Chief Scientific Advisers and their officials: an introduction

February 2015

Government Office for Science
# Contents

**Introduction** ...................................................................................................................................... 3  
Purpose ............................................................................................................................................ 3  
The Government Chief Scientific Adviser .......................................................................................... 3  
Government Office for Science ......................................................................................................... 3  
Themes and capabilities ............................................................................................................... 4  
Foresight ....................................................................................................................................... 5  
Council for Science and Technology ............................................................................................. 5  

**Role of departmental Chief Scientific Advisers** .............................................................................. 6 
Support to departmental Chief Scientific Advisers ............................................................................. 8  
Guidance and advice ........................................................................................................................ 8  
Guidelines on the use of scientific and engineering advice in policy making ...................................... 8  
Independent science advice to government .................................................................................. 9  
Networks......................................................................................................................................... 10  
Chief Scientific Advisers network ....................................................................................................... 10  
Deputy CSA network ........................................................................................................................ 10  
CSA officials network ...................................................................................................................... 10  
Advisory in emergencies .................................................................................................................... 11  
Scientific Advisory Group in Emergencies (SAGE) ........................................................................... 11  
Horizon scanning ............................................................................................................................... 11  
Science assurance ............................................................................................................................ 12  
International aspects of the CSA role .............................................................................................. 12  
Global Science and Innovation Forum (GSIF) ............................................................................. 12  
Support from the GCSA .................................................................................................................. 13  

**Role of Heads of Science and Engineering Profession (HoSEP)** ................................................ 14  
Government Science and Engineering (GSE) network .................................................................... 14  
Analytical co-ordination across government ................................................................................... 15  
Science, research and evidence strategies .................................................................................. 17  
Departmental research investment .................................................................................................... 17  

**Succession management** .............................................................................................................. 18  
Contact information ....................................................................................................................... 19  
**Annex A: Acronyms** ....................................................................................................................... 20  
**Annex B: Key documents and websites** .......................................................................................... 21  
**Annex C: Developing a Science and Evidence Strategy** ............................................................. 22  
**Annex D: Science Assurance** ....................................................................................................... 26  
**Annex E: Timetable for the appointment and induction of departmental CSAs** ......................... 27
Introduction

Purpose

The aim of this document is to describe the roles and responsibilities of departmental Chief Scientific Advisers (CSAs), Deputy Chief Scientific Advisers 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

The roles of the Government Chief Scientific Adviser (GCSA) are to advise the Prime Minister and Cabinet, on aspects of 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 departmental CSAs and other experts in relevant fields.

The GCSA reports to the Cabinet Secretary. Whilst they have a particularly close working relationship with the Science Minister, the GCSA also engages directly with Secretaries of State and other ministers and permanent secretaries across Whitehall on relevant issues. The GCSA also co-Chairs the Prime Minister’s Council for Science and Technology.

The GCSA has no formal relationship with the devolved administrations (DAs). They are 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). The GCSA also maintains strong informal links, for example through DA membership of the Chief Scientific Advisers network.

Government Office for Science

The Government Office for Science supports the GCSA to ensure that government has access to the best scientific evidence and strategic long-term thinking to inform policies and decisions. Government Office for Science is physically located in the Department for Business, Innovation and Skills (BIS) but is autonomous from it.

The Government Office for Science is responsible for:

- giving scientific advice to the Prime Minister and members of the Cabinet, through a programme of projects that reflect the priorities of the Government Chief Scientific Adviser

- ensuring and improving the quality and use of scientific evidence and advice in government (through advice and projects and by creating and supporting connections between officials and the scientific community)

- providing the best scientific advice in the case of emergencies, through the Scientific Advisory Group for Emergencies (SAGE)
• providing the secretariat to the independent Council for Science and Technology that provides high level advice to the Prime Minister

Government Office for Science and the GCSA are supported on international issues by the BIS International Knowledge and Innovation Unit (IKIU).

