



Government
Office for
Science

CSAs and their officials - an introduction

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Government Office for Science

Contents

Introduction	3
Purpose	3
The Government Chief Scientific Adviser	3
Government Office for Science	3
Science in Government	3
Foresight	4
Council for Science and Technology	5
The Role of Departmental Chief Scientific Advisers	5
Support to Departmental Chief Scientific Advisers	7
CSA and officials engaging with GO-Science	7
Head of Science and Engineering Profession (HoSEP) role	8
Government Science and Engineering (GSE) Network	8
Analytical co-ordination across government	9
Guidance and advice	9
Guidelines on the Use of Scientific and Engineering Advice in Policy Making	9
Principles of Scientific Advice to Government	10
Chief Scientific Advisers Committee	10
CSA Officials Meetings	11
Science Advisory Councils and Scientific Advisory Committees	11
CSA Engagement with SA Councils and SACs	12
Advice in emergencies	12
Scientific Advisory Group in Emergencies (SAGE)	12
Science, Research and Evidence Strategies	12
Departmental Research Investment	13
Building resilient policies for the future	13
Science, Technology, Engineering and Maths (STEM) assurance	13
Role of the CSA in this process	14
Science and Engineering Assurance (SEA) Reviews	14
International aspects of the CSA role	15
Global Science and Innovation Forum (GSIF)	16
Succession management	16
Contact information	17
Annex A: Acronyms	18
Annex B: Key documents and websites	19
Annex C: Developing a Science, Research and Evidence Strategy	21
Annex D: STEM assurance	25
Annex E: Timetable for the appointment and induction of departmental CSAs	27

Introduction

Purpose

1. The aim of this document is to describe the roles and responsibilities of departmental Chief Scientific Advisers (CSAs) and their supporting teams (CSA Officials) and to put these in context of the broader science advisory processes across government. It provides an introduction to existing guidance and networks that can be drawn upon by those providing high level scientific and engineering advice to government.

The Government Chief Scientific Adviser

2. The main roles of the GCSA are to provide scientific advice to the Prime Minister and members of Cabinet, to provide advice on aspects of policy on science, engineering and technology and to ensure that effective systems are in place within government for managing and using science. These often require the GCSA to consult CSAs and other experts in relevant fields.

3. From January 2012, the GCSA reports to the Cabinet Secretary. While he has a particularly close working relationship with the Science Minister, he also engages directly with Secretaries of State and other Ministers across Whitehall on relevant issues.

4. The GCSA has no formal relationship with the Devolved Administrations (DAs). He is however available, where appropriate, to advise on reserved matters (for example, in an emergency handled at a UK level but involving one or more DAs). He also maintains strong informal links, for example through DA membership of the Chief Scientific Advisers Committee (CSAC).

Government Office for Science

5. The Government Office for Science (GO-Science) supports the GCSA in ensuring that science and engineering are well managed and used to support the Government's objectives. GO-Science is located in the Department for Business, Innovation and Skills (BIS) but is semi-autonomous from it.

6. Its two main units are Science in Government and Foresight. GO-Science and the GCSA are supported on international issues by the BIS International Knowledge and Innovation Unit (IKIU). All three units work with each other, with staff elsewhere in BIS and with other government departments to achieve their objectives.

Science in Government

7. Within Science in Government (SiG), six Global Issues teams coordinate cross-government science policy around the following themes:

- Energy & Earth resources

- Climate change
- Food & Water
- Defence & Security
- Civil Contingencies & natural hazards
- Health & Environment

8. SiG's Science Capability and Networks unit also houses teams that:

- bring together departmental CSAs to build capacity, share good practice and address cross-cutting issues where science and engineering can add value;
- conduct reviews of departments' management and use of science and engineering (see p. 14 for more on these reviews);
- regularly collect information from CSAs on the management and use of science and engineering;
- work with other Civil Service professions and the Cabinet Office to build the effectiveness of the science and engineering profession in government; and
- maintain effective communication and engagement with the wider scientific community, the scientific media and (to a lesser extent) the public.

9. An overview of the broader work of SiG is provided in the GO-Science Annual Review¹.

Foresight

10. The aim of the Foresight programme is to help policy makers think systematically about the future and take decisions today which are robust to future uncertainties.

11. Foresight achieves this in three ways:

- Foresight Toolkits and Networks: look to strengthen thinking capability and share best practice within and across government.
- Foresight Horizon Scanning Projects: short projects looking at more discrete issues 10-15 years in the future ;
- Foresight projects: landmark in depth studies look at major issues 20-80 years in the future

¹ <http://www.bis.gov.uk/assets/bispartners/goscience/docs/g/11-p95-government-office-for-science-annual-review-2010-11.pdf>

12. Each project works with about 200 experts to develop a comprehensive evidence base which brings together leading edge science, economics and social science research. Foresight works closely with government departments, as well as external stakeholders to ensure projects' relevance to current and future policy-making. CSAs may be involved in this process.

13. Current projects include: The Future of Computer Trading in Financial Markets and the Future of Manufacturing. More information on these is available on the Foresight website²

14. An overview of the broader work of Foresight is provided in the Foresight Annual Review.³

Council for Science and Technology

15. GO-Science houses the Secretariat to the Council for Science and Technology (CST).

16. CST is the UK government's top-level advisory body on science and technology policy issues. Its remit is to advise the Prime Minister on strategic issues that cut across the responsibilities of individual government departments. It is jointly chaired by the GCSA and an independent chair (usually an eminent academic).

