this should come from appropriately qualified scientists and/or engineers [Rec 29].

The Government will reflect further on **Recommendation 31**. It believes however that **Recommendation 32** is too prescriptive. The Government consults many organisations such as PSREs, Learned Societies, Research Councils, SACs, the Council for Science and Technology, and Foresight programmes when it needs advice. It may seek advice from such an organisation directly or seek guidance on who the best experts to consult are. The Government does not believe that any of these organisations should be routinely involved in decision-making or peer review, though they might be in specific cases [Rec 48]. The recent establishment of the Civil Service Steering Board will contribute an important check on the quality of evidence-based policy making.

As part of its review of the governance of science, the Food Standards Agency Board identified an enhanced role for the Chairs of the SACs that advise it. The Chairs can now brief the Board in writing or in person before decisions are taken. There are benefits to both the Board and the SACs in this process: the Board has extra assurance about the quality of the science presented to it and the use to which it is put; the SACs gain a better understanding of how their advice is used and the issues that the Board takes into account.

35. (Recommendation 33) The situation, where the RAE acts as a disincentive to engagement by the scientific community with policy, must be rectified in the successor to the RAE. (Paragraph 83)

Following consultation, the Government announced in the 6 December pre-Budget report¹⁴ that a new, more metrics-based, research assessment process would be introduced after the 2008 Research Assessment Exercise (RAE). For science, engineering, technology and medicine subjects (SET subjects), an assessment exercise using income, student number, and bibliometric indicators would run in 2009, and begin to inform funding in the 2010-11 academic year. This new approach will keep research quality at the heart of the assessment process, and will help in particular to ensure recognition of excellence in user-led research. It will also increase transparency and reduce the administrative burden of the RAE on universities and researchers, allowing them to focus on their core activities, including engagement with policy.

The need for additional credit to be given for engagement with the policy process will be kept under active review.

¹⁴ The pre-budget report (December 2006) can be viewed on-line at: <http://prebudget2006.treasury.gov.uk/>

Recommendations 34, 35, 37, 50 and 51—Public engagement and publication policy

36. (Recommendation 34) We applaud Sir David King’s efforts to integrate fully science into an evidence based approach. Government should also be clear when policy is not evidence-based, or when evidence represents only a weak consideration in the process, relative to other factors. Where there is an absence of evidence, or even when the Government is knowingly contradicting the evidence—maybe for very good reason—this should be openly acknowledged. (Paragraph 89)

37. (Recommendation 35) We agree that ministerial decisions need to take into account factors other than evidence, but this is not reflected in the Government’s oft-repeated assertion that it is committed to pursuing an evidence based approach to policy making. We have detected little evidence of an appetite for open departure from the mantra of evidence-based policy making. It would be more honest and accurate to acknowledge the fact that while evidence plays a key role in informing policy, decisions are ultimately based on a number of factors—including political expediency. Where policy decisions are based on other such factors and do not flow from the evidence or scientific advice, this should be made clear. (Paragraph 90)

38. (Recommendation 37) Commissioned systematic reviews of the evidence base should usually be considered as research for the purposes of publication policy. (Paragraph 94)

39. (Recommendation 50) A strong emphasis on the publication of all evidence used in policy making, along with a clear explanation as to how it is used, should be one of the guiding principles of transparent policy making. (Paragraph 126)

40. (Recommendation 51) We recommend that departments make it a presumption that significant scientific advice from departmental CSAs as well as scientific advisory committees is published. (Paragraph 129)

Subject to necessary confidentiality, for example as provided for in the Freedom of Information⁶ (FoI) and Data Protection Acts⁷ (DPA), the Government is committed to publishing evidence and the reasoning behind decisions. These principles are reflected in departmental Science and Innovation Strategies [*Rec 34*].

The Department for Environment, Food and Rural Affairs’ (Defra) Evidence and Innovation Strategy provides for the integration of all evidential streams into a published framework which is mapped onto major policy drivers for that Department. The Government encourages all departments to consider how they can improve their own integration and transparency across evidential streams.

The Government agrees that some of its decisions will properly take account of factors other than evidence. See, for example, the Cabinet Office publications *Modernising Government*⁸ and *Professional Policy Making in the 21st Century*⁹ [*Rec 35*].