Themes and capabilities

Within the Government Office for Science, there are a number of teams who coordinate cross-government science policy around the following themes:

• Risk and resilience
• Innovation and infrastructure
• Trade and finance
• Energy and climate change
• Life course and cities
• Data and analytics

The Government Office for Science also houses teams that focus on science capability across government. These include:

• Scientific Advisory Group for Emergencies (SAGE) support
• supporting the network of Chief Scientific Advisers and their teams to build capacity, share good practice and address cross-cutting issues where science and engineering can add value, and to develop effective approaches to issues such as working with external experts
• working with other Civil Service professions and the Cabinet Office to build the effectiveness of the science and engineering profession in government
• ensuring that government, both collectively and within departments, has the right people, resources, and scientific infrastructure for managing and using science
• Foresight projects (see page 5)
• the Horizon Scanning Programme (HSP) Team, managed jointly with Cabinet Office, provides: secretariat to the Cabinet Secretary’s Advisory Group on horizon scanning; drives the cross-government programme of horizon scanning, briefs a Director-level group with representatives from all departments and large agencies, and co-ordinates the community of analysts in various networks

An overview of the broader work of the Government Office for Science is provided on the GOV.UK site, and in in the Government Office for Science Annual Reviews.1

1 www.gov.uk/go-science
Foresight

Foresight uses the latest evidence of all kinds, and futures analysis to address complex issues and provide strategic options for policy. Foresight projects examine important public policy issues where science and futures thinking might be part of the solution.

Each project works with a large number of experts from across disciplines and professions to develop a comprehensive evidence base which brings together leading edge science, economics and social science research, all within a framework increasingly informed by an open policy making approach. Foresight works closely with government departments, as well as external stakeholders to ensure projects’ relevance to current and future policy-making. CSAs are regularly involved in this process.

More information on Foresight work, including completed and current projects can be found on GOV.UK². Projects are publishing evidence as they proceed, and blogs giving an update on current work are available at the links below³.

Council for Science and Technology

The Council for Science and Technology (CST) advises the Prime Minister on science and technology policy issues which cut across the responsibilities of government departments. The Council is jointly chaired by the GCSA and an independent chair, with secretariat provided by the Government Office for Science.

One of the main ways CST fulfils its responsibilities is by delivery of issue-based projects. The CST meets quarterly and work is carried out between meetings through themed subgroups. CST aims to work closely with departments and with CSAs in the development of their advice. Meetings take place over two days including a dinner discussion to which ministers, permanent secretaries and CSAs often contribute.

Its recent advice to the Prime Minister has included letters on:

- algorithms and data science
- the NHS as a driver for innovation
- government procurement as a driver for innovation
- GM technologies
- science education and schools
- postgraduate training of medical doctors
- a series of letters on strategic issues in energy

More information can be found on GOV.UK⁴.

---

² www.gov.uk/government/collections/foresight-projects
⁴ www.gov.uk/cst
Role of departmental Chief Scientific Advisers

The majority of departments have a departmental Chief Scientific Adviser. CSAs work alongside the other analytical disciplines and with 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.

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.

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: (core roles are shown in bold).

- Provision of advice and challenge directly to the secretary of state, other ministers and policy makers in the department
- Performing an independent challenge function to the department, ensuring that science and engineering evidence and advice for departmental policies and decisions is robust, relevant and high quality and that there are mechanisms in place to ensure that policy making is underpinned by science and engineering
- Oversight of departmental systems for ensuring that policy makers consider relevant science and engineering evidence
- Assuring the operation of the ‘Principles of Science Advice to Government’ to all external scientific advice to their department
- Oversight of the effective operation of any departmental Scientific Advisory Committees
- Working with CSAs in other departments to share good practice across government and maximise the collective expertise of the CSA network to identify and resolve cross departmental problems
- Management or oversight of departmental research budgets
- Responsibility for departmental science and engineering quality and capability
- 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

---

5 Economists, Operational Researchers, Social Researchers, Statisticians
ensure a robust and integrated evidence base underpins policy formulation, delivery and evaluation

- Managing the development, delivery, implementation and monitoring of the Department’s Science and Evidence Strategy
- Leading and engaging within and for the department on relevant national and international science and engineering issues

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. Officials in the Government Office for Science can assist in brokering engagement as necessary.

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

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

Government Office for 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.\(^6\)

\(^6\) [www.gov.uk/government/organisations/civil-service-government-science-engineering](http://www.gov.uk/government/organisations/civil-service-government-science-engineering)
Support to departmental Chief Scientific Advisers

CSAs are normally supported by a team of officials, usually, as a minimum, an assistant (‘CSA Official’) and a PA. The majority of departments now also utilise a deputy CSA at Senior Civil Service level.