17. One of the main ways CST fulfils its responsibilities is by delivery of issue-based projects. The CST work programme is developed by its members in discussion with government. Government can ask CST to consider particular issues but the Council is under no obligation to agree to these requests if it believes that other work would be of greater value. CST has published numerous highly influential reports⁴ Most recently this has included a report on the potential of the NHS as a driver for economic growth.

The Role of Departmental Chief Scientific Advisers

18. All the main departments have a departmental Chief Scientific Adviser. CSAs work alongside the other analytical disciplines⁵ and with departmental Ministers and senior teams, to ensure robust, joined-up evidence is at the core of decisions within departments and across government. CSAs also work together, and with Research Councils and others, under the GCSA's leadership, to address and advise on issues which cut across government.

19. Mirroring the role of the GCSA, the core role of departmental CSAs is to ensure that departmental decisions are informed by the best science and engineering advice. They do this both through offering advice directly to Ministers and official colleagues and by oversight of processes for ensuring that departments take account of, and commission where appropriate, relevant scientific and engineering evidence.

20. The precise role and responsibilities of the CSA necessarily varies from department to department. In all cases, the CSA is a senior official in a position to influence departmental decision making. The specific roles of CSAs include some or all of the following:

² <http://www.bis.gov.uk/foresight>

³ <http://www.bis.gov.uk/foresight/publications/annual-reviews>

⁴ <http://www.bis.gov.uk/cst/cst-reports>

⁵ Economists, Operational Researchers, Social Researchers, Statisticians

- Provision of advice and challenge directly to the Secretary of State, other Ministers and policy makers in the department.
- Independent challenge of the evidence base for departmental policies.
- Oversight of departmental systems for ensuring that policy makers consider relevant science and engineering evidence.
- Oversight of the effective operation of any departmental Scientific Advisory Committees.
- Management of departmental research budgets.
- Responsibility for departmental science and engineering quality and capability
- Role of Head of Profession role for departmental science and engineering staff
- Working with the other analytical Heads of Profession (for economics, social research, statistics and operational research) and Departmental Directors of Analysis (DDAs) to ensure a robust and integrated evidence base underpins policy formulation, delivery and evaluation
- Performing an independent challenge function to the department, ensuring that science and engineering evidence and advice is robust, relevant and high quality and that there are mechanisms in place to ensure that policy making is underpinned by science and engineering
- Managing the development, delivery, implementation and monitoring of the department's science and innovation strategy
- Leading and engaging within and for the department on relevant national and international science and engineering issues
- Networking with CSAs in other department to share good practices across government and maximise the collective expertise of the CSA network to identify and resolve cross departmental problems

21. There is an extensive list of external bodies and other sources of expertise with which CSAs can engage. These include academics, national academies, advisory committees, consultants, professional bodies, industry, the third sector, public sector research establishments, Research Councils, members of advisory groups, consumer groups and other stakeholder bodies.⁶ Officials in GO-Science can assist in brokering engagement as necessary.

22. CSAs may take up their position from academia, industry, the third sector or from within government. As such, their level of knowledge and expertise of the working of government can vary. Officials should be sensitive to this and work to provide opportunities for incoming

⁶ <http://www.bis.gov.uk/go-science/about/our-community/a-to-z-list-of-partners>

CSAs to engage with Senior Civil Servants and other CSAs to augment their understanding.

23. As summarised in Annex E, key induction meetings for incoming CSAs are with:

- the GCSA and other CSAs;
- CSA's private office/support team;
- the Secretary of State, key Ministers and the Permanent Secretary;
- Departmental Board and as appropriate Departmental non-executive directors;
- the departmental Director of Analysis and the other analytical Heads of Profession within the departments;
- Chair of the departmental Science Advisory Council (where there is one), and of any Scientific Advisory Committees sponsored by the department;
- the departmental Head of Science and Engineering Profession (HoSEP) if this is not the CSA.

24. GO-Science can assist with the appointment of formal mentors from across the CSA network or, more widely, through the Government Science and Engineering (GSE) community. CSAs are also encouraged to become mentors themselves. More details can be found on the GSE web pages ⁷

Support to Departmental Chief Scientific Advisers

25. CSAs are normally supported by a team of officials, usually, as a minimum, consisting of an assistant CSA (or equivalent) and a PA. In an increasing number of cases, there is also a Deputy CSA at Senior Civil Service level.

26. The assistant CSA (or equivalent official) will normally be the nominated "CSA Official", the first point of call for GO-Science and others on queries and issues relating to the use and management of science in their department.

CSA and officials engaging with GO-Science

27. The GCSA needs to have a high level, up-to-date picture of the management and use of science and engineering across government. GO-Science therefore currently collects information from departments on a bi-annual basis. This information is used by the GCSA to advise the Prime Minister and Cabinet, to respond to requests from Parliamentary Select Committees, and to answer parliamentary questions (PQs).

28. Whilst every endeavour is made to keep information collected from departments to a minimum, there will be times when GO-Science will need to approach departmental CSAs and/or Officials for ad-hoc information, for example on budgets at Spending Review times, to

⁷ <http://www.bis.gov.uk/go-science/science-in-government/science-engineering-profession/gse>

support CSAC's work on particular issues, to respond to PQs etc.

Head of Science and Engineering Profession (HoSEP) role

29. The science and engineering profession across government is being developed with strong central leadership by the GCSA in his distinct role as Head of Science and Engineering Profession (HoSEP). The focus here is on the people, their skills and capabilities – scientists and engineers across government – rather than the provision of advice.

