

Royal Society response to OST's consultation on the use of science by Defra

The Society welcomes the opportunity to contribute to the Office of Science and Technology's (OST) consultation about the use of science by the Department for Environment, Food and Rural Affairs (Defra). In preparing this response we have consulted with Fellows and other experts that have worked with us on relevant committees, working groups and advisory groups. They themselves have been involved with Defra in various roles, as: recipients of funding; employees in agencies funded by Defra and as members of Defra's advisory committees. The Royal Society has interacted with Defra (including its agencies and committees) in a number of ways since Defra's formation. In addition to briefing meetings with Ministers and civil servants, nominating experts for committees and reviews and responding to consultations the Royal Society was commissioned by OST and Defra to review the scientific aspects of the control of infectious diseases in livestock and by Defra to review a report on the health and environmental effects of waste management options. This response has been approved on behalf of the Royal Society's Council by the Biological Secretary and Vice-President Professor David Read FRS.

Overview

The science used by Defra is incredibly diverse which poses a great challenge. In recent years there has been an improvement in Defra's use of science, although there is still room for improvement. Prof Howard Dalton, Defra's Chief Scientific Advisor (CSA), has played a key role in this improvement.

1 Has developed a clear, overall science strategy

It is important that Defra clearly identifies the policy challenges that it faces and fully utilises the scientific community to identify the science needed to deliver innovative solutions. This process should involve the agencies and centres that Defra funds as well as the academic community and its representatives (e.g. the Learned Societies both in the UK and overseas) as well as broader stakeholders.

Defra currently has a Science and Innovation strategy and an Evidence and Innovation strategy and plans to publish updated strategies in Spring 2005. The current strategies provide an overarching statement of Defra's commitment to the importance of using science, the policy challenges requiring a scientific input and the principles underpinning its use of science. In undertaking this review OST should evaluate:

- the extent to which the updated strategy is being informed by leading scientists and scientific organisations as well as other stakeholders;
- how well the current strategy (eg the principles underpinning Defra's use of science) has been implemented across Defra (including what mechanisms are in place for independent review of how well the science strategy is being implemented).

The appointment of a senior academic from outside Defra as the CSA has been an important step in improving the role of science in the Department and in developing a clear strategy for science. In its review, OST should examine how this role is integrated into the broad Defra management structure. It is vital that the CSA is involved in all the key strategic decisions within Defra.

The Science Advisory Council (SAC), established in February 2004 is another important strand of Defra's science strategy. To be effective SAC must be involved in all major policy issues involving scientific evidence and include a sufficient number of internationally recognised scientists (covering an appropriate range of disciplines) in addition to other stakeholders.

Those contributing to our review noted that there are examples of good strategies at the divisional level - for example well developed science strategy for the long-term environment resulting from global warming. OST should examine how these relate into the overall strategy.

2 "Horizon scans" to identify future science-related issues

Defra has recently undertaken a major horizon-scanning programme, which demonstrates that it is taking an increasingly proactive approach. We trust that, following suitable peer review, the outcomes of the horizon scan will be reflected in Defra's forthcoming strategies relating to science and innovation.

For horizon-scanning exercises to be effective it is important that the key people participate. The key people may not always be those that traditionally engage with Defra, for example they may be international experts in a particular environmental field but not receive research funding from the Department. Defra should have a strategy in place to engage with these people. In terms of ensuring future participation in these types of exercises it is important that the use made of the information received is clearly communicated.

We welcome the fact that Defra commissioned a review of the way in which it had carried out the horizon scan and we trust that it will consider the 'lessons learnt' in future horizon scans. In the future we assume that Defra will utilise and inform the work of OST's new horizon-scanning centre. It is important that SAC remains involved with any future horizon scanning exercises that Defra will use.

3 Reviews/harnesses existing research to identify gaps and opportunities for future research

This is a major challenge for an organisation that both funds and uses the outputs of a wide range of research.