The GCSA’s *Guidelines on Scientific Analysis in Policy Making (2005)*⁴, (paragraphs 25 and 26), address the importance of publication within the guidance offered by the FoI Act. The CoPSAC also addresses (paragraphs 65 onwards) the principles governing publication. The issues raised

by the S&T Select Committee will be included in the 2007 update of the CoPSAC, which will embed FoI guidance, including the treatment of ‘advice’ and ‘evidence’, and draw on existing guidance which applies to social research used by the Government.

The Freedom of Information Act governs the release of information to the public. It makes a distinction between factual information and research-based advice. Section 35 of the Act recognises that there is a public interest in ensuring that there is a space within which Ministers and officials can formulate and develop policy options freely and frankly and that some information and advice generated in this space should therefore be exempt from release (subject to the public interest test). Once the Government has taken a decision, the Act requires that particular consideration be given to the public interest in subsequently disclosing factual information [*Recs 50 and 51*].

Existing guidance on implementing the FoI in government statistics and social research makes the presumption that research and statistics should be published, and that their quality should be subject to independent scrutiny. The Government agrees that systematic reviews of scientific literature should be considered research and that therefore the assumption should be to publish such reviews subject to the caveats above [*Rec 37*].

The Cabinet Secretary has formed a working group of Permanent Secretaries to discuss further the issues associated with the publication of social research. The Government will ensure that any read-across to other research is acted on.

Recommendations 36 and 49—Effective responses to cross-cutting issues

41. (Recommendation 36) Departments need to evolve more effective mechanisms for identifying gaps in the evidence base for policy development which are capable of responding to new and emerging political priorities. (Paragraph 91)

42. (Recommendation 49) We recommend that issue-based reviews be introduced as a means of auditing cross-departmental policies. These could be incorporated into the Science Review of the department which has been designated as lead department for the relevant policy. (Paragraph 123)

The Government recognises the need to ensure that cross-cutting and long-term challenges are identified and tackled in a coordinated way. It already undertakes issue-based reviews, many of which synthesise existing evidence and identify evidence gaps. For example:

- a number of such reviews have been commissioned as part of the current Comprehensive Spending Review;
- the Prime Minister’s Strategy Unit undertakes strategy and policy reviews. The Unit has also undertaken occasional Strategic Audits of the challenges facing the UK¹⁵;
- the recently announced policy review, *Pathways to the Future*⁵, will address long term strategic priorities for the UK.

15 The Prime Minister’s Strategy Unit work can be viewed on-line at: <http://www.strategy.gov.uk/>

To complement these reviews, the newly established Civil Service Steering Board (which supersedes the Permanent Secretary Management Group) will be well placed to identify and manage strategic and operational challenges and risks.

Science Reviews have a departmental focus and would not provide an appropriate additional mechanism. However horizon scanning, which is led for the Government by the OSI, is an important means of ensuring that strategic decisions are informed and challenged by the analysis of possible futures.

The Department for Work and Pensions (DWP) leads cross-government work on demographic change. For example it has led discussions with other government departments, including HM Treasury, HM Revenue and Customs and DTI, to develop the new Wealth and Assets Survey, which the Office for National Statistics is now conducting. Fieldwork for this longitudinal survey started this summer following a successful pilot. The DWP is a major funder for the survey and hopes to use the data to help pensions policy development.

Foreign and Commonwealth Office (FCO) research analysts look forward systematically at political developments in different parts of the world, and at thematic developments matching the government's international priorities. In doing so they draw on analysis from elsewhere in Government, for example the OSI's Horizon Scanning Centre.

43. (Recommendation 38) We urge the Government CSA to investigate proactively any allegations of malpractice in the commissioning, publication and use of research by departments and to ensure that opportunities to learn lessons are fully taken advantage of. We would expect the results of any such investigations to be made public. (Paragraph 96)

The Government agrees that credible allegations of malpractice should be investigated. Depending on the circumstances it may be appropriate for the GCSA or for another person or organisation to carry out such an investigation. Publication is in general desirable but is subject to the qualifications such as those set out in response to **Recommendations 34, 35, 37, 50 and 51.**

44. (Recommendation 39) We recommend that the Government Chief Scientific Adviser ensures that the publication of research underpinning policy development and evidence cited in support of policies is monitored as part of the departmental science reviews. (Paragraph 97)

Agreed. Departmental Science Review assessment criteria include assessment of the sharing, transfer and management of knowledge as well as evidence of publication policy. Assessment criteria also include departmental implementation of the GCSA's *Guidelines on Scientific Analysis in Policy Making*⁴ and CoPSAC³.