30. The GCSA is supported in this role by a network of departmental HoSEPs. In some cases, departmental CSAs have chosen personally to accept both CSA and HoSEP roles because of the synergies between them. In others the HoSEP responsibilities fall to another individual, with whom the CSA should have a close working relationship.

31. The role of the departmental HoSEP is to build, support and champion their science and engineering community, both within their department and in associated agencies. A cross departmental network of HoSEPs helps ensure a coordinated approach to professional issues across the civil service. HoSEPs also advise on career structures, learning and development opportunities, and other professional issues, and support business planning and talent management in their own department or agency. More information on the role of heads of profession in government is available here: <http://www.civilservice.gov.uk/wp-content/uploads/2011/09/GS-toolkit-Mar11.pdf>

32. To further develop the sense of professional community across government, the current GCSA has established a cross-government community for scientists and engineers – Government Science & Engineering (GSE). This community supports and promotes the profession across the Civil Service, raising understanding of the skills, values and expertise of its members. CSAs, whether HoSEP or not, are encouraged to join GSE and promote membership uptake in their departments.

33. The secretariat for HoSEP meetings is provided by officials from GO-Science, with support from other officials in the network for specific projects.

Government Science and Engineering (GSE) Network

34. Maintaining a strong cadre of scientists and engineers throughout government is essential to managing and using science and engineering effectively. There are estimated to be around 20,000 scientists and engineers or people with a science or engineering background in government carrying out a range of roles from conducting research in laboratories to interpreting science for policy and delivery. Government Science and Engineering (GSE) is the cross-government professional community for civil servants operating in these roles. The community currently has over 3200 members drawn from over 30 departments or agencies. The majority of members work in a post where science or engineering expertise is an essential to their role and over 700 different specialist occupations have been identified within the GSE membership.

35. Benefits of GSE membership include a monthly newsletter, a bespoke programme of development opportunities including pairing schemes with scientists and engineers working in academia and industry and an online networking portal on LinkedIn. CSAs are expected to contribute to the community by acting as an ambassador for science and engineering careers in their department, in addition to contributing to the cross-government GSE agenda. This

might include, for example, hosting CSA seminars in department or open to all of Whitehall, attending GSE events and HoSEP meetings (if applicable) or establishing professional development schemes for scientists and engineers in their department and acting as a mentor to GSE members.

Analytical co-ordination across government

36. The Heads of Analysis (HoA) group gives leadership to all analysts in government. It champions first-rate analysis across government to ensure policy and delivery of government services is as effective as possible. Membership of the Heads of Analysis group is as follows: the GCSA as head of the Science and Engineering Profession, the National Statistician, the Head of the Government Economic Service, the Joint Heads of the Government Social Research Service, and the Head of the Government Operational Research Service. It is chaired by the Permanent Secretary of HM Treasury

37. The Analytical Coordination Working Group (ACWG) co-ordinates the work of the five professional support teams in government⁸. It supports the HoA group and brings issues of joint concern to the five disciplines to its attention. It also functions to share learning and processes across the professions where appropriate. GO-Science represents the GCSA and the science and engineering profession on ACWG.

38. The Departmental Directors of Analysis Network (DDAN) is a network of the most senior social scientists from each department. It has a departmental, rather than discipline-specific, focus which it brings to bear on key challenges facing government. Its aim is to share learning across departments, identify key common challenges and solutions, and to bring these issues to HoA. It provides a senior collective voice for departmental cross-government working on the social sciences. A senior GO-Science Official sits on DDAN to make links between the DDAN and CSAC (see page 10) networks.

Guidance and advice

39. It is essential that an effective science management and advisory process exists in Government. This should allow decision-makers access to high-quality and wide-ranging research and evidence, both within and outside Government.

Guidelines on the Use of Scientific and Engineering Advice in Policy Making

40. The GCSA's Guidelines on the Use of Scientific and Engineering Advice in Policy Making⁹ address how scientific and engineering advice should be sought and applied to enhance the ability of government policy makers to take better informed decisions. The Guidelines are a key document which CSAs should be familiar with.

41. Introduced in 1997, the Guidelines were most recently updated and republished in July 2010. Key messages are that departments and policy makers within them should:

⁸ Economists -members of the Government Economic Service (GESR), Operational Researchers - members of the Government Operational Research Service (GORS), Social Researchers – member of the Government Social Research Service (GSRS), Statisticians- members of the Government Statistics Service (GSS), Scientists and Engineers – members of the Government Science and Engineering community (GES)

⁹ <http://www.bis.gov.uk/assets/bispartners/goscience/docs/g/10-669-gcsa-guidelines-scientific-engineering-advice-policy-making.pdf>

- identify early the issues which need scientific and engineering advice and where public engagement is appropriate;
- draw on a wide range of expert advice sources, particularly when there is uncertainty;
- adopt an open and transparent approach to the scientific advisory process and publish the evidence and analysis as soon as possible;
- explain publicly the reasons for policy decisions, particularly when the decision appears to be inconsistent with scientific advice; and
- work collectively to ensure a joined-up approach throughout government to integrating scientific and engineering evidence and advice into policy making.

Principles of Scientific Advice to Government

42. Published in March 2010, the Principles of Scientific Advice to Government¹⁰ set out the rules of engagement between Government and those who provide independent scientific and engineering advice.

43. The Principles apply to Ministers and government departments, all members of Scientific Advisory Committees and Councils (the membership of which often includes statisticians, social researchers and lay members) and other independent scientific and engineering advice to Government. They do not apply to employed advisers, departmental Chief Scientific Advisers or other civil servants who provide scientific or analytical advice, as other codes of professional conduct apply.