The ‘CSA Official’ will be the first point of call for Government Office for Science and others on queries and issues relating to the use and management of science in their department.

CSA officials and Deputy CSAs have their own networks across government, and meet on a regular basis.

Guidance and advice

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

The GCSA’s ‘Guidelines on the use of scientific and engineering advice in policy making’ 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 with which CSAs should be familiar.

Key messages are that departments and policy makers should:

- 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
- work collectively to ensure a joined-up approach throughout government to integrating scientific and engineering evidence and advice into policy making

---

7 www.gov.uk/government/publications/scientific-and-engineering-advice-guidelines-for-policy-makers
Independent science advice to government

Many departments secure science advice from people who are independent of government i.e. who are not civil servants. All such advice should be in line with the ‘Principles of science advice to government’\(^8\). Published in March 2010, the principles set out the rules of engagement between government and those who provide independent scientific and engineering advice.

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.

CSAs are expected to be familiar with the principles and to ensure they are respected by all independent science advice to their department. CSAs are responsible for monitoring and evaluating the effectiveness of their independent science advice. CSAs are also the first port of call for independent scientific advisers concerned about the application of the principles. 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. This route is also available to individual advisers if departmental arrangements have failed to resolve a potential breach of the principles.

A number of mechanisms exist for departments to secure independent advice. These mechanisms include independent Science Advisory Councils and Science Advisory Committees, both terms abbreviated to the umbrella term SAC. Government Office for Science published a review in 2013\(^9\) of how Science Advisory Councils interact with the government departments that they advise. If departments do not have a SAC or would like to establish one, the GCSA and Government Office for Science can offer advice and support.

Published by Government Office for Science, the ‘Code of practice for Scientific Advisory Committees (CoPSAC)’\(^10\) amplifies the ‘Principles of scientific advice to government’ and sets out good practice in respect of bodies which provide independent science advice to government. It also contains good practice for engagement between CSAs and such bodies. Put in place in 2001, CoPSAC has been publicly consulted on three times ahead of its updating and re-publication.

Government Office for Science supports departments to work more effectively with independent science advisers. This includes arranging events at which good practice can be shared. The GCSA chairs a regular meeting of high-level science advisers at which CSAs and SAC Chairs can discuss issues of common interest or concern. Government Office for Science also published guidance setting out good practice for the secretariats to Scientific Advisory Committees\(^11\) (SACs).

\(^8\) www.gov.uk/government/publications/scientific-advice-to-government-principles
\(^10\) www.gov.uk/government/publications/scientific-advisory-committees-code-of-practice
Networks

Chief Scientific Advisers network

The Chief Scientific Advisers network work together to advise on cross-cutting policy issues relating to science and engineering.

The network 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.

In particular, the CSA network:

- provides collective advice to ministers
- discusses and facilitate implementation of policy on science and engineering
- identifies and promulgates good practice in science and engineering including 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
- provides a forum for departmental CSAs to share good practice across government and maximises the collective expertise of the CSA network to identify and resolve cross departmental problems
- provides a two way communication channel with the GCSA and Government Office for Science and their stakeholders within and outside of government

The CSA network meets frequently on an informal basis, including a weekly informal breakfast hosted by the GCSA. The network meets regularly with Chief Executives of Research Councils.

Deputy CSA network

Deputy CSAs from across departments meet regularly with the Government Office for Science Director. This network provides a forum for cross-departmental discussion of current or upcoming issues of common interest or concern.

CSA officials network

CSA officials also take part in a network to support the CSA network and discuss current issues or concerns. Activities include events and engagement arranged by CSA officials themselves, as well as regular meetings organised by the Government Office for Science.

CSA officials share news and information regularly, including through contributing material to updates via the Government Office for Science.
Advice in emergencies

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 the Cabinet Office Briefing Rooms and their associated crisis management facilities (COBR).

Scientific Advisory Group in Emergencies (SAGE)

If requested by the Civil Contingencies Secretariat (CCS), 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. Departmental CSAs may be called upon to attend SAGE. On occasions where SAGE is not called, departmental CSAs may be asked to feed advice directly into COBR.