45. (Recommendation 40) Research must, so far as is achievable, be independent and be seen to be so. We are not convinced that the current mechanisms for commissioning research deliver this objective. We have also made the case for greater investment in research to underpin policy development. We recommend the creation of a cross-departmental fund for

policy related research to be held by the Government CSA in order to meet these dual aims (Paragraph 98)

The Government has improved the ways it develops evidence-based cross-government policies, for example through the community of DCSAs and departmental Science and Innovation (S&I) Strategies. Departments work together in a number of other ways, for example through horizon scanning and ‘Grand Challenges’¹⁶. The Government will continue to review as a matter of importance whether further steps are needed to overcome barriers to evidence-based cross-departmental working, and in doing so will take account of the Committee’s proposal for a centrally held budget.

On a subsidiary point, research must be impartial and objective. That will not always mean that it is conducted externally (which might be implied by the word ‘independent’).

46. (Recommendation 41) We recommend that where the Government describes a policy as evidence-based, it should make a statement on the department’s view of the strength and nature of the evidence relied upon, and that such statements be subject to quality assurance. (Paragraph 101)

This recommendation will be considered during the 2007 update of the CoPSAC to see to what extent and if so how it might be made workable, taking account of the volume of work implied and the value it would add.

47. (Recommendation 42) Pilots and trials can make a valuable contribution to policy making but there is no point the Government initiating them if it is not going to use the output properly. In order to protect them from political pressures, pilots and trials should be carried out at arm’s length from Government or at least be independently overseen. (Paragraph 104)

As the Committee sets out, a review of government pilots and trials was commissioned by the Government Social Research Unit and published by the Cabinet Office in December 2003¹⁷. The report made recommendations on the role and properties of pilots, pre-conditions for success, methods and practices, and the use of results. One of the preconditions specified was that ‘A pilot should be undertaken in a spirit of experimentation. So, if it is clear at the outset that a new policy and its delivery mechanisms are effectively already cast in stone, a pilot is redundant and ought not to be undertaken.’¹⁸ The report also highlights the importance of independence. That does not have to mean that pilots and trials are carried out at arm’s length—although in practice many of them are—but that ‘Ministers and Civil Servants most closely involved with the policy should consider distancing themselves from decisions about pilot methods and the dissemination of findings’. It is common practice for the results of pilot evaluations to be peer reviewed before publication, which provides an additional independent assessment of their quality. The Government remains committed to implementing the

16 ‘Grand Challenges’ commitment can be found in DTI’s Five Year Plan 2004 on-line at: <http://www.dti.gov.uk/files/file12618.pdf#page=20>

17 Trying It Out - The Role of ‘Pilots’ in Policy-Making Report of a Review of Government Pilots can be viewed on-line at: http://www.policyhub.gov.uk/evaluating_policy/pilots/02.htm

18 Pre-conditions of pilots can be found on-line at: http://www.policyhub.gov.uk/evaluating_policy/pilots/downloads/rop.pdf#page=9

recommendations of the review, recognising, as stated earlier and as made clear in oral evidence by the Secretary of State, that evidence is only one factor taken into account in Ministers' decisions.

Recommendations 43, 44, and 45—Longer term policy planning

48. (Recommendation 43) We commend the Government CSA and the Office of Science and Innovation on their work aimed at strengthening horizon scanning in relation to science and technology across Government. (Paragraph 106)

49. (Recommendation 44) In the context of the electoral cycle and an era of 24 hour news coverage, it is not hard to see why politicians prioritise actions that can deliver short term benefits over those not likely to yield dividends until they have long departed from the Government. It is a major challenge for the Government to ensure that the results of horizon scanning are being used properly. The Government needs to put in place incentives to encourage departments to take a more long term view in developing policy. We recommend that it be a requirement for departments to demonstrate in all major strategic planning documents that they are using the results of—not just conducting—horizon scanning and research. (Paragraph 110)

50. (Recommendation 45) The Government's current approach to policy making is not sufficiently responsive to changing evidence, making it hard to feed in results from activities such as trials, research and horizon scanning. We urge the Government, as well as the opposition parties, to move towards a situation where a decision to revise a policy in the light of new evidence is welcomed, rather than being perceived as a policy failure. (Paragraph 111)

The Government is pleased by the Committee's recognition of the value of the work of the Government's Horizon Scanning Centre (HSC), which brings long term strategic perspectives into Government business [*Rec 43*].

