



House of Commons
Science and Technology
Committee

**Putting Science and
Engineering at the Heart
of Government Policy:
Government Response to
the Innovation,
Universities, Science and
Skills Committee's Eighth
Report of Session 2008–09**

**Ninth Special Report of Session
2008–09**

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The Science and Technology Committee

The Science and Technology Committee is appointed by the House of Commons to examine the expenditure, administration and policy of the Government Office for Science. Under arrangements agreed by the House on 25 June 2009 the Science and Technology Committee was established on 1 October 2009 with the same membership and Chairman as the former Innovation, Universities, Science and Skills Committee and its proceedings were deemed to have been in respect of the Science and Technology Committee.

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A list of reports from the Committee in this Parliament is included at the back of this volume.

Committee staff

The current staff of the Committee are: Glenn McKee (Clerk); Richard Ward (Second Clerk); Dr Christopher Tyler (Committee Specialist); Xameerah Malik (Committee Specialist); Andy Boyd (Senior Committee Assistant); Camilla Brace (Committee Assistant); Dilys Tonge (Committee Assistant); Jim Hudson (Committee Support Assistant); and Becky Jones (Media Officer).

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.

Ninth Special Report

On 23 July 2009 the Innovation, Universities, Science and Skills Committee published its Eighth Report of Session 2008–09, *Putting Science and Engineering at the Heart of Government Policy* [HC 168–I]. On 14 October 2009 the Science and Technology Committee received a memorandum from the Government which contained a response to the Report. The memorandum is published as appendix 1 to this Report.

The list of conclusions and recommendations at pages 63 to 69 of the Committee's Report contained several errors. A corrected list is published at appendix 2.

Appendix 1: Government response

The Government welcomes the Committee's report and its focus on the role of science and engineering in government.

The bulk of this document responds to the specific recommendations contained in the Committee's report. Overall a clear consensus emerged during the evidence sessions regarding the importance of science and engineering to effective policymaking, economic growth and quality of life.

The Government fundamentally agrees with the importance of putting science and engineering at the heart of government policy. The Government also agrees with the Committee that progress has been made in this regard but there is more to be done to ensure that every decision is based on the best available evidence.

We will maintain high levels of investment in the research base and fundamental science, and in HE more generally.

This response has been prepared by the Government Office for Science (GO-Science), with input from the Department for Business, Innovation and Skills (BIS), the Department for Children Schools and Families (DCSF) and the Medicine and Healthcare products Regulatory Agency (MHRA).

Science and engineering at the heart of government policy?

1. We were impressed by the Science Minister and Government Chief Scientific Adviser's frank assessment of how science and engineering advice is used in Government. We were pleased to hear that they have taken up those concerns we raised in the engineering report and that they have an appetite to improve the use of evidence in policy-making. (Paragraph 24)

The Government welcomes the Committee's recognition of the work undertaken by Lord Drayson and Professor Beddington to champion science and engineering in government, and to embed science and engineering advice in the process of policy-making.

The Government remains committed to the formulation and delivery of evidence-based policy. Both the Minister for Science and Innovation and Government Chief Scientific Adviser (GCSA) are working with government departments to embed independent science and engineering advice in the policy-making process.

2. We regret that the Government failed to answer the core reasons for having Departmental Chief Engineering Advisers. We urge the Government to give fuller consideration to our recommendation that “Some departments should have Departmental Chief Engineering Advisers (DCEAs), some Departmental Chief Scientific Advisers (DCSAs), and some should have both.” (Paragraph 29)

The Government does not agree that it failed to consider sufficiently the Committee's recommendation that Chief Engineering Advisers be appointed to government departments. While the Government considers the provision of engineering advice necessary and important, this function is already contained within the remit of the Departmental Chief Scientific Advisers.

The Government's reasons for not appointing Chief Engineering Advisers remain as outlined in the Government response to the Committee's report *Engineering: turning ideas into reality*:

[...] DCSAs cover both science and engineering as part of their remits; it is part of this role to ensure that each department has sufficient expertise and capacity to manage and use the engineering advice it needs. It is also noteworthy that the Ministry of Defence (MoD), the Department for Business, Innovation and Skills (BIS), the Department for Transport (DfT), the Department for International Development (DFID)¹ and Communities and Local Government (CLG) currently have engineers and/or Fellows of the Royal Academy of Engineering (FREngs) in the DCSA role. [...] They are not appointed for their personal specialist expertise (although this may often be valuable), but rather for their ability to marshal advice from all of the other specialists, both inside and outside Government, to provide whatever scientific advice their Department requires across the full spectrum of science and engineering.

The Government does not therefore accept the case for separate Chief Engineering Advisers at Government-wide or departmental levels.

The important thing is that science and engineering advice is properly reflected in the decision making process, and on this, as set out above, the Government shares the Committee's view that while progress is being made, there is more to be done.

Drawing on the Science and Engineering Assurance exercises, the Science Minister and the GCSA will work with colleagues on the ED(SI) Cabinet Sub-Committee to establish where in Government additional engineering resource is needed and how best to provide it. Within BIS, for example, the CSA is currently reviewing the process by which the Department ensures science, engineering and particularly technology advice is used appropriately in policy development and implementation.

¹ To note that since the Government responded to the Committee's report *Engineering: turning ideas into reality*, due to a change of postholder it is no longer the case that the DfID DCSA has an engineering background.

3. The Government had an opportunity at the last reshuffle to move GO-Science as per our recommendation in the engineering report. That it did not, was a missed opportunity. As the Government Chief Scientific Adviser explained, location matters because it affords daily face-to-face interaction between colleagues in the same building; and as he further pointed out, he has only seen the Prime Minister four times in the past year. We therefore appeal directly to the Prime Minister, who is responsible for GO-Science, to bring it into the Cabinet Office alongside the Strategy Unit. (Paragraph 37)

The Prime Minister shares the GCSA's view that GO-Science is best located within BIS and does not recognise Committee's assessment of his engagement with the GCSA as 'woefully inadequate'. The GCSA provides the Prime Minister with advice in a form, and at a time and level, appropriate to the matter in hand. Neither the Prime Minister nor the GCSA are convinced by the need for advice to be routinely delivered in person. However, regular meetings are now being put in place to ensure that the Prime Minister stays abreast of all the issues and is made aware of any concerns held by the GCSA.

As the GCSA points out, the co-location of GO-Science and BIS facilitates his close working with the Minister for Science and Innovation and Director General for Science and Research. The Government would like to assure the Committee, however, that the GCSA enjoys strong links with departments across Whitehall, not least with the Cabinet Office. As co-chair of the Scientific Advisory Group for Emergencies (SAGE), for example, the GCSA attends Ministerial Civil Contingency Committee (CCC) meetings (within COBR). Further, the GCSA regularly engages with Sir Gus O'Donnell (Head of the Home Civil Service), and with Permanent Secretaries and Chief Scientific Advisers across government.

Similarly, the Committee should be assured that officials in GO-Science have strong links with officials in No 10, the Cabinet Office and other government departments.