The role of SAGE is to bring together scientific and technical experts to ensure coordinated and consistent scientific advice underpins the central government response. Membership of SAGE depends on the nature of the emergency. It typically includes experts from within government and leading specialists from the fields of academia and industry. The group acts to review, enrich and agree the scientific advice underpinning policy recommendations before they are put to the Civil Contingencies Committee (CCC). Cabinet Office guidance on SAGE can be found on GOV.UK12, as well as ‘Central Government's Emergency Concepts of Operations (CONOPs)’13.

Horizon scanning

Departments need to ensure that adequate horizon scanning is available to support strategy and policy development, 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.

CSAs have the responsibility to ensure that departmental horizon scanning activities properly consider relevant science and engineering evidence and advice and that this is acted on where appropriate.

There are many ways of carrying out horizon scanning. The Government Office for Science Horizon Scanning Programme Team (created through merging the Cabinet Office’s Horizon Scanning Secretariat and the Government Office of Science’s Horizon Scanning Centre) can provide advice, examples and, in some cases, further support. More information can be found on GOV.UK14.

---

12 www.gov.uk/government/groups/scientific-advisory-group-for-emergencies-sage
Science assurance

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 advice and analysis used by their department is robust, relevant and high quality.

This is about ensuring that:

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

There is an expectation that the CSA provides independent challenge to the science and engineering being conducted in and for their department, raising any concerns they may have firstly via internal reporting hierarchies and secondly, if required, with the GCSA.

Annex D contains some questions and points to think about in relation to your role in science assurance.

International aspects of the CSA role

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.

To varying degrees, government departments and their CSAs undertake international activities. For CSAs this can range from drawing on international research to participation in conferences abroad to high profile visit programmes overseas.

The International Knowledge and Innovation Unit (IKIU) in BIS work 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.

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)

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.

Support from the GCSA

The GCSA and Government Office for Science can provide departments with advice and support on important science capacity and capability matters and regularly work with departmental CSAs to do so. An example of this is a project on Animal and Plant Health Science Capability that the GCSA has carried out working with Defra’s CSA.

CSAs should support departmental science, technology, engineering and mathematics (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.

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
Role of Heads of Science and Engineering Profession (HoSEP)

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.

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, HoSEP responsibilities fall to another individual, with whom the CSA should have a close working relationship.

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 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. They are expected to act together to support the GCSA by providing information, advice and guidance on government science and engineering capability issues. More information about, and resources for, the role of heads of profession in government is available on GOV.UK\(^\text{15}\) and the Civil Service Learning Portal.

HoSEPs meet regularly with the GCSA. The secretariat for HoSEP meetings is provided by officials from Government Office for Science, with support from other officials in the network for specific projects. You can email xgov.hosep@bis.gsi.gov.uk for further information.

In addition to his HoSEP role, the GCSA also supports the development of analysts with horizon scanning roles in government. The Horizon Scanning Programme provides classroom training, an online toolkit and advice to build their capability and maintains cross-government networks and a blog.

Government Science and Engineering (GSE) network

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.

To further develop the sense of professional community across government, a cross-government community for scientists and engineers – Government Science & Engineering (GSE) was established in 2008. It counts amongst its membership practising scientists and engineers, those working in science and engineering policy and those with a science and

engineering background. It also acts as an anchor for those who wish to remain up-to-date with science and engineering across government.

The community currently has over 3,200 members drawn from over 30 departments and agencies. The majority of members work in a post where science or engineering expertise is essential to their role and over 700 different specialist occupations have been identified within the GSE membership.

Benefits of membership include a bespoke programme of development opportunities including pairing schemes with scientists and engineers working in academia and industry, an online networking portal on LinkedIn and a monthly newsletter.

CSAs are encouraged to join GSE, and 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 or establishing professional development schemes for scientists and engineers in their department and acting as a mentor.

**Analytical co-ordination across government**

The Heads of Analysis (HoA) group provides 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 Government Chief Scientific Adviser, the National Statistician, the Head of the Government Economic Service, the Head 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.

The Analytical Coordination Working Group (ACWG) consists of officials drawn from the support units of each of the 5 analytical professions: Government Economic Service (GES), Government Operational Research Service (GORS), Government Social Research Service (GSR), Government Statistics Service (GSS), and the Government Science and Engineering community (GSE).

The ACWG aims to coordinate the activities of the analytic support units to promote the development of more effective joined-up analysis and analysts across government and jointly respond to the persistent barriers to the effective use of analysis and evidence.

