



16/02/2010

## CaSE Working Paper **SCIENCE AND ENGINEERING IN GOVERNMENT**

### **INTRODUCTION**

The UK government needs to: fund research to inform evidence-based policymaking; have structures and processes to deliver expert advice and oversee science policymaking; and have policymakers who can properly handle scientific and technical advice. This paper looks at all these issues.

### **GOVERNANCE OF SCIENCE AND INNOVATION**

#### **Cabinet Coordination**

The appointment of the Minister for Science and Innovation to the Cabinet table in 2008 was a significant upgrading of the position. Representation of science and innovation at Cabinet is vital to ensuring that there are good interfaces between the departments. Without cabinet level oversight, departments that do not see science and innovation as central to their mission may develop policies without consideration of their impact on these areas. For example, the recent overhaul of the immigration system produced some negative consequences for science and engineering.<sup>1</sup> Similarly, reforms made in the department that governs school-age education have massive consequences for the science and engineering skills available to business and the research that other portfolios draw upon.

Action: **The Minister that represents science and engineering must continue to sit at the Cabinet table to ensure that all other government departments use science and engineering advice effectively and advance policies that have been evaluated for their impact upon them.**

The current Science and Innovation Cabinet Sub-Committee (part of the Ministerial Committee on Economic Development), brings together ministers from across government to discuss cross-departmental science and innovation policies. The meetings are chaired by the Minister for Science and Innovation.

Action: **The Science and Innovation Cabinet Sub-Committee should meet frequently and should be expanded to include a minister from the Department for Culture, Media and Sport and the Foreign and Commonwealth Office.**

#### **Departmental Location of Science and Innovation**

Although science and innovation policies are spread across government it also needs to be a prominent part of a single department, which includes science in its title. The Science and Innovation portfolio could either sit within a business department or

education department as science is relevant to both missions. Alternatively, a department could be structured around science and innovation as its central mission. To a certain extent the Department for Innovation, Universities and Skills did this.

There needs to be stability in the location of the science and innovation portfolio, rather than it being moved from department to department, as it has been of late.<sup>2</sup> This portfolio was located in the Department for Trade and Industry (DTI) before being moved to the Department for Innovation, Universities and Skills in 2007, and then absorbed into the Department for Business, Innovation and Skills (BIS) in 2009.

The Minister for Science and Innovation needs to have a long-term outlook. If it all possible, the Prime Minister should try to avoid frequent changes to the person responsible for this portfolio as there needs to be continuity of policy decisions.<sup>3</sup>

Action: **The science and innovation portfolio should have a stable location within government and capacity for cross-departmental coordination on research, skills and regulatory issues.**

## **SCIENTIFIC ADVICE IN GOVERNMENT**

### **Government Chief Scientific Adviser and the Government Office for Science**

At the top of the scientific advisory system sits the Government Chief Scientific Adviser (GCSA). The GCSA is recruited from outside government to provide direct advice to the Prime Minister and Cabinet to ensure that government policy and decision-making is informed by science and engineering evidence and advice.

The GCSA, supported by the Government Office for Science (GO-Science), is currently located in the Department for Business, Innovation and Skills (BIS). It would be more appropriate for the GCSA and GO-Science to be moved to the Cabinet Office, because both are meant to support the Prime Minister and Cabinet and strengthen the Civil Service. The current departmental location of the GCSA within BIS does not foster contact with the Prime Minister, indeed the GCSA only met the Prime Minister four times between in the 12 months between May 2008 and May 2009.<sup>4</sup>

Action: **The Government Chief Scientific Adviser along with the Government Office for Science to be located within the Cabinet Office.**<sup>5</sup>

Action: **The Government Chief Scientific Adviser should have direct access to the Prime Minister and there should be regular meetings between them.**

### **Council for Science and Technology**

The Council for Science and Technology (CST) is an advisory body reporting to the Prime Minister and leaders of the devolved administrations on science and technology policy. The CST has an extremely important role in challenging government and devolved administration science policies and providing advice on high-level issues,

however it has so far been under-utilised. The CST is made up of external, independent, high-profile experts. It examines issues identified internally by a member of Cabinet.

A strengthened CST would help to ensure that science and engineering is put at the heart of government policy and that the government delivers upon its ambitions. A revamped CST could work in much the same way as the President's Council of Advisors on Science and Technology (PCAST) in the United States, producing authoritative policy reports, statistical analysis and comment upon progress against government and devolved administrations commitments.

**Action: The Council for Science and Technology to be strengthened and located within the Cabinet Office. There should be regular meetings between the Prime Minister and the Council for Science and Technology**

### **Scientific Advice to Government Departments**

Nearly all government departments have now appointed a Departmental Chief Scientific Adviser (CSA), to ensure that robust, joined-up evidence is at the core of decisions within departments and across government. However, six of the current CSAs are not independent professionals from outside government, but civil servants appointed from within the departments.