44. CSAs are expected to be familiar with the “Principles” and to ensure they are respected. CSAs are also the first port of call for members of government departments for independent scientific advisers concerned about their application.. If the matter of concern cannot be effectively resolved or is especially serious CSAs should approach the Government Chief Scientific Adviser (GCSA), who will liaise with the Science Minister to examine, and attempt to resolve, the issue.

Chief Scientific Advisers Committee

45. The Chief Scientific Advisers Committee (CSAC) is the principal committee dealing with, and advising on, cross-cutting policy issues relating to science and engineering.

46. Its membership consists of the GCSA (Chair), departmental CSAs or their equivalent from the devolved administrations and the BIS Director General for Science and Research (responsible for the national Science & Research Budget and the Research Councils). Depending on the issues under discussion, the Chief Scientists of some other government agencies and organisations may attend.

47. In particular, CSAC:

- provides collective advice to Ministers;

¹⁰ <http://www.bis.gov.uk/go-science/principles-of-scientific-advice-to-government>

- discusses and facilitates implementation of policy on science and engineering
- identifies and promulgates good practice in science and engineering including their use in government decision making, particularly in the context of policy making
- facilitates communication on particular high profile science, engineering and technology issues and those posing new challenges for government.
- Provide a networking forum for departmental CSAs to share good practices across government and maximise the collective expertise of the CSA network to identify and resolve cross departmental problems
- Provides a two way communication channel with the GCSA and GO-Science and GO-Science stakeholders within and outside of government

48. CSAC meets formally four times per year and more frequently on an informal basis. The GCSA hosts weekly informal breakfast and monthly lunchtime meetings.

CSA Officials Meetings

49. CSA Officials are invited to attend regular Officials meetings. Organised by GO- Science, these meetings provide a forum for cross-departmental discussion of current or upcoming issues of common interest or concern. This group also supports the work of CSAC.

50. CSA Officials receive regular information and news updates from GO-Science.

Science Advisory Councils and Scientific Advisory Committees

51. A number of departments have created overarching independent Science Advisory Councils (SA Councils). SA Councils provide departments with strategic, independent, expert and cross-cutting advice. They are also well-placed to take an overview of, and challenge, departments' management and use of science. They may advise on specific topics both at the request of the department and on their own initiative.

52. SA Councils vary in structure and modes of working, and the GCSA works with departments and their CSAs to develop the best approach. If departments do not have a SA Council or would like to establish one, the GCSA and GO-Science can offer advice and support.

53. In contrast with SA Councils, Scientific Advisory Committees (SACs) function to help government obtain scientific information and advice on a specific issue and make informed decisions about it. Between them, SACs give advice on a range of issues from the nutritional value of food to road safety. There are currently about 70 SACs across government. They review, and sometimes commission, relevant scientific research and offer independent expert judgement, including highlighting where facts are missing or uncertainties exist. Depending on their remit, a SAC may have to frame their advice to take account of social and ethical issues.

54. Published by GO-Science, the Code of Practice for Scientific Advisory Committees

(CoPSAC)¹¹ sets out good practice in relation to the function and working of SACs. Put in place in 2001, CoPSAC has been publicly consulted on three times ahead of its updating and republication. It was most recently reissued in December 2011.

CSA Engagement with SA Councils and SACs

55. CSAs are responsible for monitoring and evaluating the effectiveness of their Departmental Scientific Advisory Committees.

56. CSAs are expected to meet with the Chairs of SA Councils and SACs sponsored by their department every six months. The GCSA chairs a meeting of Committee and Council Chairs every six months. These meetings provide an opportunity for a discussion of issues of common interest or concern.

57. GO-Science holds regular events and workshops with a view to improving the networking between SACs and their sponsoring departments. At these events, SAC chairs, SAC members and policy officials exchange good practice and discuss ideas about the effective operation of SACs.

Advice in emergencies

58. Science and engineering (alongside other evidence sources) are important in responding to many types of emergency, ranging from disease to terrorist incidents to natural disasters. When the emergency is sufficiently serious and requires central government oversight, the Cabinet Office will activate COBR (the Cabinet Office Briefing Rooms and their associated crisis management facilities).

59. The departmental CSA in the lead government department is responsible for ensuring that scientific advice to COBR is co-ordinated, as appropriate, across government. The GCSA plays a supportive challenge role in relation to this advice. In some circumstances the GCSA may chair the Scientific Advisory Group in Emergencies (SAGE). If there is likely to be scientific or technical debate in COBR, the GCSA will attend.

Scientific Advisory Group in Emergencies (SAGE)

60. The role of SAGE is to bring together scientific and technical experts to ensure coordinated and consistent scientific advice underpins the central government response. The group acts to review, enrich and agree the scientific advice underpinning policy recommendations before they are put to the Civil Contingencies Committee (CCC). Emergency Concepts of Operations (CONOPs) guidance is available on the Cabinet Office website.

Science, Research and Evidence Strategies

61. The Government is committed to evidence-based policy. Science and engineering evidence is a critical element of this. Departments are expected to produce and publish high quality science, research and evidence strategies that link science and research to departmental objectives, and on which plans for future research investment should be based.

¹¹ <http://www.bis.gov.uk/go-science/publications>

62. Most departments now have strategies for science and research in place and a CSA should familiarise him/herself with the departments' strategy. Depending on the needs of the individual department this may be a 'science', 'research', 'evidence' or 'analytical' strategy. Regardless of its focus, it is essential that different streams of evidence and advice are not addressed in isolation. The strategy should set-out how all forms of evidence (economics, social research, statistics, operational research, as well as science and engineering) will be brought together to deliver an integrated evidence base.