Its objectives are to:

- support the Heads of Analysis group
- share learning across the analytical professions
- join up on key challenges and issues facing all analytical professions
- identify and make efficiencies of scale where possible

Government Office for Science represents the GCSA and the Science and Engineering profession on ACWG.
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 Heads of Analysis. It provides a senior collective voice for departmental cross-government working on the social sciences. A senior Government Office for Science Official sits on DDAN to make the links between DDAN and the Chief Scientific Advisers Networks.
Science, research and evidence strategies

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 to departmental objectives, and on which plans for future research investment should be based.

The CSA should familiarise themselves with their department’s Science and Evidence Strategy. These may be titled: ‘Science and Innovation’, ‘Research’, or ‘Evidence’ strategy. The strategy should set out how all forms of evidence (e.g. economics, social research, statistics, operational research, as well as science and engineering) will be brought together to deliver an integrated evidence base.

Annex C provides some guidance on designing and developing a Science and Evidence Strategy. 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 the Heads of Analysis group early opportunity and time to comment and input to the final draft before it is published.

Departmental research investment

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

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, 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’16.

Annually, the Office of National Statistics (ONS) collects departmental spend on research and development. This is collected, each summer, via the GovERD (Government Expenditure on Research and Development) Survey. This survey requests that the departmental Chief Scientific Adviser or Director of Analysis has an opportunity to input into the survey.

Departmental research and development figures are published by ONS in late summer/early autumn (as official statistics) as the ‘Science, engineering, and technology (SET) statistics’. The whole process takes about 12 – 15 months from the end of the relevant financial year. The most recent publication of the science engineering and technology statistics can be found on the ONS website17.

Succession management

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.

The GCSA and Government Office for 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.

It was agreed by government in 2011\(^{18}\) that that the default expectation is that all CSA positions be externally advertised and that the GCSA should be involved in the appointment of departmental CSAs including membership of the selection panel. Departments should put in place appropriate procedures to facilitate this.

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

Contact information

Please contact the Government Office for Science, Science Profession, Advice and Leadership team with any queries or requests for further information, at: CSAnetworks@go-science.gsi.gov.uk.
## Annex A: Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIS</td>
<td>Department for Business, Innovation and Skills</td>
</tr>
<tr>
<td>CCC</td>
<td>Civil Contingencies Committee</td>
</tr>
<tr>
<td>CCS</td>
<td>Civil Contingencies Secretariat</td>
</tr>
<tr>
<td>CLG</td>
<td>Communities and Local Government</td>
</tr>
<tr>
<td>COBR</td>
<td>Cabinet Office Briefing Rooms</td>
</tr>
<tr>
<td>CoPSAC</td>
<td>Code of Practice for Scientific Advisory Committees</td>
</tr>
<tr>
<td>CSA</td>
<td>Chief Scientific Adviser</td>
</tr>
<tr>
<td>CSR</td>
<td>Comprehensive Spending Review</td>
</tr>
<tr>
<td>CST</td>
<td>Council for Science and Technology</td>
</tr>
<tr>
<td>DA</td>
<td>Devolved Administration</td>
</tr>
<tr>
<td>DCMS</td>
<td>Department for Culture, Media and Sport</td>
</tr>
<tr>
<td>DECC</td>
<td>Department of Energy and Climate Change</td>
</tr>
<tr>
<td>Defra</td>
<td>Department for Environment, Food and Rural Affairs</td>
</tr>
<tr>
<td>DfE</td>
<td>Department for Education</td>
</tr>
<tr>
<td>DH</td>
<td>Department of Health</td>
</tr>
<tr>
<td>DFT</td>
<td>Department for Transport</td>
</tr>
<tr>
<td>DWP</td>
<td>Department for Work and Pensions</td>
</tr>
<tr>
<td>FCO</td>
<td>Foreign &amp; Commonwealth Office</td>
</tr>
<tr>
<td>GCSA</td>
<td>Government Chief Scientific Adviser</td>
</tr>
<tr>
<td>GSE</td>
<td>Government Science &amp; Engineering</td>
</tr>
<tr>
<td>GSR</td>
<td>Government Social Research Service</td>
</tr>
<tr>
<td>GSIF</td>
<td>Global Science &amp; Innovation Forum</td>
</tr>
<tr>
<td>HO</td>
<td>Home Office</td>
</tr>
<tr>
<td>HoA</td>
<td>Heads of Analysis Group</td>
</tr>
<tr>
<td>HoSEP</td>
<td>Head of Science and Engineering Profession</td>
</tr>
<tr>
<td>HMT</td>
<td>Her Majesty’s Treasury</td>
</tr>
<tr>
<td>HSP</td>
<td>Horizon Scanning Programme</td>
</tr>
<tr>
<td>HSE</td>
<td>Health and Safety Executive</td>
</tr>
<tr>
<td>IKIU</td>
<td>International Knowledge and Innovation Unit</td>
</tr>
<tr>
<td>MoD</td>
<td>Ministry of Defence</td>
</tr>
<tr>
<td>MoJ</td>
<td>Ministry of Justice</td>
</tr>
<tr>
<td>PSG</td>
<td>Professional Skills for Government</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
</tr>
<tr>
<td>RC</td>
<td>Research Council</td>
</tr>
<tr>
<td>RCUK</td>
<td>Research Councils UK</td>
</tr>
<tr>
<td>S&amp;E</td>
<td>Science and Engineering</td>
</tr>
<tr>
<td>SAC</td>
<td>Scientific Advisory Council or Committee</td>
</tr>
<tr>
<td>SAGE</td>
<td>Scientific Advisory Group in Emergencies</td>
</tr>
<tr>
<td>SET</td>
<td>Science, Engineering and Technology</td>
</tr>
<tr>
<td>SIN</td>
<td>Science and Innovation Network</td>
</tr>
<tr>
<td>STEM</td>
<td>Science, Technology, Engineering and Mathematics</td>
</tr>
</tbody>
</table>
Annex B: Key documents and websites

