Science into policy
Taking part in the process
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Back cover: Just a few of the people who have helped turn NERC-funded science into policy.
From top left clockwise: Carol Turley, Plymouth Marine Laboratory; Dan O’Toole, Living With Environment Change; Daniela Schmidt, University of Bristol; Bill Sutherland, University of Cambridge; Katrina More, Environment Agency Wales; Andrew Pullin, Bangor University; Gemma Cassells, University of Edinburgh; Faith Culshaw, NERC/LWEC; John Rea, Department for Environment, Food and Rural Affairs; Emily Stuckburgh, British Antarctic Survey; Jenny Wentworth, Parliamentary Office of Science and Technology; Anne Glover, European Commissioner; Jacky Wood, National Oceanography Centre; Gavin Kilify, University of Oxford; Rosie Stocks and Mike Billiet, both Centre for Ecology & Hydrology.

Cartoons ©Noel Ford
Foreword

Never have environmental issues been higher on the political agenda.

Growing awareness that our planet is finite, that the population is rising and that a large section of the world is undergoing rapid industrialisation, means that the sustainability of natural resources is now in everybody’s mind – in the laboratory, in the boardroom, in the popular imagination, and in the corridors of power.

This is a time of enormous opportunity for NERC, one of the few organisations with the world-class, relevant expertise to find solutions to these problems. But we can’t do it alone – we have to work in partnership, both across disciplines and with policy-makers and influencers. In the next few decades governments and international organisations will make far-reaching decisions on how to manage our planet’s resources. To make informed choices they will need the best evidence available.

This booklet is intended to help scientists not only provide this evidence to policy-makers, but also work with them to ensure it has maximum uptake and impact. Engaging policy-makers in science doesn’t just mean making research results available. It also means helping them understand the implications and working with them to decide how to respond, and what further research or other activity is needed.

The Living With Environmental Change (LWEC) partnership, launched in 2008, is one mechanism for this kind of engagement. It brings together the UK’s leading public-sector research funders with users from the worlds of policy, business and wider society to design and deliver innovative research that addresses the urgent challenges of environmental change. So far, more than 20 partners have invested over £800m in this ten-year commitment, representing an unprecedented degree of collaboration between Government Departments and Agencies, Devolved Administrations and Research Councils.

NERC has a long tradition of making an impact by communicating science to government. For example, we were heavily involved in the decision to delay rebuilding the Thames Barrier by about 40 years, saving the nation very substantial sums of money. NERC has also played an important role in influencing international climate change negotiations, and in ensuring the government is better prepared for natural hazards from space weather and volcanic ash to flooding, storms, wildfires and drought, through the Cabinet Office’s Natural Hazards Partnership.

Working with politicians and civil servants can be challenging for scientists, but it also offers big rewards – not least the satisfaction of seeing knowledge move from the lab, field and ocean to make a real difference in the wider world.

We hope this booklet will help a new generation of scientists to take part in the process of making UK environmental policy more effective, and by working better in partnership with policymakers and others to make informed choices they will need the best evidence available.

This booklet is intended to help scientists not only provide this evidence to policy-makers, but also work with them to ensure it has maximum uptake and impact. Engaging policy-makers in science doesn’t just mean making research results available. It also means helping them understand the implications and working with them to decide how to respond, and what further research or other activity is needed.

The purpose of this booklet

This booklet aims to help NERC staff and NERC-funded scientists to:

- recognise the relevance of their science to policy-makers and engage with science-to-policy activities from the outset;
- identify opportunities, routes and best practice to inform policy-making, including opportunities to feed into NERC’s corporate science-to-policy activities;
- communicate science in an appropriate and accessible way, to the right policy-makers, showing how it fits their needs.

We have used case studies to illustrate the different approaches described, and drawn out reasons for success, where appropriate, as learning points.

The first part of the booklet provides information on policy-making in general and communication with particular policy-making bodies, from the local to the international but with an inevitable focus on the UK level. The second part includes tips and summaries of tools, training opportunities and information sources.

What’s in it for me?

Although not all the science-to-policy activities described in this booklet will be appropriate to everyone, we hope you will find some inspiration. We identify where NERC acts corporately (eg in co-ordinating NERC responses to consultations and inquiries – if you are at a Research Centre or represent a major NERC investment, you could contribute to these) but also opportunities for individual scientists at universities to take part in the process.

If we – the Natural Environment Research Council (NERC) community – want our science to have maximum impact and be used to provide sustainable solutions to environmental challenges, we need to communicate it to those who can use it.

NERC’s understanding of the environment has significant potential to contribute to better government policy, to help the economy and improve people’s lives. Part of our mission is to use our science to benefit the UK, and we expect all NERC-funded researchers to participate in this process of knowledge exchange.

Most environmental science is relevant to policy either in the short-, long-, or very-long-term. It can inform policy in a simple and direct way, for example by prompting the development of a specific regulatory tool, or in a more complex way, by supporting broader, more high-level policy development.

The principal aim of science-to-policy activities should be to ensure that policy-making is underpinned by sound science, but added benefits might include job satisfaction, kudos and enhanced external awareness, added interest and variety, future funding and collaborative opportunities, and career development.

Please note that NERC’s remit does not include lobbying or political activities. Our aim should be to provide information to allow policy-makers to develop and properly assess policy options, not to push a particular line. It is also important to consider who you are representing, and to coordinate with colleagues where possible/appropriate, or where there is a NERC process in place.

Will I be supported?

Some people, especially university academics, may not feel that science-to-policy and other knowledge-exchange activities are properly recognised. However, the government’s increasing emphasis on knowledge exchange is gradually changing this culture. Indeed, the Department for Business, Innovation & Skills (BIS) is insisting that the new UK Research Excellence Framework, which will replace the Research Assessment Exercise, should duly reward influence on policymaking.

While maintaining its strong support for responsive research* and continuing to assess applications primarily for their scientific excellence, NERC also asks applicants to provide, as part of their grant applications, a ‘pathways to impact’ document, explaining how they will disseminate their results. Members of the AH/-- Peer Review College (mainly science ‘users’) – see pages 9 and 26 – help advise panels whether the activities proposed and funding requested in these plans are appropriate.

Foreword

June 2012

Duncan Wingham, Chief Executive NERC

Introduction

Introduction

University and Science Minister David Willetts, on the release of a series of reports on the impact of Research Council funding during a speech at Policy Exchange, 4 January 2012.

From the development of groundbreaking new treatments to studies that shape public policy and improve lives, the significant economic and societal impact of the UK research base is extremely impressive.*

*Responsive mode funding includes ‘blue-skies’ research – where scientists put forward their own research ideas. These can often produce unexpected results that come to new products or inform government policy.
The policy-making process

What do we mean by policy?

Policy is a plan of action or a measure developed in response to a perceived need, in order to achieve a particular outcome.

For example, regulatory agencies often provide guidance or establish official rules and procedures (regulations); organisations develop strategies to focus their activities; and governments introduce legislation to achieve a range of social, economic and environmental goals.

Evidence-based policy-making

Government departments increasingly stress the need for evidence-based policy (see for example: http://archive.defra.gov.uk/corporate/policy-evidence/), and it’s clear that sound policy-making relies upon the government receiving a flow of reliable information from all relevant sectors, public and private.

At the same time, policy-makers and scientists need to recognise that policy may have to be decided in the absence of complete information. Scientists may need to qualify the advice they give, but be ready to form opinions on the possible options.

Policy-making is an ongoing process. Although the details vary, it commonly involves an iterative cycle. Since scientific findings can contribute to the evaluation as well as the initial development and implementation of policy, it is appropriate for scientists to be involved not only early on, but also in reviewing policy and proposing amendments to improve it.