63. Annex C provides high-level guidance on developing/refreshing science, research and evidence strategies. **In particular, it is important to allow sufficient time for consultation during the strategy's development. This should include giving the GCSA and the other government Heads of Profession who sit on HoA, the opportunity and time to comment on the final draft before it is published.**

Departmental Research Investment

64. Departmental CSAs and Departmental Directors of Analysis should be involved in their departments' strategy and budget decisions to ensure that they are evidenced-based and that sufficient resources are dedicated to evidence and research.

65 In order that decisions about research budgets are taken in a strategic way, departmental CSAs should in turn keep the GCSA in close touch with current and planned research spend in their departments. **There is also a requirement, reaffirmed by the Coalition Government, that 'Departments should consult the GCSA and HM Treasury, in advance, of any potential cuts to research budgets or expenditure, including those that have implications for the funding of cross-cutting research'.**

Building resilient policies for the future

66. Departments need to ensure that adequate Horizon Scanning procedures are in place, sourcing data across all evidential areas, to provide early indications of trends, issues, or other emerging phenomena that may create significant impacts that departments need to take account of.

67. CSAs have the responsibility of ensuring that departmental horizon scanning activities properly consider relevant science and engineering evidence and advice and that this is acted on where necessary.

68. There are many ways of carrying out Horizon Scanning. The GO-Science Horizon Scanning Centre (part of Foresight) can provide advice, examples and, in some cases, further support.

Science, Technology, Engineering and Maths (STEM) assurance

69. A key aspect of the CSA role is to ensure that, in line with the GCSA's Guidelines on the use of scientific and engineering advice in policy making, science and engineering is

embedded into policy making and that all science and engineering used by government is robust, relevant and high quality.

70. STEM assurance is about ensuring that:

- science and engineering contributes (as part of an integrated evidence base) to sound policy decision making; and
- this evidence is robust, relevant and high quality.

71. A CSAC working group on STEM assurance, (2010), identified a range of points to consider in relation to STEM assurance in government departments. These are listed at Annex D.

Role of the CSA in this process

72. CSAs should support departmental STEM assurance, and if such a process does not already exist, work with policy colleagues (and other analysts) to consider the establishment of an appropriate STEM assurance process as part of the overall policy process.

73. The CSA role in relation to STEM assurance includes:

- Ensuring early involvement of scientists and engineers (and other analysts) in the policy process and at all stages so that evidence needs are thought about at an early stage.
- Providing advice and directing people to appropriate sources of advice (internal or external).
- Providing evidence-based challenge to the policy process (at times this may include the need to go direct to Ministers – although this should be under exceptional circumstances).
- Communicating the importance of STEM assurance process across government.
- Monitoring and reviewing whether science and engineering is informing the policy process.

Science and Engineering Assurance (SEA) Reviews

74. The Science and Engineering Assurance (SEA) Programme was created in March 2009 as a streamlined version of the departmental science reviews carried out by GO-Science from 2003. Its aim is to provide a 'critical friend' assessment of the way in which the evidence-base underpinning departmental business delivery is managed.

75. GO-Science works closely with the departmental CSA to identify key strengths in, and issues with, the way in which policy makers identify their information needs, gain scientific or engineering advice and evidence, and use it in the decision-making process. Each review takes around three months to complete and the current programme is planned for completion

by Summer 2012.

76. The analytical framework used to monitor the management and use of science and engineering in government has been revised. The seven criteria are:

- Strategy, policy making and delivery should be effectively informed by science and engineering;
- Government as a whole, and individual government departments, should take a strategic approach to the prioritisation, accessing, resourcing and delivery of science and engineering;
- All science and engineering used by government should be robust, relevant and high quality;
- Science and engineering should be made publicly available unless there is a clear justification for not doing so;
- The implications of science and engineering for society should be fully considered, engaging the public whenever appropriate, using good practice;
- Government should ensure effective knowledge transfer, innovation and pull through of its research to the economic development of new technologies and services; and
- Departments should ensure that they have the science and engineering capacity and capability to manage and deliver the above sustainably and effectively.

77. Eight departments and agencies were reviewed under the original Science Review programme, which began in 2003¹². Nine departments are included in the revised SEA programme¹³, of which seven have now been completed (FCO and HMT remain). The final assurance review of HMT is scheduled to be completed by June 2012. CSAs are responsible supporting the Permanent Secretaries in ensuring the recommendations from reviews are addressed effectively.

78. With the conclusion of the SEA reviews in Summer 2012 and changes at the top of the Civil Service, GO-Science is working with CSAs and other key players to design the next phase of this programme in order to help departments continue to improve their use of science evidence and so that the future programme can have maximum impact. The new programme is likely to retain the essential elements of challenge of the current programme, but will do so with a process that makes fewer resource demands of departments.

International aspects of the CSA role

79. The global nature of today's grand challenges, such as climate change, ageing populations and infectious diseases, means the importance of strategic international engagement on science is increasing.

¹² These include DCMS, Defra, HSE, CLG, Home Office, MoJ, DH, and the FSA.

¹³ DfT, DfE, BIS, MOD, DFIF, DWP, DECC, FCO and HMT.

80. To varying degrees, government departments and their CSAs undertake international activities. For CSAs this can range from attendance at meetings of the Global Science and Innovation Forum (GSIF) to drawing on international research; from participation in conferences abroad to high profile visit programmes overseas.

81. The International Knowledge and Innovation Unit (IKIU) in BIS works to ensure the UK's international engagement in science and innovation is as effective and efficient as possible. The team promotes and strengthens UK scientific expertise and innovation worldwide to inform better policymaking and leadership and to use science and innovation to influence through science diplomacy.