Horizon scanning is used widely in MoD, for example by defence policy staff to set the UK policy framework for the next 10-20 years, and by intelligence analysts using it to understand future threats and the security environment.

The MoD Development, Concepts and Doctrine Centre (DCDC) undertakes a strategic analysis programme that uses horizon scanning to feed into policy and the development of military operational concepts. This includes 'Strategic Trends', an analysis of future trends, drivers and shocks that the UK's Armed Forces might face, which is published on the web and on which comments and feedback are welcomed.

The Government recognises the importance of proper analysis and use of evidence (from research, horizon scanning, and other sources) in strategic planning. The expectation that departments should adopt a strategic approach is set out in a number of documents including the GCSA's *Guidelines on Scientific Analysis in Policy Making (2005)*⁴. The Government is seeking to develop further the capability of departments to use this information through the HSC and the National School of Government's training programme on analysis, use of evidence and strategic planning. The Government requires departments to take a long-term perspective in

the current Comprehensive Spending Review, for example through, demonstrating that they have responded to HM Treasury's *Long Term Opportunities and Challenges* publication¹¹. The OSI's Foresight programme injects long term planning into cross-departmental challenges faced by the UK. Foresight projects require the publication of an action plan, which ensures that long-term strategic issues are addressed [Rec 44].

Subject to the points made earlier about factors other than evidence (for example, political philosophy) which properly influence policy, the Government agrees in principle with the Committee and with the late Lord Keynes that 'When the facts change, I change my mind—what do you do, sir?' The Government intends to do more in particular to engage 'upstream' with the public's views on science and to improve the Government's public dialogue capability. Improving dialogue and debate will help to gain acceptance that policy reactions to new evidence are expected and welcome, rather than a failure. To this end, the Government is establishing an Expert Resource Centre for Public Dialogue on Science and Innovation to help all parts of government enable public debate on science and technology-related topics. The Centre will develop and disseminate good practice on public dialogue across government and its non-departmental public bodies, resulting in a culture where public dialogue is seen as a fundamental part of science and technology policy development [Rec 45].

Recommendations 46 and 47—Monitoring the quality of scientific advice and evidence

51. (Recommendation 46) It is useful that the Government CSA has issued guidance on the use of scientific analysis in policy making but it is disappointing that there has been so little monitoring of its implementation. Departmental CSAs should, in future, be more proactive in ensuring that the principles defined in the Guidelines on Scientific Analysis in Policy-making are adhered to within their departments. (Paragraph 114)

52. (Recommendation 47) To increase public and scientific confidence in the way that the Government uses scientific advice and evidence, it is necessary for there to be a more formal and accountable system of monitoring the quality of the scientific advice provided and the validity of statements by departments of the evidence-based nature of policies. (Paragraph 115)

The Government agrees that monitoring of the use of the Guidelines in these respects needs further development. This is being addressed through the OSI's Science Reviews, through SACs, and through annual monitoring by DCSAs of the eight attributes for the management and use of science and research in Government set out in Chapter 8 of the *Science and Innovation Investment Framework 2004–2014*². The overall results of the annual monitoring will be reflected in HM Treasury's annual report on the Investment Framework.

53. (Recommendation 52) We recommend that departmental Chief Scientific Advisers monitor the extent to which their departments and associated advisory bodies are adopting best practice in terms of openness and transparency and seek to ensure that any deficiencies are addressed. (Paragraph 130)

The Government agrees this recommendation as part of its overall aim to enhance and support the role of DCSAs alongside SAC Chairs in promoting the health of science in Government. OSI and the Secretariat to SEAC are supporting workshops, seminars and other networking opportunities for SAC Secretariats and DCSAs, in order to spread best practice.

While it will not always be appropriate, there are some good examples (e.g. SEAC) where reviews and the day to day business of SACs is conducted using open sessions, webcasts, and web summaries of open and closed sessions. The Government commends the example set by SEAC. The Select Committee's recommendation and the importance of the spread of good practice will inform the update of the CoPSAC in 2007.

Monitoring and evaluation will be reinforced through the annual report on the *Science and Innovation Investment Framework 2004–2014*². The emerging findings of the first departmental Science Reviews have already identified common issues and concerns across departments; OSI is helping departments to address these.

