

Science and Engineering in Government

CaSE

Campaign for Science and Engineering



SUMMARY

Science and engineering intersect with government and parliamentary business in the day-to-day process of policymaking and scrutiny, and in the responsive expert advice to inform action in emergencies. Science and engineering also impact on the work of every government department, from climate change, transport infrastructure and future cities, to education, national security and meeting the challenges of an ageing population.

The science and engineering community want to see government taking an increasingly evidence-informed approach to policy making so that expertise, evidence and knowledge can be used towards making policies smarter and, ultimately, lives better.

In working towards this end, it is therefore vital that the UK Government has:

- transparent and robust structures and processes for gathering and using evidence and scientific advice;
- appropriate governance, oversight and scrutiny for science and engineering across government and parliament; and
- sufficient resource and weight given to developing a strong evidence base to inform government policy and actions.

This briefing explores each of these areas and, following consultation with our members and collaborators from across the science and engineering sector, sets out the actions we want to see reflected in political party commitments and taken in the next term of Parliament.

Priority Actions



Policy for science and engineering has cross-cutting implications across government.

ACTION

The Minister that represents policy for science and engineering, currently the Minister for Universities, Science, and Cities, must continue to sit at the Cabinet table.

Independent scientific advice should be at the heart of policymaking in government, supporting effectiveness, transparency and efficiency in government spending and services.

ACTION

All departments to have a Chief Scientific Adviser to deliver expert advice and oversee policymaking.

ACTION

As with select committee calls for evidence, when the government responds to a consultation they should publish all responses that they received.

ACTION

All research performed or commissioned by government departments must be freely, publicly available in a readily-searchable, online archive.



CABINET COORDINATION

Policy for science and engineering has cross cutting implications for policy across government departments, from international development and immigration to infrastructure, innovation and skills. Cabinet level oversight of the science brief is vital to ensuring that there is good coordination between government departments.



ACTION

The Minister that represents policy for Science and Engineering, currently the Minister for Universities, Science, and Cities, must continue to sit at the Cabinet table.



ACTION

The Minister that holds the science brief should have Science within their ministerial title.

CHIEF SCIENTIFIC ADVISERS

While the Science Minister oversees policy for science, the Government Chief Scientific Adviser (GCSA) oversees science for policy which cuts across all government departments. The GCSA reports to the Prime Minister and, within the Civil Service, to the Cabinet Secretary. The Government Office for Science (GO-Science) supports the GCSA and is located in the Department for Business, Innovation and Skills (BIS).

The GCSA and GO-Science work to address issues relating to the use of science, engineering and technology in policy making, ensuring that the Government has effective systems for managing and using science. This brief cuts across departments and therefore the roles of GCSA and GO-Science should be, and be seen as, autonomous from any individual department. The GCSA and GO-Science would benefit from being entirely (rather than partly) autonomous from any individual department and be located centrally within the Cabinet Office. This move would be in line with official reporting lines, select committee recommendations since 2006 and multiple calls from CaSE and others within the science community. It would signal that science and engineering advice for policy is a central concern of government.



ACTION

The Government Chief Scientific Adviser, along with the Government Office for Science, should be relocated centrally within Cabinet Office.

CaSE believes that independent scientific advice should be at the heart of policymaking in government. Scientific evidence is not the only valid form of evidence nor the only factor taken into account in the formation of policy. However, the role of the departmental Chief Scientific Adviser (CSA) is to ensure that departmental decisions are rightly informed by relevant science and engineering evidence. This is part of their wider and collective role ensuring that robust, joined-up evidence is at the core of decisions within departments and across government.



ACTION

All departments to have a CSA to deliver expert advice and oversee policymaking.



CaSE believes that independent scientific advice should be at the heart of policymaking in government.



The routes to feed in evidence must be clear for those who aren't 'the usual suspects'



ACTION

Appoint a CSA in the Departments for Communities and Local Government, Culture Media and Sport, Transport and Northern Ireland Office which currently do not have a CSA.



ACTION

All CSAs are to be appointed through a transparent and open appointment process. The selection panel should include the GCSA and an external panel member from the science and engineering community.



ACTION

Succession planning should be set in motion with sufficient time to ensure there is continuity of scientific advice and to avoid periods where the position is vacant.

The role of CSAs within their department includes strategic and operational leadership and oversight. This includes management of departmental research budgets, providing independent advice and challenge of the evidence base during policy development and managing the development, delivery, implementation and monitoring of the department's science and innovation strategy. In order to do this the CSA needs to be in a senior position within the department. In 2010 three CSAs were reported as sitting on their departmental board, in line with Government Office for Science recommendations¹. In 2012 this had reduced to two². In 2014 this has risen to eight³.



ACTION

All CSAs are to have a seat on their department's Board, at director level or higher.



ACTION

The GCSA should sit on the Departmental Board of the Cabinet Office reflecting the post's current reporting lines within the civil service.