The policy-makers and how they work

For the purposes of this booklet and depending on the context, policy-makers include:

- ministers and other parliamentarians, and parliamentary committees
- civil servants in government departments, devolved administrations and agencies
- members of regional assemblies and local authorities
- scientific and political advisers and advisory bodies.

Although policy-makers are advised to refer to the government guidelines on scientific analysis in policy-making (see left), political realities and serendipity also often play significant roles.

Not many policy-makers have a scientific background; some may not appreciate the relevance of science to their work, and most are very short of time. They often prefer to obtain scientific information from secondary sources which digest and simplify complex analyses. They are more likely to pick up your message from a newspaper report (or even Wikipedia) than from a scientific paper.

You will probably have most opportunity to interact with civil servants or advisers involved in running research programmes and/or developing policy. You might also interact with government science advisors, including Departmental Chief Scientific Advisors. Occasionally NERC interacts directly with ministers.

But there are other effective ways of communicating your message and ensuring that once your science is relevant, the right people get to hear about it. The approach you take will depend upon the circumstances.

Policy-makers are increasingly acknowledging the importance of ensuring that policy is understood and fully accepted by the public. Scientists should therefore see communicating with the public as an important aspect of translating science into policy. As shown in the next section and in the section on ‘Working with and through other stakeholders’, there are also many stakeholder organisations with which scientists can work to communicate with policy-makers. Often, industry, policymakers and scientists working together will bring about necessary policy changes.

The legislative process for a UK Government Bill

The flow-chart opposite shows the legislative process for a UK Government Bill.

It’s easier to influence legislation at the Whitehall stage, i.e. as green and white papers in the relevant government departments, before it reaches Westminster (Parliament). This is why interacting with government, both through formal mechanisms such as consultation responses and high-level meetings, and informal relationships, can be so effective.

UK Legislation – procedure for a UK Government Bill

Government Bills are only one type of UK legislation. Useful fact sheets on Bills are available at: www.parliament.uk/parliamentary-bills-guidance/case-studies/uk-bills-overview-and-viewpoints/
Communicating with government

Why communicate with national governments?

The uptake of NERC’s research outputs into policy-making depends to a large extent on its relevance to the interests of governments. That’s obviously not to say that all the research we fund should be geared to those interests.

It is important for NERC to:

- be aware of and contribute to the strategies and policies of relevant government departments, and vice versa;
- discuss opportunities for collaboration on research projects and joint training, and alert departments to the scope for commissioning research from NERC’s research centres;
- interact with devolved administrations, which also deal with environmental and other policy areas, as well as Whitehall departments such as the Department for Environment, Food and Rural Affairs (Defra) and the Department of Energy and Climate Change (DECC);
- ensure that governments have easy access to our research outputs.

Which government departments and agencies are particularly relevant?

NERC has a special relationship with our parent department – the Department for Business, Innovation & Skills (BIS). BIS is responsible for developing, funding and managing the performance of the UK’s science and research base. It is headed by the Secretary of State for Business, Innovation & Skills, assisted by, among others, the Minister of State for Universities and Science (who has a seat in Cabinet along with the BIS Secretary of State) and the Science and Research Group. We interact particularly with the Science and Research Group, holding update meetings and providing information and briefings. The Science and Research Group sends an Observer to NERC Council meetings.

Within BIS, the Director General, Knowledge and Innovation is responsible for advising on the resources required by the research councils and is a member of the BIS Management Board. There is also a separate Government Office for Science in BIS, headed by the government’s Chief Scientific Advisor (GCSA).

Other government departments generally cover distinct policy areas. These are given on their websites and in their science and innovation strategies. However, some science areas may interest several government departments and agencies.

For example, research on biofuels from energy crops is relevant to Defra, DECC, BIS, the departments for Transport (DfT) and International Development (DfID), environmental agencies and local and devolved bodies.

One main department or agency should be responsible for policy-making in the area relevant to your science, but it may be worth establishing contacts with as many relevant stakeholders as possible.

The devolved administrations

The European Union strongly influences environmental policy in the UK, but the responsibility for it is Northern Ireland, Scotland and Wales lies with the devolved administrations. This is true also for transport, agriculture, and regional economic development.


In the devolved administrations the science-to-policy process is often more straightforward, mainly because smaller numbers of people (government departments/communities) are involved, so it is easier to identify the right person to talk to. Lines of communication are more obvious and relationships easier to establish.

Ways of communicating with government

We can communicate our science to government through various routes, both formal and informal. The tables on pages 11-12 provide details.

**CASE STUDY**

**Saving the Wandering Albatross: scientists, policymakers and fishermen working together to find a solution**

British Antarctic Survey (BAS) scientists have identified breeding pairs of wandering albatross at South Georgia every year since 1972. Over this time the population has halved.

BAS data showed that the problem lay not with a lack of breeding success but with deaths as birds scavenge behind long line fishing vessels and are caught by baited hooks. Satellite tracking showed that male albatrosses in particular were foraging within the South Georgia Patagonian toothfish fishery during the chick-rearing period.

The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), which regulates fishing in the region, decided the birds needed greater protection. BAS scientists worked with the fisheries industry – makers and fishermen working together – to find a solution.

The results have been a huge success; accidental albatross deaths have halved.

High level meetings – regular (usually annual) and ad hoc meetings between NERC and relevant government departments.

- NERC Chief Executive and/or directors and knowledge exchange staff, government Chief Scientific Advisors and evidence teams.
- To find out about government policy priorities and research requirements;
- To inform government about NERC science, processes, contacts and capabilities;
- To identify areas and mechanisms for potential collaboration;
- To update each other on respective strategies, encouraging reciprocal engagement in their development;
- To meet new appointees – eg Chief Scientific Advisors;
- To facilitate funding decisions.

Consortium agreements and memoranda of understanding – written formal agreements (but not contractual) between organisations to work together, often focussed on specific areas of science.

- Universities, NERC or its individual research organisations.
- To help ensure regular and formal exchange about strategies and priorities;
- To facilitate international collaboration in specific research areas.

Science briefing/seminars in government departments.

- Senior NERC scientists and civil servants, occasionally ministers.
- To provide relevant up-to-date information on a topic agreed between NERC and the government department;
- To inform policy-making and provide evidence for international negotiations.

Consortium agreements and memoranda of understanding – written informal agreements between organisations to work together, often focussed on specific areas of science.

- Aims
- Your participation

**Formal dialogue**

Route and description

High level meetings – regular (usually annual) and ad hoc meetings between NERC and relevant government departments.

What’s involved

- NERC Chief Executive and/or directors and knowledge exchange staff, government Chief Scientific Advisors and evidence teams.

Aims

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- To identify areas and mechanisms for potential collaboration;
- To update each other on respective strategies, encouraging reciprocal engagement in their development;
- To meet new appointees – eg Chief Scientific Advisors;
- To facilitate funding decisions.

Your participation

- Respond to briefing requests. (Before meetings take place, NERC organisers and research centre contacts, Swindon Office managers and science themes leaders for agenda items and briefing. Although only high level strategic issues tend to make it onto the agenda, we can sometimes pursue other items through working-level meetings. We provide feedback to the contributors.)

**Advice on managing seal populations**

NERC has only one statutory duty in the context of providing advice to government: namely, to provide advice on the scientific aspects of the management of seal populations under the Conservation of Seals Act 1970. Every year the Seas Mammal Research Unit – a NERC research centre – submits advice, which is approved by the Special Committee on Seals. The data have been used to identify and define ‘Special Areas of Conservation for seals under the EU Habitats Directive’.
Informal interactions, secondments and exchanges

Route and description

Who’s involved

Policymakers and scientists, at all levels.

Aims

• To help policymakers obtain information quickly from scientists they know and trust;
• To help ongoing two-way interactions at an informal level – this is arguably the most effective science-to-policy route and enhances all other mechanisms.