Through OSI, DTI's 'Science and Society' activity addresses issues ranging from science communication to the public's support, interest, engagement, and dialogue about science and the issues that it raises for society.

54. (Recommendation 53) We recommend that Government guidelines be amended to ensure that, as a matter of good practice, some high level information about the progress of major projects through Gateway reviews is made public. (Paragraph 131)

Since April 2003 the Chief Executive of the Office of Government Commerce (OGC) has written to the responsible Permanent Secretary to notify him or her of successive red Gateway reviews¹⁹. The letter highlights the importance of identifying and addressing risks to successful delivery at the earliest possible stage. Since October 2005 the National Audit Office (NAO) has been sent copies of the letters, and these may now be passed to the Chair of the Public Accounts Committee.

Gateway reviews are conducted on a confidential basis for the Senior Responsible Owners (SROs) of projects and programmes within departments. While OGC owns the Gateway process, departments own the reports and are responsible for implementing the recommended actions.

Consequently OGC does not publish information on Gateway reviews as a matter of course. However, in line with the FoI legislation, it considers all requests for such information on a case-by-case basis, taking account of the exemptions in the Act, and the public interest test.

Some summary information on Gateway reviews has been published in NAO Reports including *Improving IT procurement*²⁰ (November 2004) and *Delivering successful IT-enabled business change*²¹ (November 2006).

19 'Red' Gateway reviews relate to those major procurements that risk unsuccessful delivery without corrective action.

20 National Audit Office Report 'Improving IT procurement: The impact of the Office of Government Commerce's initiatives on departments and suppliers in the delivery of major IT-enabled projects' can be viewed on-line at: http://www.nao.org.uk/publications/nao_reports/03-04/0304877.pdf

Recommendations 54, 55 and 57—Public consultations

55. (Recommendation 54) We recommend that, as a matter of good practice, each policy statement or legislative proposal which follows a public consultation make explicit reference to how the consultation influenced the policy, including an explanation, where necessary, as to why any views or proposals widely supported by contributors were rejected. (Paragraph 138).

56. (Recommendation 55) Whilst we accept that there can be legislative and political uncertainties which affect the policy making process, we recommend that public consultations generally be accompanied by an indicative timescale of resulting decisions. (Paragraph 140)

57. (Recommendation 57) We recommend that the Cabinet Office monitor whether departments are following best practice on consultations and act where repeated breaches of the code of practice for consultations occur. (Paragraph 145)

The Government agrees with the Committee's views on public consultation set out in these recommendations.

In line with Criterion 4 of the *Code of Practice on Consultation*¹⁰, within three months of the close of a formal, written public consultation, the relevant Government Department should 'give feedback regarding the responses received and how the consultation process influenced the policy'. The consultation document should state when and how (e.g. the website address) this response document will be made available [*Rec 54*].

This same information should then feed into the Impact Assessment work that departments carry out during policy development. Any changes to a department's options that are made as a result of consultation must be recorded and explained in the full Impact Assessment and the Impact Assessment should accompany all legislative proposals laid before Parliament.

In part, the Cabinet Office's *Code of Practice on Consultation* already covers **Recommendation 55**. The Code says that departments should, as far as is possible, state in their consultation documents when and where a summary of responses will be published and that this summary should also summarise the next steps for the policy (see also response to **Recommendation 54**, above). This should, wherever possible, include an indicative timetable [*Rec 55*].

The Cabinet Office plans to review consultation policy this year in order to improve the way Government engages with stakeholders on policy development. The Committee's recommendation will be considered as part of that review.

The Government agrees with the need to ensure that consultations comply with the *Code of Practice on Consultation* and the Better Regulation Executive (BRE) already takes action to achieve this. In addition to working day-to-day with departments on all aspects of Better Regulation, including consultation, the BRE, as the Committee acknowledges, reports annually on departments' compliance with the *Code of Practice on Consultation*. These annual reports have focussed on the most quantifiable element of the *Code of Practice on Consultation*, namely

21 National Audit Office Report 'Delivering successful IT-enabled business change' can be viewed on-line at: <http://www.nao.org.uk/pr/06-07/060733.htm>

Criterion 1 ('Consult widely throughout the process, allowing a minimum of 12 weeks for written consultation at least once during the development of the policy'). In 2005, 97% of consultations lasted at least 12 weeks or had Ministerial clearance to last for a shorter period due to exceptional circumstances. Moreover, each government department has its own Consultation Coordinator who promotes compliance with the *Code of Practice on Consultation* within his or her department [Rec 57].