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

Scientific Advice Group in Emergencies  
[www.gov.uk/government/groups/scientific-advisory-group-for-emergencies-sage](http://www.gov.uk/government/groups/scientific-advisory-group-for-emergencies-sage)

Civil Service Code  

Code of Practice for Scientific Advisory Committees  

Council for Science and Technology  
[www.gov.uk/cst](http://www.gov.uk/cst)

Cultivating community: Sharing good practice across SAC secretariats  

Freedom of Information Act  

Government Office for Science: Annual Review  

Government Office for Science: Foresight  

Government Office for Science and Cabinet Office: Horizon Scanning Programme  

Government Science and Engineering  

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

Principles of Scientific Advice to Government  

Review of Science Advisory Councils 2013  

Science and Engineering in Government  

Science and Innovation Network  

Seven Principles of Public Life  

Universal Ethical Code for Scientists  
Annex C: Developing a Science and Evidence Strategy

This note sets out the key tasks and 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.

It may also be helpful to look at a selection of existing departmental Science and Evidence Strategies which may be published on GOV.UK, and to discuss your plans with CSA’s in other government departments who have recently developed or refreshed their department’s Science and Evidence Strategy.

Please ensure that the GCSA and the Heads of Analysis Group are given an early opportunity to comment and input to your department’s Science and Evidence Strategy prior to publication. This is to ensure that cross-cutting issues are taken into account.

Key elements of a Science and Evidence Strategy

The key issues that need to be addressed in the Science and Evidence Strategy are set out below.

Identifying strategic evidence challenges

Strategic challenges

The Science 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, aims, and objectives. It is also helpful for the Science and Evidence Strategy to also:

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

It is important that any risks that could affect the delivery of the department’s strategic evidence needs are clearly identified along with plans on how these are to be managed.
Emerging issues
The Science and Evidence Strategy should articulate how the department 'thinks ahead' to identify and 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.

Resources (people and budgets)
The Science 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 and the need to maintain and build key external capabilities.

The Science 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 this investment.

Working with (and through) others
Working in partnership with others is essential to achieving coherent policy. It would therefore be helpful for the Science and Evidence Strategy to explicitly acknowledge areas where the department is likely to need to work particularly closely with, for example, other departments and agencies, the devolved administrations and the wider scientific community.

It is important that the Science and Evidence Strategy sets out the department’s plans in relation to cross-cutting research issues that are of benefit to more than one department or to government as a whole.

Implementation
It is important to set out how the Science and Evidence Strategy will be delivered and how progress will be monitored.