Your participation

• Scientists often have to be proactive here; policymakers are not so short of time. Building relationships takes commitment and time – benefits are unlikely to appear immediately.

Working-level meetings.

NERC officials; anomaly contacts in government. Also researchers on collaborative or commissioned research projects involving government departments.

• To feed back about the latest government developments and priorities;
• To help to determine agendas for high-level meetings and to ensure that agreed actions are followed up;
• To build understanding and trust.

• If you’re a researcher wanting to inform a government department of your work, it is crucial to identify those few civil servants responsible for the relevant policy area – this is usually much more effective than going straight to the top. Officials five or six grades from the top of a department often provide the first draft of analysis and advice to the relevant policy. Inform them, and you can inform them at higher levels.

Secondees and exchanges – up NERC policy placement scheme and Royal Society pairing scheme for MPs, Civil Servants and Scientists.

Scientists and policymakers.

• To improve science-to-policy links and support evidence-based policy-making;
• To improve understanding and provide training on both sides.

• Apply either for a workshadow (up to 1 month) or policy fellowship (up to 24 months) via the NERC policy placement scheme – see page 24 – or for an exchange, apply to the Royal Society scheme.

Events, workshops and exhibitions – including annual community events, end-of-programme events and annual exhibition events.

NERC staff and NERC-funded scientists; government officials and other users.

• To create opportunities for networking and developing contacts;
• To obtain policy-makers’ input to NERC strategy development and implementation;
• To highlight policy-relevant outputs from NERC science.

• Attend these events where your science is being discussed and take opportunities to network with relevant users. Encourage relevant policy-makers to attend and arrange to meet them.
• Ask in display posters of your/your group’s work in government departments. Display where people are likely to stop and look, for example a waiting area, and keep them current/ link them with other activities.

Capturing information on social and economic impact

Route and description

Who’s involved

Any scientist in the NERC community who has influenced policymaking or whose ongoing science is highly relevant to policymaking can give case studies to Science Impacts Office, which has to provide evidence of NERC’s economic impact to government. Case studies may also be used in meetings with government departments, ministers and in NERC publications to a wide audience.

Aims

• To build up a comprehensive, searchable database of evidence to inform meetings with BIS and other government departments (see Science Impacts Database, page 22);
• To promote the relevance of NERC science to society;
• To raise NERC’s profile and that of its science/scientists;
• To fulﬁl a requirement for government spending reviews.

Your participation

• Give comprehensive information to the (cross-Serv) Research Outcomes System (ROS) on how your science has provided advice to government and/or is relevant to environmental policymaking;
• Provide information directly to the knowledge exchange team in Swindon Office, especially information which isn’t captured through ROS – e.g. that which arises from a collection of projects, or from externally commissioned research.

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Government involvement with NERC’s decision-making bodies

Route and description

Who’s involved

Government representation on NERC Council, Science and Innovation Strategy Board (SISB), Research Centre Boards.

Aims

• To communicate policy needs and science information;
• To raise awareness, encourage joined-up thinking and avoid duplication;
• To bring your science and NERC’s work into government departments, ministers and the wider science and policy route and enhances all other mechanisms.

Your participation

• Alert your government contacts to those opportunities, especially those which any think would represent their user community well, are influential and have a “big picture view”, and are supportive of translating NERC science into policy.

NERC Peer Review College.

Annual calls are made for full and affiliate members of the Peer Review College. Government staff may be full members if they have strong scientific expertise, but more likely to be involved in the college which is mainly made up of policymakers, business and third sector users.

• To obtain the “user view” on our knowledge exchange scheme applications;
• To engage science “lunatics” in judging pathways to impact plots in grants – these need to identify potential beneficiaries of the research (other policy-makers) and dissemination methods.

• Alert government contracts to those opportunities, also those in other public and third-sector organisations.

The report tested new ways of combining Countryside Survey data with other datasets to understand how ecosystem services respond to human pressures. It quantified surging ecosystem services data for the first time, including pollination, clean freshwater and soil carbon uptake, as well as modelling what “if” scenarios. This was used to make an important contribution to the UK National Ecosystem Assessment (2011), by developing scenarios showing how ecosystems could be affected over the next 90 years depending on what emphasis is given to environmental sustainability or economic growth.

The 2007 survey supports policy in areas including:

• Biodiversity: evidence on habitats use by policymakers advises trends in and threats to biodiversity, and the results of policy interventions aimed at meeting the UK’s biodiversity targets.
• Natural environment: better understanding of the dynamic and distributions of ecosystem services will help in developing ecosystem based approaches to policy.
• Water resource: information is helping policy-makers develop plans to implement the EU Water Framework Directive.

Urban development: the Land Cover Map provides a consistent database of built-up land, which helps policymakers understand the impact of urban development on ecosystems and minimise future environmental damage.

Climate change: the survey is the main source of information for the land cover/land use change component of the National Inventory of Greenhouse Gases.
The state of UK seas

NERC scientists contributed to the Defra report 'Charting Progress 2: The state of UK seas'. This report will help ensure the UK meets national and international environmental targets.

To date the UK has produced an initial assessment for the EU Marine Strategy Framework Directive, says Professor John Huthnance of the National Oceanography Centre (NOC). "The UK has also set itself the goal of ‘clean, healthy, safe, productive and biologically diverse oceans and seas’.


Scientists from NERC, Plymouth Marine Laboratory (PML), Scottish Association of Marine Science (SAMS), the Sea Mammal Research Unit (SMRU) and the British Association of Marine Science (BAMS), the Sea Mammal Research Laboratory (PML), Scottish Environment Protection Agency (SEPA), the Ministry of Agriculture, Fisheries and Food (MABF) and were provided to the Departmental Committee on Environment and Water (DCEW) for narrowing research objectives.

Release to the Environment. 

NERC scientists are members of numerous UK advisory non-departmental public bodies. Examples include the Advisory Committees on Hazardous Substances and on Pesticides, the Air-Quality Expert Group, and the UK Biodiversity Research Advisory Group.

Alan Jenkins, Science Director of CEH’s water programme, is chair of the UK Inter-Departmental Committee on Hydrology — as well as being Hydrological Advisor to the UK Government.

Professor Rosemary Hails uses of CEH is chair of the Natural Capital Initiative and a member of the Advisory Committee on Reaches to the Environment.

Foot and mouth disease

In response to a government request during the national emergency caused by the outbreak of foot and mouth disease in 2001, BGS offered its services and was called on to provide, often at extremely short notice, information critical to decisions about sites for burning and burying carcasses. These site-specific reports dealt with the potential risk to groundwater, and were provided to the Environment Agency, the Scottish Environment Protection Agency (SEPA), the Ministry of Agriculture, Fisheries and Food and the Army.
### Responding to consultations

<table>
<thead>
<tr>
<th>Route and description</th>
<th>Who’s involved</th>
<th>Area</th>
<th>Yearly participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responding to government consultations. The steps leading to a government Bill often involve consultation (see flow chart on page 15). Government departments and agencies sometimes produce policy proposals accompanied by legislative impact assessments examining different options.</td>
<td>Individuals (including academic, control, and NERC as a whole). Where an issue is directly relevant to NERC’s high-level strategy and objectives, or affects several of NERC’s components, Sweddon Offices aim to consult on a response using input from relevant contacts and/or other parts of NERC. On some cross-council issues, Research Councils UK submits a consolidated response using input from all the relevant research councils.</td>
<td>• If you are a NERC employee, or part of one of NERC’s major investments, provide input to a NERC corporate response; • If you are a university scientist with other allegiances than NERC, respond as an individual. When responding, state on whose behalf you are doing so; • Ask for feedback from the consultation organisation, although detailed replies are rare, study revised versions of documents for signs of change (through attribution may be unclear, especially if several consultations gave the same input).</td>
<td>NERC consultations. NERC centres/stakeholders etc. NERC/Sweddon Office promotes its consultations widely to its stakeholders, eg via the web. Other parts of NERC – eg science theme leaders in research centres may conduct consultations on individual science areas or plans etc.</td>
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Ways of communicating with national parliaments and assemblies

Most of the approaches outlined below could be taken by individual scientists but it would be wise to consult with colleagues to ensure coordination and/or consistent messages.