**Action: All Departmental Chief Scientific Advisors to be appointed from outside of government with expertise relevant to the department's mission.**

Of all the Whitehall departments only HM Treasury has yet to appoint a CSA. This is worrying because of the critical role it plays in drawing up spending plans and funding priorities for science and engineering in the UK. The Treasury was central to the development of the Science and Innovation Investment Framework 2004-2014, which remains the most important science policy document in the UK, and sets out the Comprehensive Spending Review and Budget which are crucial to achieving the Framework's goals.

**Action: HM Treasury to appoint a Departmental Scientific Advisor.**

Despite the government's own recommendation that a senior analyst should sit on the executive board of each government department to ensure that decisions on strategy and resources are fully evidence-based, only three CSAs have a place on their departmental board.<sup>6</sup> Similarly, despite recommendations that CSAs should be consulted by departmental strategy and finance teams on strategic and budget proposals, at least eight CSAs do not have direct control over their department's research and development budget.

**Action: All Departmental Chief Scientific Advisors to have a seat at their departmental board and to have oversight over the department's R&D budget.**

Science Advisory Councils (SAC) support the work of CSAs and provide an independent overview of the use of scientific advice at a departmental level, however the majority of departments have yet to establish these councils.

**Action: Every government department to create a Science Advisory Council to support the work of the Departmental Scientific Advisors**

**Table 1: Departmental Chief Scientific Advisers**

Department	Name	External appointment	On board	Controls budget	SAC
DEFRA	Prof Robert Watson	Yes	No	Data not available	Yes
MOD	Prof Mark Welland	Yes	Yes	No	Yes
DH	Dame Sally Davies	No	No	Data not available	No
DFID	Prof Chris Whitty	No	No	Yes	No
DCFS	Carole Willis	No	No	No	No
DFT	Prof Brian Collins	Yes	No	No	No
DBIS	Prof Brian Collins (also DFT)	Yes	No	No	No
DECC	Prof David Mackay	Yes	Yes	Data not available	No
DCMS	Anita Charlesworth	No	Yes	No	Yes
MOJ	Rebecca Endean	No	No	Data not available	No
HO	Prof Bernard Silverman	Yes	No	Data not available	Yes
DCLG	Prof Jeremy Watson	Yes	No	No	No
DWP	Dr Bill Gunnyeon	No	No	No	No
Treasury	-	-	-	-	No
FCO	Prof David Clary	Yes	No	No	No

## Engineering & Technology Advice

In those departments where engineering advice is needed a Departmental Chief Engineering Adviser (DCSE) should be appointed to complement the Departmental Chief Scientific Adviser. Each should have direct access to the Secretary of State.

**Action: Government departments that would benefit from having a separate Departmental Chief Engineering Adviser should appoint one.**

A Chief Technology Officer should be appointed to work in the Government Office for Science and report to the Government Chief Scientific Adviser. The Chief Technology Officer should be focussed on how government can better utilise technology.

**Action: A Government Chief Technology Officer to be appointed and located in the Government Office for Science.**

## **Integrity of Scientific Advice**

The recent dismissal of the Chair of a Scientific Advisory Committee raised a number of serious issues about how ministers should deal with scientific advice and advisers.<sup>7</sup> If concerns are not addressed then there is a real risk that the quality of advice will decline as potential advisers decline to participate.

The purpose of the high-level Principles facilitated by Sense About Science is to ensure effective engagement between the Government and those who provide independent scientific advice. The importance of safeguarding the objectivity and openness of the advisory process has been explicitly recognised by Government and the wider society since the Phillips Report (2000) into the BSE crisis.

There is a strong Code of Practice for scientific advisory committee members. However, there is no guidance on why and how a member of an advisory committee can be dismissed from their position. This omission needs to be rectified to give a clearer understanding of how to manage this important relationship when things go wrong. If any issue of dismissal arises, the minister should be obliged to discuss the situation with the Government Chief Scientific Advisor so that the integrity of the scientific advisory system can be maintained.

Advisers should be free to communicate publicly, via scholarly publishing, speaking at conferences, commenting in the media or giving evidence to parliament, making clear in what capacity they are communicating.

Some policy decisions are affected by factors other than the scientific evidence, but when expert scientific advice is rejected the reasons should be described explicitly and publicly. Advisers should be able to continue to discuss the evidence behind rejected recommendations.

**Action: A strong set of Principles should be adopted by government to ensure the integrity of scientific advice.**

**Action: The ministerial code should be revised to include relevant section of the Principles, which ministers have to sign-up to.**

## **GOVERNMENT DEPARTMENTAL R&D**

Government departments are responsible for investing in research in order to deliver their missions and secure the evidence-base for their policies. Departmental R&D spending has fallen by about a quarter in real terms since 2004 (see working paper on Research Funding). Departmental R&D budgets must be protected from short term raids whilst public expenditure is being constrained. The Sainsbury Review recommended better identification of and protection for departmental R&D budgets - the government had accepted this, but needs to implement it.<sup>8</sup>

The Department of Health is the only department to have a ring-fenced its R&D budget. At the moment, the only protection for other departmental R&D budgets is that the Treasury and the Government Chief Scientific Adviser are meant to be consulted prior to

a department taking funds from them. In fact, departments do not provide detailed projections of their spending but instead just an estimate of the next year's spending. Budgets should be published (as they have been in the past) to enable anticipation and protection of departmental spending on R&D.