The Science and Evidence Strategy should set out the department’s strategic evidence needs for the short, medium, and long term, and how frequently the strategy will be reviewed and updated.

Governance

Governance structures
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 management and governance arrangements for science, including (if appropriate) the role, remit, and responsibilities of the departmental CSA, Science Advisory Council, and any Scientific Advisory Committee(s).
Procurement processes

The Science and Evidence Strategy should set out the department’s arrangements for procuring science, engineering and research, and for prioritisation, resourcing, managing and delivering the department’s evidence requirements.

Assurance processes

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

The Science and Evidence Strategy should include details of (or reference to) the department’s strategy for the publication of research, which at a minimum should address:

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

Public engagement

If policy is to succeed it needs to have sufficient support from the public. It is therefore important that the Science and Evidence Strategy contain a statement on how the department will engage the public on issues with important science or engineering dimensions. The Science and Evidence Strategy should be published on GOV.UK.

Other issues to consider

Context

It is important to contextualise the strategy in terms of the overall goals and objectives of the department and its operating environment. It is helpful to identify any international or government commitments that have implications for the direction of the Science and Evidence Strategy, together with details of any work that must be carried out, and to set out the relationship with other strategies, documents or agreements that will operate alongside this.

Stakeholders

Key stakeholders should be clearly identified. These may include: other research funders and partner organisations, research customers, and research providers.

Messages

The Science and Evidence Strategy should provide stakeholders with clear messages about the department’s aims and objectives; relative priorities; and its evidence needs. It should also set out details of ways of working (for example, working with partner organisations to share investment, knowledge and expertise).
Reviewing and harnessing existing research

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 or be able to identify existing sources of evidence.

Innovation

The Science and Evidence Strategy should include details of (or reference to) the department’s innovation strategy, showing how the department incentivises innovation in the research and development chain to benefit policy and delivery, and also the wider economy.
Annex D: Science Assurance

Questions and points to think about in relation to science 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.
  - Does your department’s procurement process for research and technology allow for sufficient technical expertise to feed into each procurement exercise?

- Who should have ownership of science 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 science 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 science assurance part of policy methodology or guidance in your department?
  - You might wish to check awareness of need for science assurance and, as appropriate, communicate its importance.

- Is this a separate science assurance process or one that is part of a process covering all analytical evidence?
  - Possible reasons for a separate science 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 science advice with other analytical input.

- Is science 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 science (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.

<table>
<thead>
<tr>
<th>Responsibility</th>
<th>Action</th>
<th>Detail</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Departing CSA, departments (collaborating with head hunters, as appropriate).</td>
<td>Inform Government Office for Science</td>
<td>Government Office for Science to arrange meeting between GCSA and departmental permanent secretary to discuss the nature of the CSA position.</td>
<td>1 year prior to departure</td>
</tr>
<tr>
<td></td>
<td>Develop the recruitment timetable</td>
<td>Departments should examine the support needs of the CSA position as part of the process of launching the appointment of a new CSA. Liaise with HR and OCPA for updated guidance on appointments. It was agreed by government in 2011 that positions will be externally advertised to encourage applicants from a broad range of disciplines, including academia, industry, third sector etc. This should not exclude applications from within government (if appropriate). Consider what happens if a poor response is received, will this affect the timetable?</td>
<td></td>
</tr>
<tr>
<td>Departments (in collaboration with Government Office for Science)</td>
<td>Arrange meetings with Government Office for Science</td>
<td>Once the new appointment has been confirmed, departments should arrange an initial meeting with the GCSA, to discuss the network of CSAs across government. 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 Government Office for Science, working with departments will arrange. 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.</td>
<td>Once appointment is confirmed</td>
</tr>
<tr>
<td>Responsibility</td>
<td>Action</td>
<td>Detail</td>
<td>Timing</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>---------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td><strong>Government Office for Science</strong></td>
<td>Invite to CSA network/HoSEP meetings</td>
<td>Appointed CSAs should be invited to attend CSA network 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 – subject to security clearance.</td>
<td>Once appointment is confirmed</td>
</tr>
<tr>
<td><strong>Departments</strong></td>
<td>Arrange meetings with key officials</td>
<td>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). Meetings with analytical Heads of Profession in the department such as economics and social research might also be scheduled. 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. 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.</td>
<td>Upon taking up position</td>
</tr>
</tbody>
</table>