**Individual parliamentarians**

<table>
<thead>
<tr>
<th>Contact approach</th>
<th>Aims</th>
<th>Points to note</th>
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</thead>
<tbody>
<tr>
<td>Provide information by way of short letters or emails, telephone calls or brief meetings.</td>
<td>• To engage attention.</td>
<td>• Before contacting parliamentarians, ensure you find out about their roles and interests, eg from parliamentary websites or Oire’s Parliamentary Companion (see page 27).</td>
</tr>
<tr>
<td></td>
<td>• To share information, eg relevant to particular legislation or a select committee inquiry.</td>
<td>• Notify that changes happen all the time due to elections, by-elections, premières, reshuffles – make sure your information is up-to-date. Possibly use constituency addresses during parliamentary recesses.</td>
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<tr>
<td></td>
<td>• To keep written communications short, and make clear at the start that you are writing because of their interest/involvement.</td>
<td></td>
</tr>
</tbody>
</table>

Visit parliamentarians to events, e.g. regional events, and of programme events, publication launch or the opening of a building. | • To involve a parliamentarian, possibly as a speaker, at an event. | • It is polite to invite the local MP/MS if others are invited. |
| | | • Plan a reserve speaker in case of last-minute drop-out. |
| | | • In planning, think about timing and location; eg MPs are generally in London from Monday to Thursday; run-throughs in their constituencies on Fridays; try to get a room in Parliament if in London (possibly ask individual parliamentarians, select committees or POST to sponsor). |

Establish and maintain long-term relationships. | • To maintain mutually beneficial contact, eg parliamentarians may act as an agent for policy-change or increased funding – perhaps asking useful PUs in introducing supportive Bills or Early Day Motions. | • Be aware of different agendas. |
| | | • Helping with lower-priority issues may gain you goodwill and trust. |
| Participate in pairing schemes, eg Royal Society MP and civil servant-scientist pairing scheme. | • To allow scientists and parliamentarians to experience each other’s working environment. | |
| | For details see page 24. | |

**Parliamentary committees**

<table>
<thead>
<tr>
<th>Contact approach</th>
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<td>Respond to calls for evidence to committee inquiries.</td>
<td>• To communicate our science (in plain language, but in depth), so that it is included in the evidence base for policy making.</td>
<td>• Committees accept written evidence from individuals and organisations. If you have something to contribute to an inquiry, please consider whether you should make your contribution individually or through your organisation/institution.</td>
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<td>• To contribute to setting the scientific and policy agenda.</td>
<td>• Many inquiries are relevant to several NERC centres/investments and multiple research councils. In which case we should liaise and submit a joint NERC or RSLR memorandum. UK Parliament’s Science and Technology Committee often asks the seven Research Councils to submit a joint response through RSLR.</td>
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<td>• To introduce ourselves to individual parliamentarians;</td>
<td>• Electronic press releases are available from some committees, and committee websites usually provide information about meetings and other aspects of specific inquiries, as well as guidance on how to provide evidence.</td>
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<td>• To prompt visits to NERC sites, eg a base of the British Antarctic Survey, or research groups.</td>
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**How do UK parliament select committee inquiries work?**

UK Parliamentary select committee inquiries are all-party committees of parliamentarians (MPs or Peers) whose main activity is to conduct inquiries into issues of concern. The membership of the Committees reflects the party balance in the Commons, and for the session is chosen by the Speaker. The MPs nominated to a committee are members of that committee for the remainder of the session of Parliament. They generally decide their own programmes, and are supported by staff from the Committee Office, who include a clerk and one or two committee specialists with a relevant research background. External specialist advisers are sometimes called upon – often senior academics. When an inquiry is announced, the area of interest is defined, perhaps accompanied by a list of questions. Witnesses who submit written evidence may be asked to follow it up orally. Committees have the power to send for persons, papers and records, and to publish reports containing findings and recommendations for the government’s attention. The Government is obliged to respond, and there is often a debate in Parliament. Committees publish the Government response, sometimes with a commentary. NERC is often required to contribute to the Government response (where the committee’s recommendations fall within RCUK’s remit). The effectiveness of these recommendations is monitored by the House of Commons or House of Lords and their Select Committees, and by the National Audit Office (in relation to the use of public money). The effectiveness of these recommendations is monitored by the House of Commons or House of Lords and their Select Committees, and by the National Audit Office (in relation to the use of public money).

The National Hydrological Monitoring Programme (NHMP)

Water resource and flood management in the UK is very expensive and attracts a high political and public profile. The NHMP was established in 1988 to influence policy by providing impartial and authoritative guidance on extreme hydrological conditions. Its remit was later extended to include identifying and interpreting hydrological trends and documenting extreme events. CEH and BGS jointly operate the NHMP.

The programme made a major impact by engaging with policy-makers and by influencing numerous water management strategies. NHMP contributed to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.

NHMP’s work is overseen by a committee of stakeholders including government departments, UK environment agencies and the water industry. This ensures it provides information that is relevant to policy-makers and their users.

Input to the Pitt Review and applying recommendations

The frenzy of the 2007 summer floods surprised everyone and left vast tracts of England submerged. Thirty people died, and the floods cost the country £3.2bn. During the crisis, scientists from CEH, BGS and NERC’s Flood Risk from Extremes Events (FREE) programme provided essential information to BGS and NERC’s Flood Risk from Extremes Events. The FREE programme documented extreme events. CEH shared information about the floods with parliamentarians and other organisations.

**Parliamentary committees**

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<td>• To prompt visits to NERC sites, eg a base of the British Antarctic Survey, or research groups.</td>
<td>• Links can be maintained if you respond helpfully to information requests. Clerks welcome co-operation, and may help by providing feedback on written submissions.</td>
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</tbody>
</table>

Develop and maintain good links with committee clerks and committee specialists. | • To facilitate a good working relationship. | • For details see page 24. |
| | • To make it easier to obtain feedback on submissions to inquiries. | • Be aware of different agendas. |
| | • To obtain advance notice of inquiries, and possibly to influence the choice of subjects. | |

Offer to act as an (external) specialist adviser to a select committee. | • To provide a conduit for expertise from NERC scientists to parliamentarians; | • Links can be maintained if you respond helpfully to information requests. Clerks welcome co-operation, and may help by providing feedback on written submissions. |
| | • To possibly influence the terms of reference of individual inquiries. | • Be aware of different agendas. |
| | • To share information, eg relevant to particular legislation or a select committee inquiry. | • Links can be maintained if you respond helpfully to information requests. Clerks welcome co-operation, and may help by providing feedback on written submissions. |

**How do UK parliament select committee inquiries work?**

The NHMP published a comprehensive report: The summer 2007 floods in England and Wales – a hydrological appraisal. It stated that the floods were “‘a classic modern parallel for the June-August period’ and that summer 2007 was ‘a very singular episode, which did not stem from any clearly emerging pattern or long-term trend consistent with currently favoured climate change scenarios.’”

BGS and CEH scientists contributed to NERC submissions to: The Pitt Review – Learning from the 2007 floods, and to the House of Commons Environment, Food and Rural Affairs Committee inquiry into flooding, drawing attention to the NHMP report. The Pitt Review also identified a new hydrological modelling approach developed by CEH aiming at reducing the need for early flood warning across the country.