82. If a CSA is travelling abroad, they should inform IKIU. IKIU can provide support and advice through the UK's Science and Innovation Network (SIN) which is an FCO-BIS funded team of science officers located in key British Embassies and Consulates around the world. These officers work to promote collaboration in science and innovation between the UK and other countries, and ensure our international engagement is as targeted and joined up as possible.

Global Science and Innovation Forum (GSIF)

83. The Global Science & Innovation Forum (GSIF) is chaired by the GCSA every six months and brings together those in Government and key stakeholders with an interest in international aspects of science and innovation to exchange information and ideas to improve the co-ordination of UK engagement in international activities. GSIF's expertise is brought to bear on both new and emerging strategic issues, and on practical partnerships and collaborative working. GSIF is managed and supported by a working group of officials mirroring the members of the Forum; this Core Officials Group helps to set GSIF's agenda and implement its decisions.

Succession management

84. To maintain continuity of scientific advice within departments it is important to ensure that succession planning for the CSA post is undertaken at an early stage, usually a year prior to the departure of the current CSA. Ideally there will be a period of induction of the newly appointed CSA by the departing CSA.

85. The GCSA and GO-Science should be notified ahead of a department starting to recruit a CSA. As each department or agency will have its own requirement for a CSA, a discussion between the GCSA and the department's Permanent Secretary on the nature of the CSA role should take place at an early stage.

86. The Government Chief Scientific Adviser (GCSA) should be involved in the appointment of departmental CSAs including membership and/or chairing of the selection panel. Departments should put in place appropriate procedures to facilitate this.

87. For more information, see Annex E: Timeline for the successful appointment and induction of departmental CSAs.

Contact information

Please contact the Secretariat to the Chief Scientific Advisers Committee with any queries or requests for further information CSAsecretariat@bis.gsi.gov.uk.

Annex A: Acronyms

BIS	Department for Business, Innovation and Skills
CCC	Civil Contingencies Committee
CLG	Communities and Local Government
COBR	Cabinet Office Briefing Rooms
CoPSAC	Code of Practice for Scientific Advisory Committees
CSA	Chief Scientific Adviser
CSAC	Chief Scientific Adviser's Committee
CSR	Comprehensive Spending Review
CST	Council for Science and Technology
DA	Devolved Administration
DCMS	Department for Culture, Media and Sport
DECC	Department of Energy and Climate Change
Defra	Department for Environment, Food and Rural Affairs
DfE	Department for Education
DH	Department of Health
DFT	Department for Transport
DWP	Department for Work and Pensions
FCO	Foreign & Commonwealth Office
GCSA	Government Chief Scientific Adviser
GO-Science	Government Office for Science
GSE	Government Science & Engineering
GSR	Government Social Research Service
GSIF	Global Science & Innovation Forum
HO	Home Office
HoA	Heads of Analysis Group
HoSEP	Head of Science and Engineering Profession
HMT	Her Majesty's Treasury
HSC	Horizon Scanning Centre
HSE	Health and Safety Executive
IKIU	International Knowledge and Innovation Unit
MoD	Ministry of Defence
MoJ	Ministry of Justice
PSG	Professional Skills for Government
R&D	Research and Development
RC	Research Council
RCUK	Research Councils UK
S&E	Science and Engineering
SAC	Scientific Advisory Committee
SA Council	Science Advisory Council
SAGE	Scientific Advisory Group in Emergencies
SEA	Science and Engineering Assurance
SET	Science, Engineering and Technology
SIN	Science and Innovation Network
STEM	Science, Technology, Engineering and Mathematics
TSB	Technology Strategy Board

Annex B: Key documents and websites

Cabinet Office advice on emergencies, includes the Concept of Operations

<http://www.cabinetoffice.gov.uk/ukresilience.aspx>

Responding to emergencies: The UK central government response Concept of Operations

<http://www.cabinetoffice.gov.uk/sites/default/files/resources/conops-2010.pdf>

Scientific Advice Group in Emergencies

(guidance in preparation)

Civil Service Code

http://www.civilservice.gov.uk/Assets/cs_code_tcm6-2444.pdf

Code of Practice for Scientific Advisory Committees

<http://www.bis.gov.uk/assets/bispartners/goscience/docs/c/11-1382-code-of-practice-scientific-advisory-committees.pdf>

Code of Practice for Official Statistics

<http://www.statisticsauthority.gov.uk/assessment/code-of-practice/code-of-practice-for-official-statistics.pdf>

Council for Science and Technology

<http://www.bis.gov.uk/cst>

Cultivating community: Sharing good practice across SAC secretariats

<http://www.bis.gov.uk/assets/bispartners/goscience/docs/c/10-508-cultivating-community.pdf>

Freedom of Information Act

<http://www.dca.gov.uk/foi/guidance/index.htm>

Government Office for Science: Annual Review 2009 add links to 2010 review

<http://www.dius.gov.uk/assets/biscore/goscience/g/10-p95-goscience-annual-review.pdf>

Government Office for Science: Foresight

<http://www.foresight.gov.uk/index.asp>

Government Office for Science: Foresight Horizon Scanning Centre

<http://www.foresight.gov.uk/Horizon%20Scanning%20Centre/index.asp>

Government Science and Engineering

<http://www.civilservice.gov.uk/my-civil-service/networks/professional/science-engineering/index2.aspx>