Qualitative monitoring of Government's consultations will be considered as part of the Cabinet Office's review of consultation policy.

58. (Recommendation 56) We recommend that scientific advice be routinely used in drawing up the terms of consultations, in order to ensure the right questions are asked and to avoid any subsequent criticism of its terms. (Paragraph 143)

Agreed. The input of DCSAs should be sought in the design, approval and implementation of departmental consultations alongside inputs from other analytical and professional groups. This will be helped by the implementation of the 'Analysis and Use of Evidence' PSG core skill across all professional groupings.

59. (Recommendation 58) We recommend that departments ensure that the Professional Skills for Government programme and other training activities provide comprehensive coverage of the principles and practice of risk management. (Paragraph 153)

The Government agrees, and has identified risk management as a prominent feature throughout the PSG framework. It provides a range of learning and development opportunities that address risk management.

60. (Recommendation 59) We welcome the progress the Government has made toward promoting proper risk analysis in policy making but are concerned about how this progress will be sustained. We recommend that the sub-Committee on risk continue to operate and that it ensure that the monitoring of departmental performance on risk management is maintained. (Paragraph 155)

Following the two-year risk improvement programme led by HM Treasury from 2002–2004 further work has been done over the last two years to encourage and monitor the continuing development of risk management and to report progress to the PSMG sub group on risk. In 2006, two volumes of good practice examples of risk management were published; guidance on risk appetite²² was published with the second set of examples. Annual reports over the last four years have demonstrated sustained improvements in risk management.

Given the progress which has been made, the Government has decided that the sub group is no longer the best vehicle to achieve further progress. The main priorities are now:

- to focus on culture change to ensure that the right behaviours for well managed risk taking are supported; and

22 'Thinking about risk: Managing your risk appetite: Good practice examples' can be viewed on-line at: http://hm-treasury.gov.uk/media/A61/FE/pu135_risk_appetite_good_practice_examples_final_p1_vers3a.pdf; its associated publication 'Thinking About Your Risk - Setting & Communicating Your Risk Appetite' can also be viewed on-line at: http://www.hm-treasury.gov.uk/media/A61/E0/pu026_thinking_about_your_risk_final_vers1a_.pdf

- to continue to encourage a culture of learning.

Permanent Secretaries will pursue these issues within their Departments and will, periodically, take stock collectively. In addition, there is a network of Risk Improvement Managers in departments which will continue to meet on a regular basis; furthermore a new group is being established, comprising Directors General from departments, to help ensure learning and spread of best practice. Finally, the National School of Government will play a continuing role through its programmes on risk issues.

HM Treasury is continuing to provide a limited central resource to support the risk agenda and in particular to support the network of departmental Risk Improvement Managers.

Recommendations 60, 61 and 62—the Precautionary Principle

61. (Recommendation 60) We can confirm our initial view that the term “precautionary principle” should not be used, and recommend that it cease to be included in policy guidance. However, we do see value in further work which seeks to clarify the terms and correct application of a precautionary approach as set out helpfully by the GCSA. We believe that it is best to use the term precautionary approach, but with a consistent explanation of the degree and nature of the risks, benefits and uncertainty and an explanation of the concept of proportionality. It should never be considered a substitute for thorough risk analysis which is always required when the science is uncertain and the risks are serious. It should not be used, in itself, to explain a decision or course of action. (Paragraph 166)

62. (Recommendation 61) We believe that further work should also focus on the practical application of risk management theories in circumstances of scientific uncertainty and the effective communication of the decision making process. (Paragraph 166)

63. (Recommendation 62) The term precautionary principle is in current use in other jurisdictions, including the EU, so it can not simply be wished away. However, both the Government’s current use of the term precautionary approach rather than principle and the further work we are recommending to properly clarify, constrain and apply a precautionary approach is something that we recommend the Government invite the EU and other countries to consider and adopt. (Paragraph 167)

The Government agrees with the thrust of the Committee’s views, although it would not be possible to avoid the use of the term ‘precautionary principle’ given its widespread use in international agreements. The practicality of reopening these agreements, which go well beyond the EU, is doubtful.

In practice, the precautionary principle is interpreted as a flexible precautionary approach to enable innovation and learning in circumstances of significant uncertainty, while not putting the public at unacceptable risk. It must always be used with the best evidence-based risk assessment available.