Implementing the recommendations in the report, CEH’s Flood Risk from Extremes Model is currently being supplied for use by the Royal National Forecasting Centre. It will:

- for the first time, give complete flood forecasting coverage across England & Wales, and maps of indicative flood risk;
- improve and extend flood warning at a national level to up to five days ahead. If increased lead times reduced the annual costs of river flooding by 5%, this would equate to a cost saving of around £40 million per annum;
- complement existing regional systems targeted at making more accurate forecasts for specific locations.
Policy-making at other levels

Local policy-making

Central government looks to its local and regional counterparts to deliver on national priorities. At the same time, those counterparts will have local priorities. Environmental policy-making at the local level may concern issues such as the urban environment, transport, waste management and land remediation. Local authorities sometimes consult on their plans, for example on their local development frameworks and regional spatial strategies, and several have invited parts of NERC to comment. Local authorities’ main purpose is to provide public services like education, health and transport. Other significant bodies in the context of local and regional policy-making are:

- The Department for Communities and Local Government is the UK government department for local government and there are corresponding departments in the Scottish Government, the Welsh Government and the Northern Ireland Executive.
- The Improvement and Development Agency for Local Government (ILG/ILGA) is owned by the LGA (see below) and works for local government, encouraging partnerships and the sharing of best practice.
- The Local Authorities Research & Intelligence Association (LARIA) was established in 1974 to promote the role and practice of research within local government and provide a supportive network for those conducting or commissioning research.

The Local Government Association (LGA) is a Westminster-based voluntary lobbying organisation representing local government. Local authorities do not have to join but nearly all those in England and Wales are members.

European and international dimensions to policy-making

Much environmental policy originates at the European and international level. In Europe, new legislation is generally proposed by the European Commission (EC), then scrutinised and decided upon by the Council of the European Union and the European Parliament. The structure of the European Union (EU) institutions, and the way the EU makes decisions, are described in a useful booklet available at: http://ec.europa.eu/policies/booklets/eu_glance/68/en.pdf

The UK and devolved parliaments have opportunities to scrutinise EU legislation as it is being developed by the European Commission. In the UK Parliament, this scrutiny is conducted particularly but not exclusively through various committees, primarily the European Scrutiny Committee but also the House of Commons’ European Committees, and the House of Lords European Union Select Committee. For further information see www.parliament.uk/factsheets (see L11, European Committees, and the House of Lords European Select Committee). UK views can also feed in via Members of the European Parliament (MEPs), and through the government’s representation on the Council of the European Union.

A note about parliamentary magazines

Some media organisations publish magazines aimed specifically at parliamentarians, eg Dod’s The House Magazine (weekly) and The Parliamentary Monitor (monthly) (see web link to Dod’s information services on page 27) and may offer scientists space – at a price – when they plan to cover a particular subject. It is generally more economical to use your centre’s/NERC’s press office, but the option might be worth considering in unusual circumstances.

Which UK parliamentary select committees are particularly relevant to NERC?

<table>
<thead>
<tr>
<th>Select Committee</th>
<th>Remit</th>
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<tbody>
<tr>
<td>House of Commons committees related to particular government departments: DECC; Defra; DfID; BIS; Defence; Communities and Local Government.</td>
<td>To examine the expenditure, administration and policy of their corresponding government departments and associated public bodies.</td>
</tr>
<tr>
<td>House of Commons Environmental Audit Committee.</td>
<td>To consider how far the policies and programmes of government departments and NDPBs contribute to environmental protection and sustainable development, and to audit their performance.</td>
</tr>
<tr>
<td>House of Lords Science and Technology Committee.</td>
<td>To consider science and technology.</td>
</tr>
<tr>
<td>House of Lords EU Sub-Committee B: Internal market, energy and transport.</td>
<td>To scrutinise EU documents and policy on energy markets, transport, internal market, research and innovation.</td>
</tr>
<tr>
<td>House of Lords European Union Sub-Committee D: Agriculture, Fisheries and Environment.</td>
<td>All aspects of the EU’s agricultural, fisheries and environmental policies including climate change.</td>
</tr>
<tr>
<td>House of Commons Science and Technology Committee.</td>
<td>To scrutinise the Government OFFs for Science (EN-SaF), a semi-autonomous organisation based within BIS. This committee can examine the activities of any government departments where they have implications for, or make use of, science, engineering, technology and research.</td>
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</tbody>
</table>

All-Party Groups in the UK Parliament

<table>
<thead>
<tr>
<th>Contact approach</th>
<th>Aims</th>
<th>Points to note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attend meetings of relevant All-Party Groups (APGs).</td>
<td>To network with other organisations and most MPs and Peers in a relatively informal setting</td>
<td>M Ps/Peers are usually in a small minority at meetings, and may not stay for the question session. Swinburn OFFs subscriptions allow one or two people to attend meetings of some APGs, and invitations are forwarded to relevant centre staff.</td>
</tr>
<tr>
<td>Offer to give a talk/presentation at an APG meeting.</td>
<td>To increase awareness of research among parliamentarians and other interested organisations</td>
<td>As above.</td>
</tr>
<tr>
<td>Establish a new APS.</td>
<td>To attract parliamentary interest in a NERC/Research Council concern.</td>
<td>The road and the available support/parliamentary sponsorship would have to be assessed carefully before deciding to do this. There are already a great many APSs.</td>
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Information offices for parliamentarians (MRS, POST, SPICE)

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<tr>
<th>Contact approach</th>
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<th>Points to note</th>
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</thead>
<tbody>
<tr>
<td>Collaborate with information offices to organise events for parliamentarians.</td>
<td>To ensure relevance of events to parliamentarians.</td>
<td>Collaboration can be mutually beneficial. POST has collaborated with NERC on a number of topics. It may be able to help with arranging a venue and publicity to parliamentarians.</td>
</tr>
<tr>
<td>Participate in the policy seminars for PhD students scheme.</td>
<td>To enable NERC-funded PhD students to work in a parliamentary briefing capacity. To apply NERC-funded expertise/training.</td>
<td>Seminars are for 3 months. For further information see page 24.</td>
</tr>
<tr>
<td>Register as a potential committee adviser or external research consultant with SPICE.</td>
<td>To contribute your expertise to the policy-making process.</td>
<td>See the SPICE website.</td>
</tr>
<tr>
<td>Offer to contribute to and review POST/Treasury.</td>
<td>To contribute your expertise to the policy-making process.</td>
<td>POST asks relevant experts to externally review its briefing notes.</td>
</tr>
</tbody>
</table>

Advising the UN on mercury policy

Originally set up to bring together UK technical experts on mercury, the NERC-funded International Knowledge to Inform Mercury Policy (IKIMP) network, based at the University of Oxford, was asked by Defra to advise on how UK mercury stocks could be stored safely. This framework IKIMP developed for Defra was then by a representative of the United Nations Environment Programme, who asked IKIMP to present it to the UN International Negotiating Committee (INC) that aims to introduce a global ban on the use of mercury.

The use of highly-toxic mercury in industry and consumer products is being phased out in favour of less toxic and more environmentally-friendly materials. The IKIMP framework provides guidance on how national governments can safely manage the resulting ‘redundant’ mercury stocks and identify the options available for long-term storage.

The framework was written following a meeting between academics, policy makers, and representatives from industry and the not-for-profit sector. It was well received by policy makers, and IKIMP were asked to present it to the European Commission to help establish the European view on mercury ahead of the UN discussions. They then presented it in the first meeting of the INC itself.

According to network coordinator Dr Murray Gardner, “It has been a great opportunity for disseminating information, working with international policy makers to provide the information they need.”