GSR Code

http://www.gsr.gov.uk/professional_guidance/gsr_code/index.asp

Guidelines on the Use of Scientific and Engineering Advice in Policy-Making

<http://www.bis.gov.uk/assets/bispartners/goscience/docs/g/10-669-gcsa-guidelines-scientific->

[engineering-advice-policy-making.pdf](#)

Principles of Scientific Advice to Government

<http://www.bis.gov.uk/go-science/principles-of-scientific-advice-to-government>

Science and Engineering in Government

<http://www.bis.gov.uk/goscience-seg>

Science and Innovation Network

<http://www.fco.gov.uk/resources/en/pdf/4103709/5380299/working-in-partnership/science-and-innovation/sin-network-report-08-10-part-one.pdf>

Seven Principles of Public Life

http://www.public-standards.gov.uk/Library/Seven_principles.doc

Sharing experience: Improving engagement across SAC secretariats

<http://www.bis.gov.uk/assets/bispartners/goscience/docs/s/10-1012-sharing-experience-across-sac-secretariats.pdf>

Universal Ethical Code for Scientists

<http://www.bis.gov.uk/goscience-code> [do we still maintain / reference this?]

Annex C: Developing a Science, Research and Evidence Strategy

Developing a science, research and evidence strategy

C1. General advice on strategy development is available in PMSU's Strategy Survival Guide¹⁴. This note sets out the key tasks/areas of work associated with the main phases of strategy development, and provides a number of tools and approaches that can help support strategic thinking.

C2. It may also be helpful to look at a selection of existing departmental science, research and evidence strategies (which can be accessed from GO-Science's website)¹⁵ and to discuss your plans with teams in other government departments that have recently developed new departmental science, research and evidence strategies.

C3. Towards the end of the process, the GCSA and the other Heads of Profession who sit on the HoA Group should be given the opportunity to comment on the draft science, research and evidence strategy prior to publication.

Key elements of a science, research and evidence strategy.

C4. The key issues that need to be addressed in science, research and evidence strategies are set out below.

Identifying strategic evidence challenges

Strategic challenges

C5. The science, research and evidence strategy should identify the key challenges on which the department needs to ensure it has robust and comprehensive evidence. Clearly, there should be a direct link between these and the department's business plan and objectives. It may also be helpful for the science, research and evidence strategy to:

- briefly set out the arguments for why these are the main evidence challenges, as opposed to others;
- make clear the 'spatial extent' of the evidence challenges (i.e. is the evidence needed in the UK or internationally, or both?);
- comment on how lower order research priorities will be managed;
- the means of allocating budget;
- identify any serious knowledge gaps; and
- address monitoring and surveillance requirements.

¹⁴ Cabinet Office – Prime Minister's Strategy Unit: Strategy Survival Guide (July 2004). Available at: <http://interactive.cabinetoffice.gov.uk/strategy/survivalguide/downloads/ssgv2.1.pdf>

¹⁵ <http://www.bis.gov.uk/go-science/science-in-government/strategy-and-guidance/si-strategies-dm>

C6. It is important that any risks that could affect the delivery of the department's strategic evidence needs are clearly identified in the science, research and evidence strategy, along with plans on how these are to be managed.

Emerging issues

C7. The science and innovation strategy should articulate how the department 'thinks ahead' to identify (and from there prioritise) new issues on which scientific advice and evidence may be needed. This should include a statement about whether the department uses, or has access to, 'Futures' expertise (such as horizon scanning or Foresight activities, etc.) to support its policy development and appraisal of policy options, and (if appropriate) the source of this expertise (internal capacity, commissioned advice, expertise in GO-Science's Foresight and Horizon Scanning Centre.)

Resources (people and budgets)

C8. The science, research and evidence strategy should set out how the department will strategically manage its long-term needs for science and engineering expertise at all levels within the organisation. This should include statements on professional development. It may also be appropriate for the strategy to address the need to monitor, maintain and build key external capabilities.

C9. The science, research and evidence strategy should also provide an indication of the department's research budget(s) for delivering the strategy, and outline the department's procedures for directing, approving, monitoring and evaluating its research investment.

Working with (and through) others

C10. Working in partnership with others (through, for example, partnerships and collaborative programmes) is not only key to effective working in the current financial climate, but is essential to achieving coherent policy. It may therefore be helpful for the document to explicitly acknowledge areas where the department is likely to need to work particularly closely with, for example, other departments and agencies.

C11. In particular, it is important that the science, research and evidence strategy sets out the departments plans in relation to cross-cutting research issues that are of benefit to more than one department or to Government as a whole.

Implementation

C12. It is important to set out in the science, research and evidence strategy how it will be delivered, including how progress will be monitored.

C13. The strategy will set out the department's strategic evidence needs for a number of years. During this time, however, the department's priorities and associated evidence needs may change. It may therefore be helpful to say how frequently the strategy will be reviewed and updated.

Governance

Governance structures

C14. The strategy should outline how the CSA, other analytical heads of profession in the department, departmental boards and Ministers will work to ensure that science and engineering are at the core of decisions within departments and across government. As part of this, it may be helpful to explain the department's wider arrangements for science governance, including (if appropriate) the role of the Science Advisory Council and Science Advisory Committee(s).

Procurement processes

C15. The science, research and evidence strategy should set out the department's arrangements for procuring science, engineering and research, including prioritisation, accessing, resourcing, managing and delivery.

Assurance processes

C16. It is important that the strategy identifies the mechanisms by which the department assures itself that:

- policy making is underpinned by science and engineering; and
- the scientific evidence and advice it uses is robust, relevant and high quality.