The identification of gaps and opportunities needs to occur at a number of levels –from project and programme through to broad policy areas such as climate change. It needs to incorporate the science funded by Defra (which will be aimed at addressing a particular policy issue) and that which is funded and undertaken by others. In the case of the latter the research may have been instigated for a different purpose but will be relevant to the policy challenges faced by Defra. The

Department can use networks such as the Environmental Funders Forum, and some of their specialist advisory committees such as Global Environment and Climate Change to access this information. Attendance by staff at key workshops and conferences will also be beneficial.

At the broad policy level, SAC members, with their individual expertise and networks can play an important role. At the level of Defra-funded projects and programmes, those producing and peer reviewing the final reports should be asked to identify gaps and opportunities for future research. There is an impression among some of those scientists that are familiar with Defra funding that the identification of gaps depends on the capabilities of individual project officers.

Concerns were expressed to us that Defra does not make best use of some of the global initiatives that it is engaged with to identify areas for future research. However one of the climate change experts that we consulted felt that a combination of horizon scanning and policy relevant research (e.g. fast track climate impacts assessment) meant that in the case of climate change, Defra was able to effectively identify gaps and opportunities.

4 Commissions and manages new research

It is important that Defra makes best use of both its agencies and the broader scientific community in delivering the research that it requires. It might be useful if Defra clarified which aspects of its science portfolio might most appropriately be undertaken by its agencies (eg long-term strategic data gathering) and those aspects that should be open to contract from the strongest science bidder (which might include agency groups). There would be mutual benefit in introducing incentives for Defra's agencies to work more closely with outside groups. It is important for Defra to ensure that it engages with the best science and not just with the institutions that it has traditionally worked with.

It has been suggested that Defra should be able to respond more quickly to changing priorities. Budgets are inevitably limited and Defra must be prepared to reassign its scientists onto new areas or release the money by reducing its staff.

There are concerns within Defra's agencies and the wider scientific community about the time in which it takes the Department to make decisions about commissioning new and follow-up work. However, we received positive comments about the efficient way in which Defra manages its research once it has been commissioned and the important role played by the Defra project officers.

5 Ensures the quality and relevance of department sponsored work

The effective use of independent peer review is a vital part of ensuring the quality of the work that Defra sponsors. We welcome the recent establishment, by the CSA, of the Science Quality and Priorities Team that is playing a key role in developing quality assessment within the department. The SAC also has a role in assessing quality and it should ensure that the outcome of quality reviews (e.g. of programmes) feed into decisions about future funding. In response to Question 3 we have highlighted the role of peer review in identifying gaps and opportunities for further research. Scientific publications in international journals can be used as a measure of quality in the case of Defra's agencies.

While it is important to include wider stakeholder groups in establishing priorities (and in many cases the terms of reference for research), this should not compromise the scientific peer review, which should involve the leading experts in the field, including international experts where appropriate.

With respect to relevance, the OST review will need to examine the extent to which the work sponsored by the department matches the priorities set out in Defra's various science strategies.

An important part of ensuring quality and relevance is making certain that the correct terms of reference for the research are established at the outset. This is particularly important where the outcomes are likely to feed directly into policy decisions. The Royal Society was involved in the quality assurance process for a review of a report on health and environmental effects of waste management options that Defra had commissioned. We felt that the failure to frame the study in the context of a life cycle analysis prevented a complete comparison of the waste management options and reduced the value of the report to policy makers (Royal Society, 2003). Some form of expert review of the original terms of reference might have avoided this situation.

6 Uses research and scientific advice in formulating policy

We believe that this is an area where improvement is required and we welcome Defra's new evidence-based policy making project that was initiated to provide guidance on this issue. One of the situations that has given the Royal Society, the House of Lords and others cause for concern in this context is the low level of scientific representation on Defra's Committee on Radioactive Waste Management (CoRWM). It is felt that Defra has failed to establish a committee where scientists and social scientists can work effectively together to provide the best policy advice. We welcome the fact that the CSA has agreed to examine the provision of scientific advice to CoRWM.