The inventory has been completed and the review is recognised as the most complete mercury budget for the oil and gas industry of a nation. The report is being used by Defra in current negotiations, and has led to approaches from industry.
Unravelling the impact of ozone pollution

The ICP Vegetation programme, managed by CEH, coordinates research on the harmful effects of ozone pollution on European vegetation. New critical ozone levels, specific to vegetation and growing conditions, have been included in transboundary air pollution policies.

Ozone pollution in the air can harm large areas of European vegetation, causing leaf damage and reduced root growth, lowering yields and tolerance of drought.

The ICP Vegetation programme investigates the impacts of air pollutants on vegetation. It forms part of the United Nations Economic Commission for Europe Convention (UNECE) on Long-Range Transboundary Air Pollution (LRTAPP). Coordinated by CEH, the programme involves scientists in 35 countries.

Knowing the ozone concentration in the air provides only a partial picture of its potential for damage. The gas’s impact varies according to the vegetation type – some species take in more ozone through the pores in their leaves than thighs – and to climate and soil conditions.

Maps that incorporate these factors are better at predicting ozone damage to vegetation than those based on ozone concentration alone. Ultimately, the data suggest that ozone levels in the air are harming vegetation across most of Europe.

Following two international workshops, chaired by Dr Steve Mills of CEH, new critical thresholds for ozone were set. These have been incorporated into EU air pollution policy.

### How to influence European and international policymaking

<table>
<thead>
<tr>
<th>Route</th>
<th>Policy advice and support via UK government involvement in EU and international policy fora.</th>
<th>Your participation</th>
<th>Examples and points to note</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Briefings for high-level and wide-ranging interactions between NERC and government departments (see page 17).</td>
<td>NERC has strong links with the FCO and DEFRA. BAS supports the FCO’s mission to sustain the UK as an active and influential regional presence and a leadership role in Antarctic affairs, including administrative responsibilities for the British Antarctic Territory. BGS monitors volcanic activity in Montserrat, and the Scottish Association for Marine Science (SAMS) has a long-term commitment to Arctic science.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Involvement of Research Centres in research supporting international policy, eg via FCO, DTI.</td>
<td>NERC collaborates with DEFRA on the Ecosystem Services for Poverty Alleviation programme, ESFA, a research programme designed to feed ways of managing ecosystems sustainably in the developing world; BGS and CEF have long histories of work in developing countries; BGS acts as an adviser to the UK government and the EC on carbon capture and storage;</td>
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<td></td>
<td></td>
<td>Many NERC-funded scientists participated in the latest and previous scientific assessments conducted by the Intergovernmental Panel on Climate Change, several key UK authors are given financial support for their IPCC roles by the UK government, mainly through Defra;</td>
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<td></td>
<td></td>
<td>NERC anticipates an equally significant role in the new Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).</td>
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</table>

### Consultations on EU strategies and legislation

- run by UK Government Departments and the European Commission.

Keep an eye on consultations on the websites of relevant government departments and EU Directorates-Generals. Respond either as an individual or through a NERC response. The greatest scope for informing EU policy is early on. However, contact with members of the UK Parliament’s European Scrutiny Committee (and other similar committees) at a later stage could still be effective.

We can also correspond with relevant committees in the European Parliament, and directly with relevant contacts in the Commission. A directory of Commission officials is available at: http://ec.europa.eu/traffic/plot/gov_page/display_index?lng=en

### Membership of European and International scientific advisory networks, and provision of scientific information/studies

Look out for invitations to apply for membership of or to conduct/contribute to studies;
- Register in the EU Database of External Experts (see link on right);
- Register on the SHARPSE network – see link on page 26;
- Alert editors of Science for Environment policy (see page 26) to your publications, where relevant to EU policy.

The European Parliament’s Committee on the Environment, Public Health and Food Safety Committee commissions studies relevant to the legislation it is considering; see www.europarl.europa.eu/committees/en/epidcom; Register in the EU Database of External Experts (http://ec.europa.eu/ep/mscripts/public رسالة/CommitteeCommittee_api.aspx?comid=1&lan=fr);

Science Europe aims to set science agenda for Europe. It is currently considering how it will interact with committees and boards such as the European Polar Board and the Marine Board.

Examples of NERC involvement

- United Nations Educational, Scientific and Cultural Organisation Intergovernmental Ozone Commission (ICOC) is UK lead via the National Oceanography Centre;

Commission on the Conservation of Antarctic Marine Living Resources – BAS provides significant scientific input via long-term monitoring and survey.

### Research activities and coordination

- scientific research with direct relevance to EC and international policy, eg Horizon 2020, research co-funded with GOV departments;

NERC programmes with international partners and international research programmes/project offices, and coordination of policy-relevant research through funding fora.

NERC scientists participated in a range of policy-relevant EC projects. European Research Area Network (ERA-NET) often have particular policy relevance, eg SPLASH (www.splash-erna.net), the ERA-Net of the EC Water Initiative – NERC participates through the Centre for Ecology and Hydrology; SEPEK (Scientific Knowledge for Environmental Promotion) ERA-Net aims to facilitate the improvement of science into policy processes, and to support evidence-led regulation (http://cordis.europa.eu/coordination/era-net.html); the Environment Agency participates for the UK;

NERC and DEFRA co-fund the ESFA programme (see page 18);

Research funded within the Changing Water Cycle Programme, some of which has been jointly funded in partnership with India’s Ministry of Earth Sciences, directly relates to the UK Government’s strategic goals for adaptation to, and mitigation of, climate change.

Biodiversity and Ecosystem Processes in Human Modified Tropical Forests includes work in partnership with Brazil. The research will inform policy decisions of governments, forest managers and the agro-industry.

NERC supports UK research institutions to host a number of international project offices (IPOs). These include the Global Carbon Project based at the Tyndall Centre for Climate Change Research, and the World Climate Research Programme’s Climate Variability and Predictability (CLIVAR) IPO, managed and co-funded by NERC and based at NOC. One of CLIVAR’s activities was the largest ever climate model experiment and analysis, which influenced the IPCC’s Fourth Assessment report;

NERC is a member of the UK Collaborative for Development Research (UKCfD), a forum for funders of development science, including research councils, DFID and the Wellcome Trust;

The Centre for Ecology and Hydrology is in the Partnership for European Environmental Research (PERER) which brings together public research centres in Europe to encourage interdisciplinary environmental research in support of innovation and informed policy-making for sustainable development.

### How to influence European and international policymaking cont.

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<td>As a Principal Investigator on an EC project you are likely to receive invitations to contribute to EC policy.</td>
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<td></td>
<td>Staff involved in running international science programmes and project offices can play a significant role in bringing relevant science to the attention of policy-makers at this level.</td>
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</tr>
<tr>
<td></td>
<td>Participating in research coordination fora can help to increase the policy-relevance of research outputs.</td>
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NERC’s International Team based in Swindon Office can help with advice on participation in EU Framework Programmes and other international research initiatives. Contact: international@nerc.ac.uk

The UK Research Office (UKRO) in Brussels has good links with the European Commission and may be able to help with queries regarding research and policy. Register with UKRO for policy updates: www.ukro.ac.uk/

### A note about global agreements

Much European environmental legislation takes account of the need to minimise transboundary environmental effects, for example due to long range transport of air pollutants. Science underpins global agreements such as the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the Montreal Protocol to eliminate the production and consumption of ozone-depleting chemicals – a direct policy impact following the discovery of the ozone hole by scientists from the British Antarctic Survey (BAS) in 1985.

### EU Directives and Regulations

The main forms of EU law are directives and regulations.

Directives establish a common aim for all member states, each state decides for itself how to transpose the directive into national law, and has one to two years to implement it. Regulations are directly applicable throughout the EU as soon as they come into force without further action by the member state.
Working with and through other stakeholders

The NERC community can work with and through a range of other stakeholders and initiatives to ensure policymakers hear about their science. For example:

**Learned societies**

Many NERC scientists are members of learned societies such as the British Ecological Society, the Geological Society of London, the Royal Geographical Society and the Royal Society. These societies often have close links with policy-makers, provide consultation responses and organise events bringing scientists and policymakers together.