The Committee comments that the distinction between GO-Science and its parent department is unclear on occasion (Paragraph 36). This is a helpful observation and one which reinforces the need for activities already initiated to communicate better the position of GO-Science as a semi-autonomous unit with a cross-government remit.

4. We are reassured to hear that Professor Beddington will take steps to look at the MHRA's decision to licence homeopathic products as well as the wider issue of the purchasing of homeopathy by the NHS. We hope that he will be able to bring scientific evidence to the centre of this complex policy issue. (Paragraph 42)

The GCSA is concerned that the licensing of homeopathic remedies might be taken to imply clinical efficacy. He wrote to the MHRA requesting clarification on the licensing of homeopathic products. The information the GCSA received from the MHRA is summarised below.

Homeopathic medicinal products are included in the scope of European Directives and the Medicines Act 1968. Under current licensing arrangements, homeopathic products either: have Product Licences of Right (PLRs); have been granted certificates under the Simplified Scheme; or have been granted homeopathic marketing authorizations under the National Rules Scheme.

PLRs are licences issued to all products on the market at the time that the Medicines Act 1968 was implemented in 1971. Legislation requires PLRs to be reviewed over a 7 year period from 01 September 2006 (as a result of introducing the National Rules Scheme).

The Simplified Scheme for homeopathic medicinal products was introduced in 1992 under European Directive 92/73/EC. The scheme is regarded as simplified because there is no requirement in the Directive for data to demonstrate clinical efficacy and the eligibility criteria confer a certain reassurance on safety. The Simplified Scheme does not permit therapeutic indications to be stated on the product label.

In 2006, the UK introduced the National Rules Scheme allowing the marketing of homeopathic products under European Directive 2001/83. Directive 2001/83/EEC, as amended, is specific to homeopathic products and recognises the principles and characteristics of homeopathy as practised within the individual Member States. Only products which are indicated for the relief of minor symptoms and minor conditions in humans are eligible for a homeopathic marketing authorization under the scheme. For these purposes, minor symptoms are those which can ordinarily and with reasonable safety be relieved or treated without the supervision or intervention of a doctor. Additional warnings appear on the packaging instructing the patient to seek medical help if symptoms do not improve.

The National Rules Scheme does not endorse clinical efficacy of homeopathic products, as clinical efficacy is understood in the context of conventional pharmaceutical medicines. Rather, it addresses previous inconsistencies in the marketing of homeopathic products in the UK. Previously, for example, manufacturers with Product Licences of Right (PLRs) were able to market a wider range of product dosage forms and dilutions—and give indications—whereas manufacturers with registration certificates for the same products under the Simplified Scheme were not necessarily permitted to include any therapeutic use on the labelling.

Arnica Pillules have been available on the UK market as a homeopathic medicinal product without indications for many years. The Nelson's arnica product is the only product to be authorised under the National Rules scheme to date. In accordance with the requirements of the National Rules Scheme, the applicant submitted a dossier demonstrating the safety and quality of the product as well as information on the usage of the product within the UK homeopathic tradition for the indications sought. Safety and quality are monitored during the life cycle of the product in similar terms to pharmaceutical medicines with full marketing authorisations. The product packaging for arnica has undergone full user testing to ensure that the most important key messages for safe use of the product are conveyed to the consumer in a user-friendly manner.

The GCSA would like to reassure the Committee that product licenses granted do not indicate clinical endorsement for any treatment, but provide a regulatory context in relation to product safety. He is persuaded that a system able to regulate claims made in marketing homeopathic products is potentially of benefit, but recognises that this does not address the issue of individuals taking medicines that are of no clinical benefit. He will

monitor current arrangements and watch for any evidence that such a scheme unduly encourages the use of such remedies in place of more appropriate medical treatment.

On the purchasing of homeopathic medicines by the NHS, the GCSA has been in contact with the Chief Medical Officer (CMO) to discuss this matter. The CMO indicated that the cost of homeopathic prescriptions dispensed by the NHS represented a very small proportion of the total drugs bill. The Committee should be assured that discussions between the Department of Health and the GCSA on this matter are ongoing, having only been recently interrupted as a result of priority work on the Government's response to swine flu.

5. We call on the DCSF Chief Scientific Adviser to explain what advice she provided, if any, on the Every Child literacy and numeracy programmes and report it to the House. (Paragraph 47)

DCSF is committed to evidence-based policy-making and the effective use of scientific advice. The current DCSF CSA, Carole Willis, joined the department in August 2008, and so was not in post when many of the Every Child literacy and numeracy programme decisions were taken. However, she has a specific remit to ensure that robust evidence and analysis is used consistently across the department in its policy development. The CSA chairs the Department's Research Approvals Committee, which scrutinises all research and evaluation proposals to test their scientific rigour before funding is approved. The CSA also chairs the Policy Evaluation Group (which investigated and approved the evaluation of the "Every Child a Reader" initiative earlier in the year) and oversees development and delivery of the Department's Analysis and Evidence Strategy (published on 20th July 2009).

The CSA advises Ministers on the content of the forward looking research programme and the scientific integrity and validity of research and evaluation. She actively challenges the department on the evidence base for its policies, and sits on several of the department's decision making Boards. More generally, the DCSF analytical community work on behalf of the CSA to ensure that evidence underpins policy development decisions across the department. There are 210 professional analysts within the Department (economists, operational researchers, social researchers and statisticians) which provides DCSF with a solid analytical base.

The Department is providing specific support on literacy and numeracy to an increasing number of local authorities and schools in England, targeted on greatest need. These are focussed through the following intervention programmes: Every Child a Reader (ECaR), Every Child a Writer (ECaW), Every Child Counts (ECC) and Every Child a Talker (ECaT). The ECaR programme was piloted between 2005 and 2008 and, informed by findings from a range of academic research and analysis, is being rolled out nationally on an incremental basis. The other initiatives are being piloted or rolled out incrementally, with advice from DCSF analysts, in order to build a strong evidence base for future decisions about funding. The CSA has ensured that ECaR, ECC and ECaW undergo a rigorous evaluation process, and is in the process of exploring how ECaT should be evaluated, and the lessons learned. DCSF analysts will ensure that the results are used to inform the future of these programmes. DCSF would welcome the opportunity to provide the committee with full details on the evidence base and evaluation activity if they wish.

6. We agree with Professor Beddington that Departmental Chief Scientific Advisers should have devolved responsibility for the quality of scientific advice in each department. On that basis, it is crucial that each DCSA has a tight grip on their departmental remits and have sufficient support so that problem policy areas can be identified and dealt with. The DCSA must challenge policy-makers to demonstrate clear evidence to support policy or to acknowledge that no such evidence exists. The GCSA needs to be advised by DCSAs of those instances where DCSAs have been overruled on such matters; and we further recommend that he publishes these in his annual report. (Paragraph 48)

The Government is confident in the ability of its Chief Scientific Advisers effectively support and challenge policy-making in their home departments. As the Committee rightly acknowledges, however, science and engineering evidence will only ever be one of the factors that influences the form and focus of government policy.

It is the Government's view that the full range of evidence used to inform policy-making should be made publicly available whenever possible. Given this will encompass science and engineering advice received, the Government is not persuaded of the need to publish details of occasions when departmental policy outputs have or have not fully reflected the Chief Scientists' advice.