A strong collegiate CSA network enables the sharing of cross departmental issues, and effective cross-departmental working. This needs to be fostered through regular meetings, both formal and informal, between CSAs.

EXTERNAL SOURCES OF ADVICE

An essential part of science advice in government is to harness the broad expertise of the research base, subject experts and practitioners outside of government to inform policy making. All major parties advocate open and evidence-based policymaking. Therefore the routes to feed in evidence must be clear for those who aren't 'the usual suspects'.

¹ Science and Engineering in Government, CaSE, 2010

² The role and functions of departmental CSAs, House of Commons Science and Technology Committee, 2012

³ Listed on department websites under 'our management'



One of the major concerns from amongst our members is that evidence gathering takes place too late in the policymaking process. This can be due to policies being implemented following manifesto commitments, Ministerial announcements or because they need to be enacted quickly. However in every case the best available scientific evidence should be gathered and used. Consultation documents are often extremely long and response periods quite short. Therefore often the issue isn't whether there is the opportunity for the science and engineering community to feed in, but whether there is the opportunity for evidence to be appropriately gathered and considered by officials to inform policy decisions.



ACTION

Evidence gathering should occur earlier in the policy process so that there is time for scientific evidence to inform policy decisions rather than be used to justify a particular policy decision.

There is a lack of transparency about how evidence submitted to government is used. In consultations the weight given to scientific evidence compared to anecdotal evidence is currently unclear.



ACTION

In order to increase transparency, when government responds to a consultation they should publish all responses that they received.

The Ministerial Code⁴ sets out the over-arching duties which Government Ministers must abide by. Since 2010 it has included that ministers should have regard to the Principles of Scientific Advice to Government when making policy decisions.

The principles⁵ state that 'government should publicly explain the reasons for policy decisions, particularly when the decision is not consistent with scientific advice and in doing so, should accurately represent the evidence', as previously called for by CaSE. They also state that 'scientific advisers are free to communicate publicly their advice to government, subject to normal confidentiality restrictions, including when it appears to be inconsistent with government policy.' This is made extremely difficult if Ministers have not declared the basis on which policy decisions have been made or if departments control the publication of reports from independent committees.

There are some examples of when this has been done well⁶. However, often this principle is not adhered to leading to a lack of transparency regarding the basis for the policy decision.



ACTION

Ministers should publicly explain the reasons for policy decisions, particularly when the decision is not consistent with scientific advice and in doing so, should accurately represent the evidence.



ACTION

Independent Science Advisory Committees should publish the findings of their reports independently from the commissioning department.



“Government should publicly explain the reasons for policy decisions, particularly when the decision is not consistent with scientific advice”

The Ministerial Code

⁴ Ministerial Code, Cabinet Office, May 2010

⁵ Principles of Scientific Advice to Government, GO Science, March 2010

⁶ Letter from the Rt Hon Theresa May to ACMD Chair Prof Les Iversen, July 2013



EVIDENCE-INFORMED APPROACH TO POLICY MAKING

Publicly funded research

Departmental investment in R&D is an important part of the government spend on science. CaSE has concerns about how publicly funded or commissioned research is valued – particularly within departments where there have been substantial and repeated reductions in spend on R&D. In 2011/12 half of all departments reduced R&D expenditure in excess of 20% compared with the previous year, some by as much as 50%⁷. These reductions were disproportionately large compared to departmental savings of 0-5%. This reduction in spend could be due to cuts or to reduction of internal demand for research. Both are of great concern.

The tension within departments is that every pound spent on research could be seen as a pound less spent on frontline support – whether that be schools, disability support or investment in transport links. However, cutting R&D on this short-term basis could be counterproductive. Departments' R&D spend is used to invest in research to develop and evaluate new ideas and existing policies. Therefore, relatively small amounts of spend on research can lead to better front line provision and increased cost effectiveness.

For instance the Department for Transport funded research into design of train carriages to facilitate the boarding of a high volume of people before new trains were built. This led to improvements in the design and function of new stock⁸. This example shows why it is particularly important in times of constrained public finances that government departments prioritise investing in R&D to ensure that their policies and public services are cost efficient and effective.

The CSA role is well positioned to ensure that decisions regarding R&D budgets are taken in an evidence-based and strategic way, resisting the political imperative to divert resources to services and programmes more likely to deliver short term 'wins'. The CSA guidelines dictate that the CSA should be involved in any decisions that affect departmental research budgets⁹. Further, there is 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'. From responses to questions from CaSE it is clear that this requirement and the CSA guidelines are not being appropriately acted on across all departments. One department was not even aware of the requirement. This may be contributing to the disproportionate reductions to departments' investment in R&D seen in recent years¹⁰.



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ACTION

Departmental CSAs are to have oversight of the department's R&D strategy and budget.