Recommendations 63, 64, 65, 67 and 68—Risk Communication

64. (Recommendation 63) We welcome the public commitment to transparency in the handling of risk in policy guidance and the recognition by Chief Scientific Advisers of the need to improve public communication on risk. (Paragraph 171)

65. (Recommendation 64) We recommend that the Cabinet Office assume greater responsibility as the centre of excellence on risk communication within Government. It should have a leading role in collating and disseminating best practice on risk communication, commissioning further research as appropriate, in conjunction with other departments, and for monitoring performance in implementing guidelines. (Paragraph 174)

66. (Recommendation 65) We strongly endorse the development of alternative voices for the provision of information and advice of a technical nature. Given the issues of trust identified by research, the often instinctive reaction of departments to field a minister should be resisted. (Paragraph 175)

67. (Recommendation 67) We believe that the Government's communication strategy would benefit from the adoption of a higher public profile by departmental CSAs on policies with a strong evidence or science base. We recommend that the Government CSA explore with ministers and departmental CSAs how this might be best achieved and that the impact of this enhanced role be monitored. (Paragraph 180)

68. (Recommendation 68) We welcome the Government's attempts to liaise with the media on risk communication and its recognition that there is more work to be done on this front. We recommend that the Government continue to develop a strategic and pro-active approach to engagement with the media. The work started under John Hutton should be part of a structured programme, with attention being given to learning from recent examples of coverage as well as informing coverage of current risk related issues. Newspaper representatives should be a priority for engagement. Government guidance should encourage a more aggressive approach to correcting inaccuracies or mis-interpretations in media coverage of risk, with departmental Chief Scientific Advisers playing a leading role when appropriate. (Paragraph 186)

The Government welcomes the Committee's endorsement of its public commitment to transparency and its commitment to making improvements [Rec 63].

The Cabinet Office does and will continue to play a prominent role in risk communication across Government. Improved and detailed guidance on risk communication has been published in the 'Engage' strategic communications section of the Government Communication Network²³. Further case studies will be published and seminars held to spread best practice and share information [Rec 64].

A significant amount of guidance relating to risk management has also been produced by HM Treasury in recent years, including the 'Orange Book'²⁴ (*Management of Risk – Principles and*

23 Government Communications Network (GCN) can be viewed on-line at <http://www.comms.gov.uk/> and its 'Engage' resources can be found on-line at: <http://engage.comms.gov.uk/>

24 'The Orange Book: Management of Risk - Principles and Concepts' can be viewed on-line at: <http://www.hm-treasury.gov.uk/media/FE6/60/FE66035B-BCDC-D4B3-11057A7707D2521F.pdf>

concepts) and *Managing risks to the public: appraisal guidance*²⁵. The importance of communication within the organisation, between the organisation and its partners in delivery, and between the organisation and its stakeholders is stressed in this guidance. A network of Risk Improvement Managers is embedded in departments.

Risk management is integral to the Capability Review Programme²⁶ led by the Cabinet Office. The Capability Reviews form part of the wider Civil Service reform agenda designed to identify key areas for improvement and action and lead to a Civil Service that is better able to deliver public services. The scope of the reviews means that they can identify risks that need addressing within individual departments as well as across Government. The Cabinet Secretary's office monitors resulting action plans.

It is agreed that those who are appointed to Government in an expert or quasi-independent capacity should have an active media role where appropriate [*Recs 65 and 67*].

DCSAs are often best placed to clarify issues and provide an authoritative voice on specialist or complex issues for the general public. It is normal in the case of 'live' issues, such as human health (radiation contamination, pandemic flu, Measles Mumps and Rubella vaccine) or animal disease outbreaks (foot and mouth, 'bird flu'), that the relevant chief adviser engages proactively with the media to ensure the public are provided with independent, expert information and advice from the outset.

Strategic and pro-active engagement with the media continues and the Government recognises and agrees with the Committee on the importance of this. For example the Media Emergency Forum (MEF), which brings together senior editorial figures from the media (broadcasters, national and regional newspapers) with representatives of central and local government and the emergency services and utilities, meets twice a year. As well as strategic issues, there is frank and open discussion of communications issues arising from specific emergencies and from joint exercises. Regional MEFs have been set up to extend this best practice across England [*Rec 68*].

