Engineering the Future

# Role and function of Departmental Chief Scientific Advisors

**Response from the engineering profession (Engineering the Future) which includes:**

- The Royal Academy of Engineering
- The Institution of Engineering and Technology
- The Institution of Civil Engineers
- The Institution of Mechanical Engineers
- The Institution of Chemical Engineers
- The Engineering Council
- Engineering UK

**House of Lords Select Committee on Science and Technology**

**September 2011**

The Engineering the Future alliance is pleased to have the opportunity to input into the House of Lords Select Committee on Science and Technology inquiry into the role and function of Departmental Chief Scientific Advisors. As representatives of the engineering profession, with access to some of the best engineering skills and experiences, the Engineering the Future partners have a key role in supporting the work of the Departmental Chief Scientific Advisors as well as Professor Sir John Beddington CMG FRS, the Government Chief Scientific Advisor.

This response has been coordinated by The Royal Academy of Engineering on behalf of Engineering the Future.

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*Engineering the Future is a broad alliance of engineering institutions and bodies which represent the UK's 450,000 professional engineers.*

*We provide independent expert advice and promote understanding of the contribution that engineering makes to the economy, society and to the development and delivery of national policy.*

Institution of Mechanical Engineers · ice Institution of Civil Engineers · IChemE Institution of Chemical Engineers · The Royal Academy of Engineering

IET The Institution of Engineering and Technology · Engineering Council · EngineeringUK

## Introduction

The engineering community has long held the view that government policy has too often failed to take proper account of good scientific and, particularly, engineering advice at the policy formulation stage. This has often been evident when policies have not been implemented successfully and in the inability of government to be an 'intelligent customer' for scientific and engineering advice when it is available or offered.

More recently, since the establishment of the network of Departmental Chief Scientific Advisors (DCSAs), this situation has markedly improved. The reviews of the use of science within government departments instigated by Sir David King during his tenure as CSA has focused minds across government on how scientific and engineering advice is obtained and used, leading to much improved access for the engineering community to offer advice.

## The ability of CSAs to provide independent advice to ministers and policy makers within their departments

The ability of the CSA and the DCSAs to provide independent advice to ministers and policymakers relies to a large extent to the quality of their wider networks of experts. Engineering the Future partners have access to substantial expertise in both industry and academia through the profession and are therefore an important component. The expertise available through academia is able to provide evidence and facts to inform policy making, and expertise from industry and business is able to inform the deliverability of policies. Industrial and business expertise can be, and is now often, used by DCSAs to provide a project management understanding of policy implementation and delivery. Moreover, the route into that expertise is made simple through the expedient use of the Royal Academy of Engineering. Through a well-established agreement, the Academy uses both its own expert Fellows and the many professional engineers who can be accessed through its Engineering the Future partners.

Departmental CSAs are generally part-time posts and currently post-holders (apart from the new DCSA in the Treasury) are predominantly academics from scientific and engineering backgrounds. The part-time nature of the posts ensures that DCSAs maintain their useful external networks for the period of the appointment, but, at the same time, limit the amount of time available for DCSAs to influence the wide variety of policy development within their departments. The role of the DCSAs' staff and deputies therefore becomes important in liaising between DCSAs and the rest of the department. Where such relationships have become established, they provide useful mechanisms for exchanging ideas and advice. The tendency to appoint DCSAs with an academic rather than industrial background limits their ability to provide independent advice to Ministers on project management type issues associated with successful policy.

## Influence over research spend

The research budgets of different departments and their agencies vary considerably, so generalised comments on DCSAs' influence is not possible. It is, however, worth noting that, in terms of engineering advice, much of the requirement for external advice is for project planning or implementation rather than academic research or data collection. This type of advice can generally be obtained a very little cost through networks such as Engineering the Future (which includes professional engineering bodies) and the National Academies.

**Role in providing independent challenge**

The ability of DCSAs to provide an independent challenge function to policymakers within their departments relies, to some extent, on the policymakers being able to be 'intelligent customers' for the advice offered.

The strategic capacity within government departments to be an 'intelligent customer' requires engineering skills to be embedded, recognised and deployed within departments.

The establishment of the Science and Engineering Profession group within the Civil Service by the Government Office of Science and led by Professor Sir John Beddington CMG FRS, is improving this ability. The group is still growing within the Civil Service and is much younger than other comparable professional groupings. It is most important that this Group is supported and helped to prosper such that the position and importance of scientists and engineers in government is properly recognised and their skills used.

Recent moves to actively recruit engineers into DECC are welcome and are likely to further benefit the department in terms of its ability to understand and use the engineering advice offered.

**Range of expertise provided by the network of CSAs**

Engineering the Future has argued on a number of occasions for the establishment of Chief Engineering Advisor posts. This has been on the basis that good engineering advice can be of a different nature from good scientific advice in terms of its relevance to deliverability and implementation as opposed to the facts and evidence that policy is based upon. Currently, the network of DCSAs includes a number of professional engineers who understand and make use of this distinction in the advice they seek externally and offer to their departments.

Recent, high-profile examples of major government policy projects that have failed point to the need for high level advice on the deliverability and implementation of policy, as well as the scientific and technical aspects. The skills, experience and understanding of major project delivery found within business and industry are generally more substantial because success and, indeed survival, depend on it. This suggests that CSAs should have greater breadth of experience than is normal in those who have an exclusively academic background so they can properly advise on policy deliverability and delivery. Consideration of widening the recruitment criteria in some departments to include major project delivery experience should be seriously considered.

While the engineering profession would like to see a Chief Engineering Adviser post established, the significant improvement in interactions between DCSAs and the engineering world brought about by the current CSA have already made a real difference in the use of engineering advice.

In some government departments, the need is for a Chief Engineering Adviser rather than a Chief Scientific Adviser and this should be explored further. At the time of writing, there are gaps in BIS and DfT and MOD is recruiting. It is really important that departments such as these where engineering is so central have CSAs who have a strong appreciation of the engineering (and science) involved.

It is worthy of note that the Council for Science and Technology (CST) should also continue to have broad range of engineering expertise on it.

**Extent to which CSAs have authoritative standing within relevant academic, industrial or business communities**

The standing of CSAs within academic networks is good. The Engineering the Future partners work hard to make advice from the engineering business and industry available to the network of CSAs, but it is clear that their standing within the communities from which they have been recruited varies. As explored above, the widening of the recruitment pool for CSAs to include those from business and industrial as well as academic backgrounds could improve this situation considerably.