The Government's commitment to transparent policy-making is described in the *Guidelines on Scientific Analysis in Policy-making*:

In line with the Freedom of Information Act, there should be a presumption at every stage towards openness and transparency in the publication of expert advice. Departments should also ensure their procedures for obtaining advice are open and transparent. It is good practice to publish the underpinning evidence for a new policy decision, particularly as part of an accompanying press release. [...] When publishing the evidence the analysis and judgment that went into it, any important omissions in the data, should be clearly documented and identified as such. This should be done in a way that is meaningful to the non-expert.

7. Strong consideration should be given to increasing the number of departments that have Science Advisory Councils with a departmental remit. The Department of Health, the Department of Energy and Climate Change and the Department for Transport are obvious 'top-of-the-list' candidates, with the latter two in particular needing high quality engineering advice. (Paragraph 54)

The GCSA has made public his view that government departments benefit from having an SA Council, and that he is exploring the potential establishment of SA Councils across a broader range of government departments.

The Government welcomes the Committee's support for this agenda, and is pleased to report that, since the Committee started its inquiry, DCMS has announced plans to introduce such an advisory structure.

The potential to embed the model of an SA Council across government departments was considered at the September meeting of the Chief Scientific Advisors Committee (CSAC).

Officials in GO-Science will be acting on the outputs of this meeting to progress this programme of work.

8. SAC members should not be criticised for publishing scientific papers or making statements as professionals, independent of their role as Government advisers. (Paragraph 64)

The Government agrees that the independence of science advisers is critical. It was precisely for this reason that the GCSA wrote to then-Home Secretary Jacqui Smith to express concern over her criticism, in Parliament, of Professor Nutt (Chairman of ACMD) with regard to an article he published in a peer-reviewed journal.

Since the then-Home Secretary's criticism of Professor Nutt, at least one SA Council, DefraSAC, has recruited a number of new members. As Professor Gaskell (Chair of DefraSAC) informed the Committee, applications were received from a large number of high calibre candidates.

The Government is not complacent, however, and as part of its annual monitoring of the health and functioning of SACs, all SACs, and their sponsor Chief Scientific Adviser, have been asked to report on succession planning and issues faced or identified in recruiting new members. Responses to this year's exercise are currently being collated and will be considered at the December meeting of the Chief Scientific Advisers Committee. The Government would be happy to report the findings of this exercise to the Committee.

9. It is important to safeguard the independence of the advisory system. In situations where the independence of a SAC chairman or member is or might be threatened for political reasons, support should be offered by the DCSA and/or the GCSA. (Paragraph 67)

10. We welcome the steps taken by the GCSA to deal with one incident that occurred between the Chairman of the ACMD and the Home Secretary. Further steps that should have been taken are: (1) the GCSA should have written or spoken to the Chairman of the ACMD, letting him know that support was being provided; (2) the correspondence between the GCSA and the Home Secretary should have been published immediately so that other SAC Chairmen and the public (including the science community) could see that support was being offered; and (3) the GCSA should have provided public support for the Chairman of the ACMD and for his right to publish. (Paragraph 68)

The Government is committed to the provision of independent scientific advice, and to supporting the mechanisms and structures by which this advice is delivered. This is evidenced by its ongoing work to embed science and engineering advice in policy-making processes across government (through the appointment of CSAs and establishment of SA Councils, for example).

The Committee can be assured that the GCSA will take steps to support SAC Chairs and SAC members should he believe that their independence is being impinged upon. The Government does not, however consider it likely that instances of this occurring will be widespread or accept that the GCSA should routinely publish correspondence with SAC chairs, SAC members or Ministers. On the issue of public support, the GCSA will decide

on the most effective action for dealing with any discord between the advice offered by SACs and the development of government policy.

11. The Government should seek specialist advice prior to making policy decisions, early in the policy-making process. Clearly the Government should be free to reject the advice of its SACs, since scientific evidence is only one factor—albeit a very important one—in policy decisions: Advisers advise, Ministers decide. However, when the Government does take a different policy decision to that recommended by a SAC, it should make clear its reasons for doing so. (Paragraph 69)

The Committee correctly identifies that science (and engineering) evidence is only one of the factors that Ministers take into account when reaching a policy decision. As outlined in the Government's response to Recommendation 6 of this report, the Government has a long-held view that the evidence-base for any policy decision should be made publicly available and that, when the decision runs contrary to independent advice received (irrespective of the advisory structure), the reasons for rejecting this advice be outlined.

Guidance on when to seek expert science and engineering advice, and to publish this advice, is provided in the Government's *Guidelines on Scientific Analysis in Policy-making*. The Government is currently acting to update this document and will be launching a public consultation on the guidelines later this year. The Government would welcome consultation input from the Committee.

12. We conclude that there would be value in being clear in the Code of Practice as to what 'independence' means. Members of Science Advisory Committees are likely to represent the views of their constituencies; what is important is that they have no conflict of interest with Government. Therefore, in the case of Science Advisory Committees, 'independence' should mean 'independence from Government'. (Paragraph 73)

The Government agrees that when used in relation to SACs, 'independence' should mean independent of government. This is reflected in the current version of the Code of Practice for Scientific Advisory Committees which states that: 'committee's advice [...] should be seen as independent of government'.

The Government will ensure that the independence of SACs from government is clearly reflected in the updated *Guidelines on Scientific Analysis in Policy-making*.

13. We agree that SACs should recruit members based on competencies. However, we are concerned that dropping the term 'lay' removes an expectation that specialist advisory councils should have non-specialist members. Additionally, we are not convinced by the argument that scientists from one subject are necessarily a 'lay' person in another scientific area. Whether or not they are called 'lay members', non-specialists do have a lot to offer specialist committees. The presumption should be that SACs have lay/non-specialist members. (Paragraph 78)

The Government agrees that non-specialist members can add value to the functioning of a SAC, and would advocate that every SAC consider the inclusion of a 'lay' member amongst its membership. However, the balance of specialist and non-specialist members on a given SAC will reflect the role and remit of the Committee in question. That said, the Committee

may be interested to note that—in November 2009—GO-Science will be holding an event for SAC members across government to discuss the role of non-specialist members, and how best to support their development and working.

The Government can report that the majority of SACs do count non-specialists among their membership. The precise balance of specialist and non-specialist members varies considerably, however. For example, the Forensic Science Advisory Council reports having 11 non-specialist members and 4 specialist members; the Advisory Committee on Packaging reports 2 non-specialist members; and the Committee on Medical Aspects of Radiation in the Environment has only expert members. The diversity of SACs' membership only serves to highlight the degree to which the optimal structure of a given Committee will reflect the nature of the issue on which it advises.