**Non-governmental organisations (NGOs)**

Interaction with some NGOs can be an appropriate science-to-policy approach, as long as NERC’s independence is not compromised and we don’t get involved in NGO campaigns. NGOs often have a recognised lobbying function, high visibility, wide membership, and may have more direct access to policymakers than an NPRB such as NERC. They can also help disseminate information to the public and, through their influence, policymakers. They are often very attuned to public opinion, and may express opinions to policymakers before NERC would feel it had sufficient scientific evidence. Where evidence suggests that a policy would not be acceptable to the public, public opinion is likely to hold sway.

Some NGOs have a research capability and can be useful partners in research, for example the Royal Society for the Protection of Birds (RSPB) co-funds some NERC CASE students. The RSPB has ‘Independent Research Organisation’ status and can therefore apply for NERC funding, as can, for example, the British Trust for Ornithology and the Wildfowl and Wetlands Trust.

NERC invites relevant NGOs to participate in events including, for example, as speakers in debates. Members of NGOs may be on NERC committees, including NERC Council, though in this case they are there in their own right rather than representing a particular organisation.

**Science Media Centre**

This independent organisation works ‘to promote the voices, stories and views of the scientific community to the national news media where science is in the headlines’ and can therefore help communicate research findings and address controversy in media coverage. See www.sciencemediacentre.org.uk/pages/.

ScienceWise - Expert Resource Centre for public dialogue in science and innovation

This BIS-funded initiative aims to help policymakers commission and use public dialogue to inform decisions in emerging areas of science and technology. It provides a comprehensive online information resource and a range of support services aimed at policymakers and all stakeholders involved in science and technology policy-making, including the public. It offers workshops and newsletters, and provides co-funding to Government departments and agencies to develop public dialogue activities. See www.sciencewise-erc.org.uk/cms/about/

**Think tanks**

The studies, reports and opinions of think tanks, both independent and those connected with political parties, often prompt policy development or change. Their publications can help to highlight areas where policy could benefit from more research, and where existing evidence already suggests the need for new policy. For example, the Institute for Public Policy Research published a working paper on ‘The New Front Line: Security in a changing world in early 2008 which analyses the implications for policy of changes in the ‘security landscape’, including climate change, and this is very relevant to LWEC and ESPA (www.ippr.org/security/publicationsandreports.asp?id=388886&tid=2656). Other relevant think tanks include the Centre for Policy Studies and the New Economics Foundation. There could be scope for more interaction with these bodies.

Top ten tips for communicating science to policymakers

1. Make sure you’re speaking to the right person/people

Ask your homework first! If necessary, ‘use people to find people’. The subject must be compelling for the audience, and your message tailored accordingly.

2. Always emphasise what you can do for policymakers as well as asking what they can do for you – explain how your input will take their agenda forward and support their priorities, and vice versa.

3. Always prepare for face-to-face communication with policymakers by having a bullet-point briefing (with headings such as ‘issue’, ‘considerations’, ‘options and costs’) ready, and some high-impact succinct material to leave with them. All communications must be brief and digestible. Any views should be honest and balanced – this will help build trust. Remember that you are seen as a reliable and independent source of expertise in the area. Always acknowledge and identify uncertainties. Check with colleagues in the NERC research community that the messages you are presenting are consistent with theirs.

4. Non-governmental organisations (NGOs) are the best way of getting science into policy. It is easier to present four or five options and make points about the pros and cons of each, rather than to say ‘you must do this’. This gives the minister scope to make a decision vis-à-vis the policy trends and political acceptability. Options that do not map into present policy trends will almost certainly be ignored. However, be prepared to frame an answer in terms of the possible options even when information is incomplete.

5. Follow up face-to-face contact with a short letter of thanks, reinforcing the main points from the meeting and creating the opportunity for future contact.

6. Keep contacts information up to date – new policy-makers emerge and people move all the time. See page 26.

7. Be proactive about building relationships - policy-makers never have much time so are likely just to call the scientist they know.

8. Long-term relationships with frequent interaction and feedback are critical to building mutual understanding and trust. This works well in devolved, local and regional government, it is harder to achieve in Whitehall and Westminster, although it is important here too.

9. Remember the media’s influence on policymakers – MPs read newspapers and listen to the radio.

10. Influencing policy is also about influencing pressure groups, think tanks, the public etc. Not just government policymakers. A many-pronged approach can be particularly effective – but remember, NERC’s role is to provide information, not to get involved in lobbying (see page 20).
**CASE STUDY**

**Tools for science-to-policy work**

**Events and workshops**
These can be used to disseminate research outputs and gather stakeholders’ views. It is often worth dedicating a session at end-of-programme events to the needs of policy-makers, and inviting policy-makers specifically for that session.

**External media**
The press offices of NERC and its centres offer opportunities to highlight NERC science in the national and local press. This can be one of the most effective ways of reaching policy-makers.

**Facilitators – translators – science communicators**
NERC sponsors science-to-policy/facilitator roles in some of our research programme management teams, for example the Ocean Acidification programme. Tasks can include: encouraging feedback to users, tailoring research outputs to meet user needs, and assisting project teams in seeking new funding opportunities.

NERC’s Urban Regeneration and the Environment (URGENT) programme appointed two facilitators to cover two different regions. One of these facilitators was employed after URGENT finished, funded by the Environment Agency, Birmingham City Council, NERC and the University of Birmingham.

The importance of the science-policy ‘interpreter role’ was also highlighted in the report: Using research to inform policy: the role of interpretation. See www.nerc.ac.uk/documents/2007-03-interpret-study.pdf

**NERC’s Science Impacts Database (SID)**
NERC collates examples of the social, policy and economic impact of its science investments into a database available on its website. This evidence base of case-study impacts is used for reporting and dissemination purposes, and to highlight the relevance of NERC science to the ‘user’ community. See http://sid.nerc.ac.uk/

**Research Outcomes System (ROS) returns**
These returns provide material for numerous NERC publications, briefings and case studies, many of them aimed at policy-makers. We include specific questions on ‘science to policy’ to measure how many NERC scientists judge their science to be relevant to policy and in which areas and how many of these provide advice to government and in what form.

Both ROS returns and SID help NERC to evaluate the economic impact of the science-to-policy part of its knowledge-exchange work, an important BS reporting requirement.

**Good practice guidelines**
NERC has worked with the Living With Environmental Change partnership to develop some good practice guidelines in knowledge exchange, which are now available as an online toolkit www.lwec.org.uk/ke-guidelines

These are mainly aimed at those with responsibility for knowledge exchange at the programme or larger activity level, but are a useful resource for anyone who wants to find out different ways of engaging policymakers and other users in research and have a sustained two way dialogue which should lead to greater uptake and impact. They are also linked to, and peppered with, examples of what has worked elsewhere.

Publications
NERC’s Communications Team and staff in centres produce many publications which can be sent to stakeholders, including the quarterly magazine Planet Earth, the brochure Knowledge Exchange: Sustainable solutions from environmental science, and a range of briefing notes. See www.nerc.ac.uk/publications/

End-of-programme publications should have a section on (potential) policy applications.

Increasingly, publications are available on the NERC website, including a regularly-updated on-line version of Planet Earth It can be helpful to target publications at specific policymakers – for instance the URGENT programme’s digest for local government (see page 26)

**Public engagement with research**
Policy-making includes an important ‘science in society’ element, and it is as vital that the public engage with our science as it is understood by policy-makers themselves. Public engagement can take many forms, providing different opportunities for the public to talk to researchers as well as with the research being carried out; it might include debates, demonstrations, festivals or social networking.