Fluctuations in demand for R&D are to be expected. However reductions in a department's R&D spend that are disproportionately large compared to departmental spend should trigger an investigation by the CSA. The National Audit Office who are tasked with holding government to account for use of public money should report if necessary.



ACTION

Disproportionate reductions in a department's R&D spend should trigger an investigation by the CSA, the results of which should be published.

⁷ Government R&D hit by disproportionate cuts, again, CaSE analysis, 2014

⁸ Public procurement as a tool to stimulate innovation evidence, House of Lords S+T Committee, 2011

⁹ Chief Scientific Advisers and their officials – an introduction, 2011

¹⁰ CaSE analysis of departmental R&D spend 2011/12, January 2014



Accessing and contributing to publicly funded research

Government research, including commissioned research, makes up a large body of evidence of great interest and significance to the research community and to government. Yet research commissioned by government departments, in particular any research prior to 2010, has been archived in such a way as to make it unsearchable and inaccessible to both government officials and the wider research community. This has led to instances where officials have sought to commission research, unaware of major research programmes and outputs previously funded by their department. This research must be publicly available in a readily searchable archive. This should include research prior to 2010 and span all disciplines, including social science research. Such an archive will facilitate cost savings and efficient use of publicly funded research by officials and policy makers in policy development and by the research community in expanding the body of evidence available to government.



ACTION

All research performed or commissioned by government departments must be freely, publicly available in a readily-searchable, online archive.

For evidence to drive policy it needs to begin at a research level and not simply at a policy level. As such, it would be a beneficial annual exercise for departments to publish major, long-term research questions with the aim of prompting more long-term thinking within the department and to set or inform the research agenda in the scientific community.



ACTION

Every government department should publish, and annually update, a list of key, long-term research questions.

Amid discussions of greater devolution of decision making to a local and regional level there needs to be training, structures and budgets to ensure that the learning and good practice from central government on using evidence in policymaking can be built upon at the local level.



ACTION

Appropriate consideration should be given to the processes, structures and funding required to ensure evidence informs local and regional policy decisions.

GO-Science used to maintain a list of Science Advisory Councils and Committees¹¹ however this has not been updated since 2010, so there is not an easy way to know what councils and committees exist. This can make it difficult for those in the science and engineering community to contribute to policy development.



ACTION

Each department's website should clearly list their Science Advisory Council and Committees, including a point of contact for each.

Scientists and engineers in the civil service

Scientists and engineers in the civil service can apply their expertise to policies with a scientific or technical element, apply their analytical skills in policy analysis and bring



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¹¹ List of Science Advisory Councils, GO Science, 2010



a representative range of perspectives on an issue. Currently the number of scientists and engineers in the Government is monitored through membership of the Government Science and Engineering (GSE) group, a self-nominating community drawn from staff with science and/or engineering qualifications or background or who work in a related area.

**ACTION**

Make a formal professional route for the scientific profession within government and parliament. This should include the Science and Engineering Fast Stream route, opportunities for professional development and feed into hiring at every level.

**ACTION**

Annually publish the number of scientists and engineers in government.

PARLIAMENTARY SCRUTINY OF POLICY MAKING

The cross departmental nature of science, engineering and technology issues is highlighted by the presence of dedicated cross-departmental select committees on Science and Technology in the House of Commons and the House of Lords. These committees complement the Select Committees focused on scrutinising the business of individual government departments.

Select Committees should routinely ask policy decision makers about the basis of their decision, how and what evidence was considered, including the handling of scientific evidence or advice that does not support the policy decision.

**ACTION**

Evidence derived from the scientific method should be distinguished from other kinds of evidence, and such evidence should have a higher profile in policy scrutiny

**ACTION**

When a Committee announces an inquiry the range of evidence received in the development of the policies in question, should be made available to the committee and to the public.

The aim of this action is to strengthen the scrutiny process, increase transparency and help build public trust through more open policymaking. This would enable inquiries to provide a forum for scrutiny of how evidence has been handled and the strength of the evidence base on which a policy decision has been made, rather than evidence sessions providing an opportunity to set out evidence in the first instance.

CSAs and the GCSA provide independent advice to policy makers, but do not themselves make the policy decisions. As such they should not be asked to defend policy decisions, but rather to explain the scientific basis for their advice and to what extent they consider the policy is in line with scientific advice.

CONTACT US

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ABOUT CaSE

The Campaign for Science & Engineering (CaSE) is the leading independent advocate for science and engineering in the UK.

We speak with the voice of our members from across the science and engineering community, in industry and academia, to raise the political profile of science and engineering and deliver independent, authoritative analysis to convey its economic and societal importance.

FIND OUT MORE

This policy briefing is part of a set of three which can be downloaded at www.sciencecampaign.org.uk

The briefings cover Investment, Education and Skills, and Science and Engineering in Government and were developed in consultation with our members and collaborators from across the science and engineering sector. They set out the actions we want to see reflected in political party commitments and taken in the next term of Parliament.