14. We support the Code of Practice's emphasis on the importance of publishing documents relating to the work of science advisory committees. We would prefer a slightly different emphasis on open meetings. Rather than recommending that SACs "should aim to hold open meetings on a regular basis", we suggest that SACs "should aim to hold the majority of their meetings in public, making use of new media wherever possible". (Paragraph 82)

A majority of SACs now hold one meeting in public each year, with a broad range of SACs meeting in public on a regular basis. This is indicative of a general move to greater transparency, with a number of SACs routinely advertising meeting dates on their websites and providing online access to meeting agenda, papers and minutes and SAC reports (Advisory Council on the Misuse of Drugs; Scientific Advisory Committee on Nutrition; and the Advisory Committee on Hazardous Substances, for example). The Committee may be interested to note that the Human Genetics Commission makes audio recordings of their meetings available to the public.

15. We can see the logic and agree that it is important that SAC advice should be presented to Ministers in advance of publication, giving them sufficient time to consider a response. However, it is also clear that SAC advice should, when it is given to Ministers, be final advice, and not a launching pad for debate. On this basis, we recommend that the process of SACs providing evidence to Ministers should be as transparent as possible. SAC evidence that is presented to Ministers should subsequently be published in unaltered form, along with the date on which the evidence was presented to Ministers and the details of any requests for alterations or clarifications of the evidence. (Paragraph 84)

It is the longstanding view of Government that all independent advice it receives be made publicly available as a matter of routine. This view is clearly laid out in the Government's *Guidelines on Scientific Analysis in Policy-making* (see the Government's response to Recommendation 6 of this report), and, as set out below, in the Code of Practice for Science Advisory Committees (CoPSAC):

Advice should normally be made public by the scientific advisory committee at the time it is given or as soon as reasonably practicable thereafter. Where there are circumstances which justify giving advice in private, committees should consider whether the advice could be made public after a suitable time interval has passed. If so,

they should publish the advice as soon as is reasonably practicable. Reasons for privacy should be consistent with the principles of Freedom of Information legislation [page 21].

16. We recommend that a small press office be set up within the Government Office for Science, to serve the press needs of GO-Science and all the Science Advisory Committees across Government. (Paragraph 86)

GO-Science receives press office support from BIS, with the GCSA and GO-Science being served by a dedicated press officer. BIS press office and GO-Science are soon to be co-located, and the Government does not consider a separate GO-Science press office to be warranted.

It is the Government's view that there is not a 'one size fits all' approach to be taken to the provision of media support to SACs. In general, SACs receive press office support from their sponsor department. Government departments and SACs have close working relationships, and the provision of press office support to SACs by their sponsor department is not contentious.

On the rare occasion that a SAC has requested independent media support this has been arranged. The Government is therefore of the view that, as is current practice, the precise nature of support required by a SAC should be discussed on a case-by-case basis.

17. Shuffling the body responsible for providing cross-departmental science and engineering advice from one department to another and then back again within the space of two years is the opposite of 'putting science and engineering at the heart of Government policy'. It reduces science and engineering advice to, at best, a peripheral policy concern, and, at worst, a political bargaining chip. If science and engineering are to be successfully placed at the heart of policy, as the Government is keen to do, two things need to happen. First, the Government Office for Science (and Engineering, as we would have it) should have a stable home. We believe that this should be the Cabinet Office: the heart of Government. Second, there needs to be a Government Chief Engineer and a Government Chief Scientist, who are responsible for cross-departmental advice and coordination, freeing up the Government Chief Scientific (and Engineering) Adviser to advise the Prime Minister more closely and to act as a public figurehead for science and engineering in the United Kingdom. (Paragraph 88)

The Government rejects the Committee's assertion that the body responsible for providing cross-departmental science and engineering advice (now GO-Science) has been 'shuffled about' over recent years. The GCSA and the office that supports this role have been continuously co-located with the department responsible for the Science Budget since 1995. The Government believes this is the optimal location for the GCSA and GO-Science and refers the Committee to its response on Recommendations 2 & 3.

Debating strategic priorities and the Haldane Principle

18. We are left wondering what this strategic priorities debate was about and whether it has led to a major shift in Government policy. We are in favour of a discussion about how best to focus research funds so that the UK gets maximum reward from its

investment, but the lesson to be learned is that the Government should be clear in its own mind about the format and goals of a debate before launching it. (Paragraph 105)

25. In the case of the strategic-priorities debate, the benefits of a fast-moving process have been countered by a lack of coherence. Launching the debate with a Green Paper or something similar would have given a focus to the debate that was sorely lacking. We acknowledge that this would have elongated the timeframe for the debate, but since the intention was always for an on-going debate, this should not have been seen as a problem. (Paragraph 133)

The Government welcomes the Committee's acceptance that it should set the over-arching strategic priorities for research funding. However, Government does not set priorities in isolation: there is continuing dialogue between Government, Research Councils, learned societies, research users, and the research community about the strategic priorities for research funding. This consultation takes account of changing circumstances. Such discussions have in the past informed cross-council programmes such as those set up following the Comprehensive Spending Review. The Government has already committed to consult more extensively in the run-up to the next Science and Research Budget allocation. The debate that Lord Drayson launched earlier this year was set clearly in the context of that continuing process. It was timely in light of the turbulent economic climate, for at least two reasons: science and research will have a key role driving the economy through and out of recession, and it is more important than ever that every pound of taxpayer's money is used as effectively as possible. This timeliness was the reason for the rapid and flexible approach taken to the debate, rather than a more formal approach such as a Green Paper.

19. Past experience of failing to accurately 'pick winners' has led to a risk-averse executive. The belief that 'sectors will pick themselves' is misplaced and when proactive interventions by Government are not forthcoming, potentially successful industries that germinate in the UK, blossom elsewhere. Choosing to support one sector over another will be difficult. The Government should develop clear and agreed methodologies for determining priorities and acceptability of risk. (Paragraph 109)

The Committee is right to point out the challenges for Government in making targeted interventions to help the economy of the future. The Government laid out in detail its approach to this challenging and important task in the policy statement *Building Britain's Future - New Industry, New Jobs*, published on 20th April 2009.

20. If the Government is to develop clear and agreed methodologies for identifying areas of high priority, these must also be effective in identifying areas of low priority. Further, the Government should not prevaricate on this issue: if it decides to prioritise some areas of research it should come clean about which areas of research will see reduced investment. (Paragraph 111)

The Government does not agree with the Committee that it is necessary or desirable for the Government itself to specify which areas of research will receive lower levels of funding. Each Research Council decides independently how best to deliver excellent research in priority areas, while retaining a broad base of excellent research. They base their approach

on the needs and views of their varied research communities and the businesses and public bodies with which they work.

26. Any debate on strategic science funding should be put in the wider context of the role of science and engineering in the economic and social wellbeing of the UK. The 2004 ten-year science and innovation framework was successful in focussing attention on the importance of science and innovation. We now suggest that the UK needs a 'national science and engineering strategy'. The Government should spend the last two-years of the ten-year framework (2012 and 2013) reviewing the science and innovation framework and consulting on a new strategy that will set out the direction of travel for science and engineering within UK plc from 2014 until 2024. (Paragraph 137)

Halfway through the existing ten year *Science and Innovation investment framework 2004–2014*, the Government considers that this Framework continues to be appropriate, and substantial progress has been made in achieving the aims set out five years ago. It welcomes the Committee's view that the Framework has been successful. There have continued to be annual reports about further progress, and the Innovation Nation White Paper last year was a further major step forward. The Government agrees that further evolution will be desirable.