In addition, the review by Godfray *et al* (2004) of the Randomised Badger Culling Trial and Associated Epidemiological Research also raised concerns about the link between science and policy formulation by Defra and the scientific input from its Independent Steering Group. The review recommended that:

- processes be put in place to ensure that in future there is better communication between Defra policy units and groups responsible for managing policy-relevant science projects
 - a senior figure with a scientific background takes ownership of large science-based projects
- We support these generic recommendations and suggest that OST examines whether they have been implemented.

Press releases are an important way of communicating policy to a wide audience and it is therefore important that there is scientific involvement in the production of press releases. For example in response to our follow-up to our report on infectious diseases in livestock (Royal Society, 2004) DEFRA issued a press release that took a very cautious attitude to vaccination. This cautious view was not supported by the CSA.

The OST review should examine the extent to which Defra accesses the best external scientific advice (rather than its traditional community) to inform policy. Two other issues of concern were raised with us. First, a perception that Defra fails to engage with the research community in its

preparations for the meetings relating to international conventions such as the Convention on Biological Diversity. Second, doubt about whether Defra is using the expertise of lay or NGO observers to identify the effects of long-term low-level chronic exposure to dispersed emissions of pollutants.

7 Publishes results and debates its findings and implications openly

Generally Defra is an open department. Its Science and Research Projects database lists the work it is funding and in many cases contains links to reports or summaries of the research. The scientific work of the five Defra science agencies is debated in the scientific literature. Scientific conferences, wider stakeholder meetings and written consultations are valuable methods of debate and the OST review should consider how effectively Defra utilises these options.

8 Shares, transfers and manages knowledge

Defra facilitates the sharing, transfer and management of knowledge through its open publication policy. At a cross departmental level, we note that Defra has taken the lead on cross-departmental initiatives such as the new nanotechnology Research Co-ordination group.

9 Has implemented Guidelines 2000 and the Code of Practice for Scientific Advisory Committees

The 2000 Guidelines set out the key principles that should underpin the use of scientific advice in policy making and address many of the issues outlined in questions 1-8 above. Defra has introduced a number of mechanisms such as the SAC and the initiatives on peer review and evidence-based policy making that will help it to implement the guidelines. However there are some situations where it is not clear that the Guidelines are being implemented. For example, one section of the Guidelines is aimed at ensuring that the right questions are asked at the outset of the project by consulting the relevant experts. As described in our response to question 5, we do not think that this had been done adequately for the review of health and environmental effects of waste management options. More recently, we were very disappointed by the fact that Defra failed to consult with the Royal Society, key leading Fellows or relevant Learned Societies in putting together the programme and list of speakers for the climate change conference that it organised in Exeter in February. Another section of the Guidelines outlines the need to assemble the correct balance of disciplines to address a problem. As we explain in our response to question 6, we do not think this has been achieved in the case CoRWM.

10 Uses, maintains and develops scientific expertise (within the department itself and in the scientific community - capacity and capability building)

We recognise the potentially conflicting demands (given limited resources) of ensuring the continued capacity in a particular science areas, while having the flexibility to allocate funding to tackle urgent problems.

Defra has been successful in helping to build capacity in the environmental sciences and has created centres of excellence in universities and agencies such as the Met Office. However in

some areas Defra tends to mainly utilise well-trusted long-established relationships with certain research centres and research groups. A broader engagement of the wider research community would be beneficial in terms of increasing the number and breadth of people engaged in policy-relevant research.

Reciprocal exchanges between scientists and policy makers (including those without a scientific background) can play an important role in developing expertise within both the department and the wider community. Although not a reciprocal arrangement, one of our research fellows spent time in Defra's Europe Environment Division which was beneficial to both the Department and the research fellow. Defra-sponsored postdoctoral fellowships could also play a role in building capacity in key areas.

References

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