Communication

Research publication

C17. The science, research and evidence strategy should include details of (or reference to) the department's strategy for the publication of research, which (among other things) might usefully address:

- open access to research papers and journals; and
- data sharing and improved access to research data.

Public engagement

C18. If policy is to succeed it needs to have sufficient support from the public. It is therefore important that the science, research and evidence strategy contains a statement on how the department will engage the public on issues with important science or engineering dimensions.

Other issues to consider

Context

C19. It is important to contextualise the strategy in terms of the overall goals and objectives of the department and its operating environment. As part of this, it may be helpful to identify any international or Government commitments that have implications for the direction of the science, research and evidence strategy together with details of any work that must be carried out, and to set out the relationship with any other strategies, documents or agreements that will operate alongside the science, research and evidence strategy.

Audience

C20. All audiences with a stake in the strategy, or who are involved in its funding or implementation, should be clearly identified. These will include (among others) other research funders and partner organisations, research customers and research providers.

Messages

C21. The science, research and evidence strategy should provide stakeholders with clear messages about the department's objectives; relative priorities; needs for science, research and other forms of evidence; and ways of working (for example, working with partner organisations to share investment, knowledge and expertise).

Reviewing and harnessing existing research

C22. The strategy should set out the department's arrangements for managing and synthesising existing knowledge and research (nationally and internationally). This should include engaging with those who can help to frame the issues comprehensively and/or be able to identify existing sources of evidence.

Innovation

C23. The science, research and evidence strategy should include details of (or reference to) the department's innovation strategy, showing how the department incentivises innovation in R&D to benefit policy and delivery, and also the wider economy.

Annex D: STEM assurance

Questions and points to think about in relation to STEM assurance in government departments are:

- Does your department have processes in place to ensure that science and engineering are embedded into policy making and that this evidence is robust, relevant and high quality?
 - Science and engineering should inform all stages of the policy process.
 - Among other things, it is important to consider if a policy is dependent on a particular technology, and if so, whether the technical assumptions underpinning the policy are correct.
- Who should have ownership of STEM assurance?
 - Important that this is jointly owned by policy and CSAs and, as appropriate, other analysts and to have buy-in from policy side at senior level.
 - Responsibility for embedding STEM in the policy process and for quality, robustness and relevance lies with both policy teams and CSAs and, as appropriate, other analysts.
- Is the need for STEM assurance part of policy methodology or guidance in your department?
 - You might wish to check awareness of need for STEM assurance and, as appropriate, communicate its importance.
- Is this a separate STEM assurance process or one that is part of a process covering all analytical evidence?
 - Possible reasons for a separate STEM assurance process are that this is something that is being overlooked.
 - Either way it is important to link up with other analysts and to integrate STEM advice with other analytical input.
- Is STEM assurance part of the formal sign-off of policy proposals or not?
 - This will depend on the requirements of your department
- Has the department adopted a risk-based approach i.e. where different processes are applied according to the cost and risks attached to the policy proposal under consideration?

- Procedures can involve internal experts (including the GSE community), review by the CSA, review by existing advisory groups e.g. Science; Advisory Councils, through to review by external specialists (groups of experts).
- Does the department monitor and evaluate how the STEM (wider evidence) assurance scheme is working in your department?

Annex E: Timetable for the appointment and induction of departmental CSAs

A good practice summary for the recruitment and induction of departmental CSAs is below. This is intended as a guide only.

Responsibility	Action	Detail	Timing
<p>Departing CSA, departments (in Collaboration with head hunters, as appropriate).</p>	<p>Inform GO-Science</p>	<p>GO-Science to arrange meeting between GCSA and departmental.</p> <p>Permanent Secretary to discuss the nature of the CSA position.</p>	<p>1 year prior to departure</p>
	<p>Develop the recruitment timetable</p>	<p>Departments should examine the support needs of the CSA position as part of the process of launching the appointment of a new CSA.</p> <p>Liaise with HR and OCPA for updated guidance on appointments.</p> <p>Encourage applicants from a broad range of disciplines, including academia, industry, third sector and within government (if appropriate).</p> <p>Consider what happens if a poor response is received, will this affect the timetable?</p>	

Departments (in collaboration with GO-Science)	Arrange meetings with GO-Science	<p>Once the new appointment has been confirmed, departments should arrange an initial meeting with the GCSA, to discuss the network of CSAs across government.</p> <p>Need for mentor to be established – to be either another CSA or SCS if extensive experience of working within government is desirable. If required, GCSA and GO-Science, working with departments will arrange.</p> <p>Departments must consider the requirements of the new candidate’s diary. Begin to block out meetings, as far in advance as possible to avoid clashes with their existing commitments</p>	Once appointment is confirmed
Go-Science	Invite to CSAC/HoSEP meetings	Appointed CSAs should be invited to attend CSAC meetings (or equivalent, if appropriate) prior to taking up their position, to help them understand the context they are working within and to establish support networks	Once appointment is confirmed
Departments	Arrange meetings with key officials	<p>Departments should arrange preliminary familiarisation meetings with key staff in the department. This would include the CSA’s private office/support team, Science Advisory Council/Scientific Advisory Committee Chairs and secretariats and, if this is not the CSA, the Head of Science and Engineering Profession (HoSEP).</p> <p>Meetings with analytical Heads of Profession in the department such as economics and social research might also be scheduled.</p>	Upon taking up position

		<p>It is important that the new CSA meets with the Secretary of State, key Ministers and the Permanent Secretary as soon as possible after taking up their appointment.</p> <p>The new CSA should also meet informally with the department's Management Board members early into their time in office. This should help them in understanding the work of the department and how the CSA's role fits into it.</p>	
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