23. It is unlikely that the Science and Society consultation will contribute substantially to "a new strategy for the UK": most of what has been said was either predictable or already government policy. However, we will watch the work of the Expert Groups with interest. (Paragraph 126)

Government welcomes the Committee's interest in the Science and Society work and would encourage widespread engagement with the relevant Expert Groups. Whilst the initial findings of the Science and Society Strategy consultation did not reveal pressure for radical change, it did confirm, at a national level and with the significant support of the vast majority of stakeholders, a collective agreement to the priorities set out in the consultation. Perhaps more significantly, it confirmed a willingness by a wide number of organisations and influential individuals to come together to provide increased momentum and co-ordination of activities. The consultation revealed that the focus of science and society is continually shifting and it was therefore timely to review the science and society commitments in the Science and Innovation Investment Framework: 2004–2014.

The externally-led Expert Groups have been charged with appraising critically the science and society landscape, and with testing the responses and key issues which arose from the consultation. They will develop long-term delivery plans to address the most important issues. Government Departments, Agencies and NDPBs are represented on the groups and are fully committed to the process.

24. We welcome the Government's commitment to consultation. It would be helpful if the Government was clearer about the reasons for each consultation and what was at stake. This would make the process more worthwhile for all concerned and would remove the feeling of 'box-ticking' that so often accompanies consultations. (Paragraph 132)

The Government accepts the importance of clarity of aims in consultation, but feels the best way to achieve this in practice depends on the nature of the consultation. What is

important is that, as John Hutton is quoted in the Committee's report, the consultation is "targeted at, and easily accessible to, those with a clear interest in the policy in question". The Science and Society consultation was a substantial formal consultation open to the public. It complied with the Cabinet Office Code of Practice on Consultation, from which John Hutton's quote is taken, and used not only the basic minimum principles for conducting effective Government consultations but new innovative deliberative engagement techniques which are already an increasing part of the science and society portfolio.

The debate on strategic priorities was not a formal public consultation but was intended to be flexible and responsive, and to engage expert stakeholders who were already very familiar with the issues at stake: this allowed the debate to proceed in a much more informal manner. The nature of each consultation is always tailored to its audience and aims, in compliance with the Code of Practice.

21. The Department for Business, Innovation and Skills should consider long-term investment returns when it considers strategic priorities in international partnerships. (Paragraph 114)

The Government agrees. The UK has for a considerable time sought to develop international partnerships that can help bring returns in both the shorter and longer terms. The UK's membership of CERN, which dates back to the 1950s, is just one example of this approach, which the Government intends to continue.

22. Curiosity-driven research is a key component of a successful knowledge-economy. We strongly endorse the view that increased focus in applied research and industrial follow-through should not be at the expense of blue-skies research, which is one of the UK's greatest strengths. (Paragraph 117)

The Government agrees with the Committee that expanding the frontiers of knowledge continues to be of vital importance in its own right, as well as being key to the UK's future economic and social success. The Science and Research Budget will continue to fund such research driven by the curiosity of top quality researchers.

29. To conclude, we are in favour of the idea that researchers are best placed to make detailed funding decisions on the one hand and, in principle, we support the Government to set the over-arching strategic direction on the other. However, it is necessary for the Government to spell out the relationship between these two notions for a broader funding principle to be of any use. (Paragraph 157)

35. We have already given our support for a more strategic approach to setting priorities in science funding, specifically at the applied end of the spectrum. Considering this issue in the context of the Haldane Principle highlights the need for a new approach to science funding that incorporates the good elements of Haldane in relation to basic science, but does not hinder a more mission-driven approach to get the full benefits of applied science and engineering. (Paragraph 185)

The Government is clear that the Haldane Principle remains the correct basis for governing the allocation of science and research funding. It welcomes the Committee's acceptance of key aspects of the Haldane Principle: that researchers are best placed to make

detailed funding decisions on the one hand and that Government should set the over-arching strategic direction.

Far from hindering the ability to do both blue-skies and challenge-driven research, the Haldane Principle facilitates it. For example, the Research Councils have responded to the strategic challenges, identified by Government, of environmental change, ageing, global security and sustainable energy with cross-council research programmes that include blue-skies and directed research. Under this approach, the UK research base is the most productive in the G8 (and twice as productive as that of the USA), the UK's research performance is second only to the USA while university income from business and external sources has reached its highest level ever.

27. The 2009 Budget Research Council savings have had an impact on the way that Research Councils allocate their funds. While this cannot be regarded as dictating 'detailed decisions', it is not 'over-arching strategy' either; it is somewhere in between. (Paragraph 155)

28. These 'savings' are in reality a strategic influencing of research funding streams. Whether or not it is the right thing to do is open to debate. But, either way, the Government should communicate clearly what it is doing and not label them as something they are not. (Paragraph 156)

The Government does not recognise the Committee's account of the process by which Research Councils made commitments to greater efficiency savings as part of Budget 2009.

As part of the preparations for Budget 2009, all Departments sought to identify where further efficiency savings could be made, in addition to those already committed to as part of the CSR2007 settlement. After discussion with the Research Councils on the level of savings that was feasible, the then Department for Innovation, Universities and Skills announced that the Research Councils had committed to make an additional £106 million of efficiency savings by 2010/11. The Research Councils decided both how these savings should be made, and how the funding thereby generated would be best used.

HM Treasury agreed that, given the importance of science and research, the £106 million generated by these efficiency savings should be retained within the Science and Research ringfence. This was in contrast to most parts of Government, from which efficiency savings had to be passed back to HM Treasury.

Research Councils then had to decide how to allocate this £106 million. They consulted with the research community, including at a public conference in April, on the priorities for allocating this money. They subsequently announced these priorities on 18th May.

The Research Councils decided how the initial efficiency savings should be made, and later decided what the priorities should be for allocating the resulting money, once HM Treasury had agreed to its being retained. So while the Government agrees that "the 2009 Budget Research Council savings have had an impact on the way that Research Councils allocate their funds", this is as a result of decisions taken by Research Councils in consultation with the research community, not by Government. In accordance with the Haldane Principle, the Government did not determine what specific research should be funded: Research Councils and researchers did.

30. Research Councils are not, and never have been, the ‘guardians of the independence of science’. That responsibility has historically lain, and should remain, with the learned societies, universities and individual academics. (Paragraph 159)

Research Councils have an important role to play in ensuring that specific decisions about which projects and researchers are funded are at arm's length from Government. They therefore do guard the independence of scientific research. The Government agrees that important roles in relation to independence are also played by the learned societies, universities and individual academics. The Government values and supports the autonomy of universities, and the independent perspective provided by the learned societies.

31. The Government's refusal to give us confidential access to papers relevant to this inquiry is unacceptable. Without seeing the Science Budget Allocation letters, we are forced to speculate that the Government has exerted inappropriate influence over the Research Councils. However, we have been unable to confirm or deny this suspicion because of the Government's contempt for Parliamentary scrutiny. (Paragraph 165)

Far from having contempt for Parliamentary scrutiny, Government welcomes and engages with it. In particular, the close and regular attention paid by the Committee to issues surrounding research funding is important and valuable to Government.