Action: **Government departmental R&D budgets need to be maintained to provide the evidence-base for policy development and the effective delivery of public services. With fewer resources available, government departments need research to ensure that their policies and public services are cost-efficient.**

Action: **Budgets should be carefully identified, published in advance and protected from other spending needs.**

Although departments are expected to publish science and innovation strategies, many of these strategy documents are unavailable or are out of date.

Action: **All departments should have an up-to-date science and innovation strategy developed with input from external stakeholders.**

Although the Chief Scientific Advisers Committee is meeting more frequently to discuss cross-cutting issues, departmental R&D budgets are still firmly placed within the departmental responsible. Greater consideration should be given to how cross-departmental R&D budgets could be managed.

Action: **Cross-departmental research needs to be better identified and funded, coordinated by the Government Office for Science.**

## **SCIENTISTS & ENGINEERS IN THE CIVIL SERVICE**

Scientists and engineers are needed in the civil service to apply their expertise to policies with a scientific or technical element, to apply their analytic skills in all policy analysis, and to bring a representative range of perspectives on an issue. The exact number of scientists and engineers in the civil service is currently unknown, but considered to be lower than optimal.<sup>9</sup>

Action: **There should be better monitoring of the number of scientists and engineers working in the civil service.**

The Civil Service Fast Stream is a training and development programme for graduates with the potential to reach the Senior Civil Service. In 2007, out of the 249 successful candidates for the general fast stream (which includes the science and engineering fast stream) only 37 had a STEM related degree.

Action: **The science and engineering civil service fast stream to be expanded and effectively recruited into, to increase the number of senior civil servants with a science or engineering background.**

## PARLIAMENTARY SCRUTINY

### House of Lords

The House of Lords Science and Technology Select Committee was set-up in 1980 and draws upon considerable expertise available from all three major political parties as well as the cross benches, including many eminent scientists from all fields. It complements the work of the House of Commons committee and should be maintained.

Action: **The House of Lords Science and Technology committee should be maintained in the next Parliament.**

### House of Commons

The cross-departmental nature of science, engineering and technology issues, reflected within government through the Government Office for Science and the Cabinet Sub-Committee on Science and Innovation, should be highlighted by the presence of a dedicated cross-departmental select committee. The former House of Commons Science and Technology committee was abolished in 2007 following the creation of DIUS. The Select Committee for Innovation, Universities and Skills took on science oversight but lacked the necessary resources to fully scrutinise science policy across government and was limited by its perceived departmental remit. Accordingly, the House of Commons Select Science and Technology Committee was reinstated in October 2009 and should be maintained.

If the Minister with the science and innovation is appointed from the House of Lords, then there must be a scheduled system of accountability, such as a question time in the House of Commons Science and Technology Committee.

Action: **The House of Commons Science and Technology committee should be maintained in the next Parliament with a clear remit to scrutinise the Government Office for Science and science and technology issues across government.**

## FURTHER INFORMATION

This is one of three CaSE working papers written in the run-up to the general election 2010, the others cover Research Funding and Education and Skills.

Nick Dusic, CaSE Director, [nick@sciencecampaign.org.uk](mailto:nick@sciencecampaign.org.uk)

Dr Hilary Leever, CaSE Assistant Director, [hilary@sciencecampaign.org.uk](mailto:hilary@sciencecampaign.org.uk)

## References

---

<sup>1</sup> International Excellence

<sup>2</sup> Putting Science and Engineering at the Heart of Government, IUSS committee Inquiry, 2009

<sup>3</sup> Unfortunately, between the end of 2006 and now, there were three Science Ministers, although Lord Drayson, the current Minister for Science and Innovation, has been in post for nearly 18 months.

<sup>4</sup> Putting Science and Engineering at the Heart of Government, IUSS committee Inquiry, 2009.

<sup>5</sup> This view is also supported by the House of Commons Science and Technology Committee <http://www.publications.parliament.uk/pa/cm200809/cmselect/cmdius/168/168i.pdf>

<sup>6</sup> <http://www.dius.gov.uk/~media/publications/GO-Science/GO-ScienceSEG>

<sup>7</sup> In October 2009 the Home Secretary controversially dismissed Professor Nutt as Chair of the Advisory Council on Misuse of Drugs.

<sup>8</sup> *The Race to the Top A Review of Government's Science and Innovation Policies*. Lord Sainsbury, October 2007.

<sup>9</sup> Putting Science and Engineering at the Heart of Government, IUSS committee Inquiry, 2009.