Government departments try to help accurate media coverage by releasing evidence, statistics and other information in a timely and balanced way. In most cases, if risks have been mis-reported or mis-represented, the department's Communications Division will contact the journalist or editor and ask them to correct or balance their story immediately. Most media outlets are willing to do this and it is the quickest way to get the correct facts into the public domain. If a newspaper refused and went against their Code of Conduct then the department would consider reporting the case to the Press Complaints Commission.

Recommendations 66 and 69—Common language on risk

69. (Recommendation 66) We believe scientists, including departmental CSAs, should play a leading role in communicating to the public levels of scientific agreement, where necessary, and the degree of certainty in the scientific advice being offered. We recommend that common terminology be developed to be used consistently across Government in order to communicate these uncertainties. (Paragraph 177)

25 'Managing risks to the public: appraisal guidance' can be viewed on-line at: http://www.hm-treasury.gov.uk/media/8AB/54/Managing_risks_to_the_public.pdf.

26 The Capability Review Programme can be viewed on-line at: http://www.civilservice.gov.uk/reform/capability_reviews/index.asp

70. (Recommendation 69) We recommend that the Government build on existing work to develop, subject to academic peer review, a scale of risks for use by all departments, as appropriate, when communicating levels of risks to the public. (Paragraph 194)

Just as the Government has not developed a standardised table of risks, as risks mean different things to different people, it does not agree that a common terminology or scale of risks would be helpful to DCSAs or the public. Each case and each issue needs to be dealt with individually and communications or actions tailored appropriately. Generic categorisation of risks may infer that one risk is directly comparable to another, which is often not the case.

The Government does however adopt a common methodology and scale in specific areas where the advantages outweigh the disadvantages, for example in assessing disruptive challenges to the UK. There is a duty on Category 1 responders (those organisations at the core of the response to most emergencies, eg emergency services, local authorities, NHS bodies), under the Civil Contingencies Act 2004, to assess risk in their area and communicate those risks by publishing a community risk register. The Civil Contingencies Secretariat in the Cabinet Office provides these responders with guidance on which risks to consider, a common methodology and a common scale for assessing the likelihood of those risks to ensure that there is some consistency between the assessments made across the country at a local level and those made as part of the national risk assessment.

The Government analytical community has a role in explaining to the public, as well as to policy makers, the true nature of perceived risks. Their involvement ensures that the Government is in a position to adopt a balanced and proportionate approach to managing risk. In order to achieve this, the public needs to be in a position to understand the available information and set it in context. This will ensure that any debate is based on an understanding of the facts.

The reporting of risk and uncertainty is specifically addressed in the CoPSAC, paragraphs 55 to 60. The proposed update of the Code in 2007 will make clarifications where appropriate.

Reports from the Science and Technology Committee

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First Report	Work of the Committee in 2005–06	HC 202
Second Report	Human Enhancement Technologies in Sport	HC 67

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First Report	Meeting UK Energy and Climate Needs: The Role of Carbon Capture and Storage	HC 578-I
Second Report	Strategic Science Provision in English Universities: A Follow-up	HC 1011
Third Report	Research Council Support for Knowledge Transfer	HC 995-I
Fourth Report	Watching the Directives: Scientific Advice on the EU Physical Agents (Electromagnetic Fields) Directive	HC 1030
Fifth Report	Drug classification: making a hash of it?	HC 1031
Sixth Report	Identity Card Technologies: Scientific Advice, Risk and Evidence	HC 1032
Seventh Report	Scientific Advice, Risk and Evidence Based Policy Making	HC 900-I
First Special Report	Forensic Science on Trial: Government Response to the Committee's Seventh Report of Session 2004-05	HC 427
Second Special Report	Strategic Science Provision in English Universities: Government Response to the Committee's Eighth Report of Session 2004-05	HC 428
Third Special Report	Meeting UK Energy and Climate Needs: The Role of Carbon Capture and Storage: Government Response to the Committee's First Report of Session 2005-06	HC 1036
Fourth Special Report	Strategic Science Provision in English Universities: A Follow-up: Government Response to the Committee's Second Report of Session 2005-06	HC 1382
Fifth Special Report	Research Council Support for Knowledge Transfer: Government Response to the Committee's Third Report of Session 2005–06	HC 1653
Sixth Special Report	Watching the Directives: Scientific Advice on the EU Physical Agents (Electromagnetic Fields) Directive: Responses to the Committee's Fourth Report of Session 2005–06	HC 1654