There has been no inappropriate influence exerted over the Research Councils. The Government published details of the allocation of the Science and Research Budget in December 2007, and the Research Councils published their detailed Delivery Plans. As has been explained to the Committee, the purpose of not disclosing the process between Government and the Research Councils leading up to spending decisions is to promote candid discussion and robust appraisal of options. Contemporary disclosure of such discussion, or the knowledge that they would be subject to specific scrutiny, would inhibit effective preparation of advice to Ministers.

32. Logically, the Government cannot support both the Excellence and Haldane Principles in their current form *and* be responsible for promoting science and engineering as a means of economic recovery and growth in the regions. The time is ripe for an unambiguous rationalisation of the two concepts. Researchers, industry, regional and national policy makers and the public have a right to know on what basis research funding is distributed both nationally and regionally; the rationale for funding decisions should be transparent and rigorous. The Government should adjust the framework for research funding and regional development so that it does not contain internal contradictions. (Paragraph 173)

33. Science and engineering are crucial to the economic wellbeing of every region in the UK, and development strategies that have supported and made use of science and engineering have proven successful. In the consideration of UK science policy, it is essential that the regional dimension is clearly and publicly set out. It is important that the Government is able to communicate its role in regional development and in science policy, and especially the relationship between the two. It will only be able to do this if it resolves the conflict between its regional policies and the Haldane Principle. (Paragraph 176)

As the Committee acknowledges in its report, the Government has been clear and consistent that

“Public funding of research at a national level, through the Research Councils and funding bodies, is dedicated to supporting excellent research, irrespective of its UK location. The ‘excellence principle’ is fundamental to safeguarding the international standing and scientific credibility of the UK science and research and supporting an excellent, diverse, expanding and dynamic science base, providing value for money for public investment.”²

The Committee succinctly explains that this “is a good thing because it keeps science competitive and sends the money where it is most likely to produce the best results.” This principle was stated in the *Science and Innovation investment framework 2004–2014* and on subsequent occasions, and remains in place.

The Government sees no contradiction between this principle and recognition of the reality that science and innovation are key factors in economic development. Funding is allocated to universities and research institutes on the basis of excellence. This funding enables researchers to contribute to the economic development of the regions in which their research happens to be located as well as to the UK more widely, but the funding is not provided with regional development in mind. The Government sees no conflict between the allocation of research funding on the basis of excellence according to the Haldane Principle, and the work of the Regional Development Agencies in promoting economic development in their respective regions.

The Committee refers to Lord Drayson’s evidence in which he acknowledged the regional impact of strategic decisions about the location of major pieces of infrastructure. In this evidence, he was referring specifically to the few occasions in which Ministerial involvement is required, rather than the generality of research funding. The published criteria used for the Large Facilities Capital Fund (which is used to provide additional funding for most larger public research infrastructure projects) are clear that “the opportunities that are opened up for knowledge or technology transfer and innovation” is one factor used in making this type of decision, albeit one factor amongst fourteen. However, as Lord Drayson made clear in his evidence, when taking these and all decisions about research funding “the excellence...is what comes first”.

34. The relationships between the Government and the research bodies that it funds should be both explicit and transparent. We recommend that the different streams of research funding are mapped and the nature of the contract between Government and the research bodies described. (Paragraph 181)

36. The time has come for a new framework to replace the Haldane Principle (however it is understood) that adds transparency and rigour to the relationship between Government and the research community. It is important that the diversity of relationships between Government and the various bodies it funds to do research are included under a broad set of principles. We recommend that the Council for Science and Technology be commissioned to carry out this work. (Paragraph 188)

2 Quoted from 10 Year Framework

There are many different types of relationships between the various Government Departments and research organisations, and as the Committee points out, “it would be inappropriate for the same relationship to exist between each of these organisations and Government”. Government is not aware of any instances in which the formal nature of the relationship is unclear. The Government does not plan further work to map and describe the overall relationship between Government and research bodies.

In the original Haldane Report, a clear distinction is drawn between “research work for general use”, in which Ministers should not take a detailed involvement (this now includes funding via the Science and Research Budget following the Haldane Principle), and research carried out for the benefit of specific Departments. Haldane writes “many Departments must retain under their own control a distinctive organisation for the prosecution of specific forms of research.” The Government still agrees that Departments should retain control over the distinctive organisation of research for their own purposes. As for the Science and Research Budget, Government is clear that the Haldane principle remains the correct framework to govern that highly successful set of relationships, and the previous Secretary of State John Denham set out clearly in his speech at the Royal Academy of Engineering on 29 April 2008 how the Haldane principle applies in a modern context.

Science and Engineering Scrutiny

37. Changes to the science and engineering scrutiny programme to make reviews shorter and mandatory are welcome. We recommend that there should be regular and constructive liaison between the newly formed Science and Technology Committee and the Science and Engineering Assurance team. (Paragraph 194)

We welcome the Committee’s interest in our Science and Engineering Assurance (SEA) programme. The SEA reviews are designed to provide information and assurance to both the GCSA and Departmental Permanent Secretaries on the state of management and use of science in Government.

The Committee has asked Professor Beddington to appear as an early witness in the new S&T Committee work programme. This would be the first opportunity for Professor Beddington to update the Committee on the progress of the review programme. Further updates could be provided at future evidence sessions.

While it may not be appropriate to discuss the emerging findings of on-going SEA reviews with the Committee we would be pleased to make reports of departmental reviews available to the committee on publication.

38. We would like to thank all those who made strong representation to the Leader of the House on our behalf. We also recognise the responsibility that derives from a consensus in Parliament and the science and engineering community that science and technology scrutiny matters. We will strive to make the work of the new Committee—which is essential for the democratic scrutiny of science, engineering and technology—relevant, rigorous and transparent. (Paragraph 207)

39. The current arrangement for the future Science and Technology Committee is the best that could be achieved following the machinery of Government changes. We suggest that following the general election the committee responsible for science,

engineering and technology policy should be called the Science, Engineering and Technology Committee. (Paragraph 210)

40. We suggest that the Science, Engineering and Technology Committee should revert to its original 11 members with a quorum of three. (Paragraph 212)

41. To avoid complications related to the lines of departmental responsibility and future machinery of Government changes, we suggest that following the next general election the Science, Engineering and Technology Committee should be installed as a free-standing committee with a cross-departmental remit for science and engineering including research budgets across Government. (Paragraph 214)

The Government welcomes the re-establishment of the House of Commons Science and Technology Select Committee, a move Lord Drayson and Professor Beddington have publicly supported. As outlined in the response to Recommendation 31, the Government values Parliamentary scrutiny and has appreciated the work of the IUSS Select Committee.

The Government notes the Committee's suggestions for changes to the name, membership and remit of the Committee and agrees with the Committee's view that any further significant changes of this kind would be better carried out at the beginning of the next Parliament.

Conclusion

42. We close this inquiry by urging the Government to raise its game. When it turns its attention to updating the Science Framework, we recommend that the Government consult widely with a view to producing a successor ten-year science and engineering strategy that is both tangible and ambitious. We suggest that built into this strategy-in the spirit of scientific and engineering endeavour-should be an assessment of what benefits, if any, are delivered by putting science and engineering at the heart of Government policy. (Paragraph 216)

As we hope is made clear above, the Government agrees with the Committee on the importance of science and engineering to the development and delivery of government policy. On the issue of updating the Science Framework, we refer the Committee to the response to Recommendation 26.

Appendix 2: Conclusions and recommendations

Science and engineering at the heart of Government policy?

1. We were impressed by the Science Minister and Government Chief Scientific Adviser's frank assessment of how science and engineering advice is used in Government. We were pleased to hear that they have taken up those concerns we raised in the engineering report and that they have an appetite to improve the use of evidence in policy-making. (Paragraph 24)

Previous recommendations and policy examples

2. We regret that the Government failed to answer the core reasons for having Departmental Chief Engineering Advisers. We urge the Government to give fuller consideration to our recommendation that "Some departments should have Departmental Chief Engineering Advisers (DCEAs), some Departmental Chief Scientific Advisers (DCSAs), and some should have both." (Paragraph 29)
3. The Government had an opportunity at the last reshuffle to move GO-Science as per our recommendation in the engineering report. That it did not, was a missed opportunity. As the Government Chief Scientific Adviser explained, location matters because it affords daily face-to-face interaction between colleagues in the same building; and as he further pointed out, he has only seen the Prime Minister four times in the past year. We therefore appeal directly to the Prime Minister, who is responsible for GO-Science, to bring it into the Cabinet Office alongside the Strategy Unit. (Paragraph 37)
4. We are reassured to hear that Professor Beddington will take steps to look at the MHRA's decision to licence homeopathic products as well as the wider issue of the purchasing of homeopathy by the NHS. We hope that he will be able to bring scientific evidence to the centre of this complex policy issue. (Paragraph 42)
5. We call on the DCSF Chief Scientific Adviser to explain what advice she provided, if any, on the Every Child literacy and numeracy programmes and report it to the House. (Paragraph 47)

Science Advisory Councils/Committees

6. We agree with Professor Beddington that Departmental Chief Scientific Advisers should have devolved responsibility for the quality of scientific advice in each department. On that basis, it is crucial that each DCSA has a tight grip on their departmental remits and have sufficient support so that problem policy areas can be identified and dealt with. The DCSA must challenge policy-makers to demonstrate clear evidence to support policy or to acknowledge that no such evidence exists. The GCSA needs to be advised by DCSAs of those instances where DCSAs have been overruled on such matters; and we further recommend that he publishes these in his annual report. (Paragraph 48)

7. Strong consideration should be given to increasing the number of departments that have Science Advisory Councils with a departmental remit. The Department of Health, the Department of Energy and Climate Change and the Department for Transport are obvious 'top-of-the-list' candidates, with the latter two in particular needing high quality engineering advice. (Paragraph 54)
8. SAC members should not be criticised for publishing scientific papers or making statements as professionals, independent of their role as Government advisers. (Paragraph 64)
9. It is important to safeguard the independence of the advisory system. In situations where the independence of a SAC chairman or member is or might be threatened for political reasons, support should be offered by the DCSA and/or the GCSA. (Paragraph 67)
10. We welcome the steps taken by the GCSA to deal with one incident that occurred between the Chairman of the ACMD and the Home Secretary. Further steps that should have been taken are: (1) the GCSA should have written or spoken to the Chairman of the ACMD, letting him know that support was being provided; (2) the correspondence between the GCSA and the Home Secretary should have been published immediately so that other SAC Chairmen and the public (including the science community) could see that support was being offered; and (3) the GCSA should have provided public support for the Chairman of the ACMD and for his right to publish. (Paragraph 68)
11. The Government should seek specialist advice prior to making policy decisions, early in the policy-making process. Clearly the Government should be free to reject the advice of its SACs, since scientific evidence is only one factor—albeit a very important one—in policy decisions: Advisers advise, Ministers decide. However, when the Government does take a different policy decision to that recommended by a SAC, it should make clear its reasons for doing so. (Paragraph 69)
12. We conclude that there would be value in being clear in the Code of Practice as to what 'independence' means. Members of Science Advisory Committees are likely to represent the views of their constituencies; what is important is that they have no conflict of interest with Government. Therefore, in the case of Science Advisory Committees, 'independence' should mean 'independence from Government'. (Paragraph 73)
13. We agree that SACs should recruit members based on competencies. However, we are concerned that dropping the term 'lay' removes an expectation that specialist advisory councils should have non-specialist members. Additionally, we are not convinced by the argument that scientists from one subject are necessarily a 'lay' person in another scientific area. Whether or not they are called 'lay members', non-specialists do have a lot to offer specialist committees. The presumption should be that SACs have lay/non-specialist members. (Paragraph 78)
14. We support the Code of Practice's emphasis on the importance of publishing documents relating to the work of science advisory committees. We would prefer a slightly different emphasis on open meetings. Rather than recommending that SACs

“should aim to hold open meetings on a regular basis”, we suggest that SACs “should aim to hold the majority of their meetings in public, making use of new media wherever possible”. (Paragraph 82)

15. We can see the logic and agree that it is important that SAC advice should be presented to Ministers in advance of publication, giving them sufficient time to consider a response. However, it is also clear that SAC advice should, when it is given to Ministers, be final advice, and not a launching pad for debate. On this basis, we recommend that the process of SACs providing evidence to Ministers should be as transparent as possible. SAC evidence that is presented to Ministers should subsequently be published in unaltered form, along with the date on which the evidence was presented to Ministers and the details of any requests for alterations or clarifications of the evidence. (Paragraph 84)
16. We recommend that a small press office be set up within the Government Office for Science, to serve the press needs of GO-Science and all the Science Advisory Committees across Government. (Paragraph 86)

Conclusion

17. Shuffling the body responsible for providing cross-departmental science and engineering advice from one department to another and then back again within the space of two years is the opposite of ‘putting science and engineering at the heart of Government policy’. It reduces science and engineering advice to, at best, a peripheral policy concern, and, at worst, a political bargaining chip. If science and engineering are to be successfully placed at the heart of policy, as the Government is keen to do, two things need to happen. First, the Government Office for Science (and Engineering, as we would have it) should have a stable home. We believe that this should be the Cabinet Office: the heart of Government. Second, there needs to be a Government Chief Engineer and a Government Chief Scientist, who are responsible for cross-departmental advice and coordination, freeing up the Government Chief Scientific (and Engineering) Adviser to advise the Prime Minister more closely and to act as a public figurehead for science and engineering in the United Kingdom. (Paragraph 88)

Debating strategic priorities

18. We are left wondering what this strategic priorities debate was about and whether it has led to a major shift in Government policy. We are in favour of a discussion about how best to focus research funds so that the UK gets maximum reward from its investment, but the lesson to be learned is that the Government should be clear in its own mind about the format and goals of a debate before launching it. (Paragraph 105)
19. Past experience of failing to accurately ‘pick winners’ has led to a risk-averse executive. The belief that ‘sectors will pick themselves’ is misplaced and when proactive interventions by Government are not forthcoming, potentially successful industries that germinate in the UK, blossom elsewhere. Choosing to support one sector over another will be difficult. The Government should develop clear and agreed methodologies for determining priorities and acceptability of risk. (Paragraph 109)

20. If the Government is to develop clear and agreed methodologies for identifying areas of high priority, these must also be effective in identifying areas of low priority. Further, the Government should not prevaricate on this issue: if it decides to prioritise some areas of research it should come clean about which areas of research will see reduced investment. (Paragraph 111)
21. The Department for Business, Innovation and Skills should consider long-term investment returns when it considers strategic priorities in international partnerships. (Paragraph 114)
22. Curiosity-driven research is a key component of a successful knowledge-economy. We strongly endorse the view that increased focus in applied research and industrial follow-through should not be at the expense of blue-skies research, which is one of the UK's greatest strengths. (Paragraph 117)
23. It is unlikely that the Science and Society consultation will contribute substantially to “a new strategy for the UK”: most of what has been said was either predictable or already government policy. However, we will watch the work of the Expert Groups with interest. (Paragraph 126)
24. We welcome the Government's commitment to consultation. It would be helpful if the Government was clearer about the reasons for each consultation and what was at stake. This would make the process more worthwhile for all concerned and would remove the feeling of ‘box-ticking’ that so often accompanies consultations. (Paragraph 132)
25. In the case of the strategic-priorities debate, the benefits of a fast-moving process have been countered by a lack of coherence. Launching the debate with a Green Paper or something similar would have given a focus to the debate that was sorely lacking. We acknowledge that this would have elongated the timeframe for the debate, but since the intention was always for an on-going debate, this should not have been seen as a problem. (Paragraph 133)
26. Any debate on strategic science funding should be put in the wider context of the role of science and engineering in the economic and social wellbeing of the UK. The 2004 ten-year science and innovation framework was successful in focussing attention on the importance of science and innovation. We now suggest that the UK needs a ‘national science and engineering strategy’. The Government should spend the last two-years of the ten-year framework (2012 and 2013) reviewing the science and innovation framework and consulting on a new strategy that will set out the direction of travel for science and engineering within UK plc from 2014 until 2024. (Paragraph 137)

The Haldane Principle

27. The 2009 Budget Research Council savings have had an impact on the way that Research Councils allocate their funds. While this cannot be regarded as dictating ‘detailed decisions’, it is not ‘over-arching strategy’ either; it is somewhere in between. (Paragraph 155)
28. These ‘savings’ are in reality a strategic influencing of research funding streams. Whether or not it is the right thing to do is open to debate. But, either way, the

Government should communicate clearly what it is doing and not label them as something they are not. (Paragraph 156)

29. To conclude, we are in favour of the idea that researchers are best placed to make detailed funding decisions on the one hand and, in principle, we support the Government to set the over-arching strategic direction on the other. However, it is necessary for the Government to spell out the relationship between these two notions for a broader funding principle to be of any use. (Paragraph 157)
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35. We have already given our support for a more strategic approach to setting priorities in science funding, specifically at the applied end of the spectrum. Considering this issue in the context of the Haldane Principle highlights the need for a new approach to science funding that incorporates the good elements of Haldane in relation to basic science, but does not hinder a more mission-driven approach to get the full benefits of applied science and engineering. (Paragraph 185)

Science and engineering scrutiny

36. The time has come for a new framework to replace the Haldane Principle (however it is understood) that adds transparency and rigour to the relationship between Government and the research community. It is important that the diversity of relationships between Government and the various bodies it funds to do research are included under a broad set of principles. We recommend that the Council for Science and Technology be commissioned to carry out this work. (Paragraph 188)
37. Changes to the science and engineering scrutiny programme to make reviews shorter and mandatory are welcome. We recommend that there should be regular and constructive liaison between the newly formed Science and Technology Committee and the Science and Engineering Assurance team. (Paragraph 194)
38. We would like to thank all those who made strong representation to the Leader of the House on our behalf. We also recognise the responsibility that derives from a consensus in Parliament and the science and engineering community that science and technology scrutiny matters. We will strive to make the work of the new Committee—which is essential for the democratic scrutiny of science, engineering and technology—relevant, rigorous and transparent. (Paragraph 207)
39. The current arrangement for the future Science and Technology Committee is the best that could be achieved following the machinery of Government changes. We suggest that following the general election the committee responsible for science, engineering and technology policy should be called the Science, Engineering and Technology Committee. (Paragraph 210)
40. We suggest that the Science, Engineering and Technology Committee should revert to its original 11 members with a quorum of three. (Paragraph 212)
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List of Reports from the Committee during the current Parliament

The reference number of the Government's response to each Report is printed in brackets after the HC printing number.

Session 2008–09

First Report	Re-skilling for recovery: After Leitch, implementing skills and training policies	HC 48-I (HC 365)
Second Report	The Work of the Committee 2007-08	HC 49
Third Report	DIUS's Departmental Report 2008	HC 51-I (HC 383)
Fourth Report	Engineering: turning ideas into reality	HC 50-I (HC 759)
Fifth Report	Pre-appointment hearing with the Chair-elect of the Economic and Social Research Council, Dr Alan Gillespie CBE	HC 505
Sixth Report	Pre-appointment hearing with the Chair-elect of the Biotechnology and Biological Sciences Research Council, Professor Sir Tom Blundell	HC 506
Seventh Report	Spend, spend, spend? – The mismanagement of the Learning and Skills Council's capital programme in further education colleges	HC 530 (HC 989)
Eighth Report	Putting Science and Engineering at the Heart of Government Policy	HC 168-I
Ninth Report	Pre-appointment hearing with the Chair-elect of the Science and Technology Facilities Council, Professor Michael Sterling	HC 887
Tenth Report	Sites of Special Scientific Interest	HC 717 (HC 990)
Eleventh Report	Students and Universities	HC 170-I (HC 991)

Session 2007-08

First Report	UK Centre for Medical Research and Innovation	HC 185 (HC 459)
Second Report	The work and operation of the Copyright Tribunal	HC 245 (HC 637)
Third Report	Withdrawal of funding for equivalent or lower level qualifications (ELQs)	HC 187-I (HC 638)
Fourth Report	Science Budget Allocations	HC 215 (HC 639)
Fifth Report	Renewable electricity-generation technologies	HC 216-I (HC 1063)
Sixth Report	Biosecurity in UK research laboratories	HC 360-I (HC 1111)
Seventh Report	Pre-legislative Scrutiny of the Draft Apprenticeships Bill	HC 1062-I (HC (2008–09)262)
First Special Report	The Funding of Science and Discovery Centres: Government Response to the Eleventh Report from the Science and Technology Committee, Session 2006–07	HC 214
Second Special Report	The Last Report: Government Response to the Thirteenth Report from the Science and Technology Committee, Session 2006–07	HC 244
Fourth Special Report	Investigating the Oceans: Government Response to the Science and Technology Committee's Tenth Report of Session 2006–07	HC 506 [incorporating HC 469-i]