One clear way of bringing people into the scientific process, and ensuring their views are fed into policy development, is public dialogue. This is a three-way process, bringing together members of the public with scientists and policy-makers to talk about a specific issue that could affect their lives.

For example, the 2010 Experiment Earth? public dialogue on geoengineering run by NERC and Sciencewise-ERC (see case study to the right) sought to explore people’s attitudes towards various geoengineering methods that are being considered if efforts to mitigate climate change fail (www.nerc.ac.uk/about/consult/geoengineering.asp).

Scientists wanted to join the project steering group, as well as to attend workshops to discuss geoengineering research with members of the public and also see their project. The public benefited from the opportunity to talk about the issues with scientists, while the scientists gained new ways of looking at their research, as well as insight into how the public think about some of the issues. NERC is using the results to inform research strategy. They have also been widely distributed to policy-makers in the UK and overseas.

Another way of getting the public involved with science and understanding it better is working with schools. Taking science in to schools and making what we do accessible enables engagement from an early age. NERC’s research centres and researchers undertake a range of outreach work with schools; for example BAS provides diverse resources for teachers and students www.antarctica.ac.uk/about_antarctica/teacher_resources/information/index.php, and BGS runs the UK School science project www.bgs.ac.uk/education/scholarship/.

Engagement doesn’t stop at learning about NERC-funded research; schools can take part in real experiments. For example, the Conker Tree Science work lets members of the public report their findings, either uploading to a website, or using a mobile phone app, helping researchers collect data from all around the country.

**CASE STUDY**

**Experiment Earth?**

Geoengineering is the deliberate modification of the environment to counteract the effects of climate change. Scientists have proposed a range of ideas, which have not yet been tested in the real world and may have cultural, ethical and social implications.

The public dialogue, ‘Experiment Earth?’, consisted of a series of workshops in early 2010. Diverse stakeholders, including representatives from Government and NGOs, were invited. This ensured the process was fair and transparent as possible, and would affect a range of users.

‘We have a responsibility to discuss research plans in potentially contentious areas like geoengineering with the public, and to ensure their views and concerns influence research council and government policy-making,’ said NERC Project Manager Faith Culshaw.

The results showed that participants did not object to geoengineering in principle, but had serious concerns about some of the technologies discussed. They felt that public dialogue should continue as research progresses. Many said that they enjoyed the process and valued the chance to discuss their views and better understand how research works. They felt it important that the government discusses issues like geoengineering with the public.

As well as influencing two research projects and further public engagement activities, the dialogue was highlighted by the House of Commons S&T select committee’s March 2010 report on the regulation of geoengineering, and informed a cross-government statement on geoengineering research published by Defra in September 2012.

[Image 170x42 to 568x304]

**Tools for science-to-policy work**

[Image 622x43 to 1021x305]
Science-to-policy training and ‘people flow’ opportunities

Several training courses are available, some offered by NERC. Secondment and placement opportunities (‘people flow’) are themselves science-to-policy mechanisms, and should be encouraged where appropriate.

Training courses and best-practice sharing

Training

NERC has run occasional science-policy training workshops, often with other partners such as ESRC, government departments and the British Ecological Society. – see www.nerc.ac.uk/using/publicsector/sciencetopolicy.asp. Other organisations offer courses in stakeholder engagement and participatory knowledge exchange (based on the UWECS good practice guidelines, see page 22) – see wwwdialoguematters.co.uk/training.asp.

Engaging the public with your research: training courses offered by NERC’s Communications team, free to all NERC scientists – see www.nerc.ac.uk/press/mediatraining.asp.

Various courses on government, parliament, policy-making are offered by external bodies – for example Parli-Training (www.parli-training.co.uk/). Westminster Explained (www.westminster-explained.com/), and the National School of Government (www.nationalschool.gov.uk/policy/index.asp?tab=2).

NERC’s Knowledge Exchange Network (KEN) allows colleagues in NERC’s research and collaborative centres, and major programmes, to share good practice in stakeholder engagement and knowledge exchange and plan appropriate knowledge-exchange activities.

Secondment and placement opportunities

These can be helpful for both scientists and policy-makers, and range from shadowing or pairing schemes to longer-term placements. They help scientists and policy-makers understand each other’s needs and deadlines.

Ideally, secondments and placements need suitable policies in both organisations which:

- ensure that knowledge and understanding gained by the returning secondee is disseminated throughout the organisation.
- NERC policy placement scheme: www.nerc.ac.uk/using/publicsector/placements.asp
  This scheme allows researchers and other staff involved in environmental science research to work closely with policy-makers within government and other organisations in the UK. Two types of placement are available: Fellowship placements – from 3 to 24 months, where the researcher works on a specific project agreed by the public-sector partner and NERC; and work shadow placements, where the researcher arranges to shadow a number of staff in a policy-making organisation.
- Policy secondments for NERC-funded PhD students, eg NERC/POST fellowships: www.nerc.ac.uk/using/schemes/nercpostfellowships.asp.
  These are available for NERC-funded PhD students to spend three months in one of the parliamentary information offices. Students use their scientific and writing skills and gain experience of the science-to-policy environment. Publicity is sent to students in their 2nd and 3rd years; supervisors should encourage those with an interest in policy-making to apply.
- NERC Knowledge Exchange (KE) Call: www.nerc.ac.uk/using/schemes/hellocall.asp
  The KE Call allows sharing of knowledge, people, skills and expertise between the UK’s research base and the user community (public and private sectors). Grants could cover a secondment or the employment of a facilitator, for example.
- Knowledge Transfer Networks (KTNs): https://connect.innovateuk/web/grant/home
  The Technology Strategy Board’s Knowledge Transfer Networks (KTNs) are designed to help specific communities to develop their ideas and internal interactions, and to communicate with the UK government. NERC jointly supports two KTNs.
- Royal Society MP and Civil Servant – Scientist Pairing Scheme: http://royalsociety.org/training/pairing-scheme
  Other relevant knowledge exchange funding schemes
  - NERC’s Knowledge Exchange (KE) Call: www.nerc.ac.uk/using/schemes/nerccall.asp
  - Other knowledge exchange funding schemes
    - NERC’s Knowledge Exchange (KE) Call: www.nerc.ac.uk/using/schemes/hellocall.asp
    - Other relevant knowledge exchange funding schemes
      - NERC’s Knowledge Exchange (KE) Call: www.nerc.ac.uk/using/schemes/nerccall.asp

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CASE studentships: www.nerc.ac.uk/using/schemes/case.asp
Government departments and other bodies can joint-fund studentships including CASE studentships. University departments receiving funding for four or more NERC students are obliged to find external partners (private or public sector) for at least 30% of them, to provide CASE awards.

Other secondments to government departments or agencies

Opportunities may arise for Research Council staff to be seconded to UK government departments or agencies to work on specific projects or cover for parental leave, for example.

Opportunities may also arise for scientists to spend up to two years as a Seconded National Expert in the European Commission (http://ec.europa.eu/civil_service/job/sne/index_en.htm), although it is unusual for the Commission itself to fund these secondments.

‘Scientists and policy-makers don’t often share a common vocabulary, which can make engaging with politicians a daunting task. The NERC/POST fellowship is a great opportunity to learn how to present complex topics in ways politicians can engage with.’

Gemma Cassells, who took part in a 3-month secondment to POST during her PhD.

CASE STUDY

Getting to know MPs

Daniela Schmidt, an earth scientist from the University of Bristol, took part in a Royal Society’s MP Scientist Pairing Scheme. This enabled her to work shadow MP Stephen Williams at Westminster.

Chaline spent time with Daniela, getting to grips with a day’s work as a scientist.

Daniela said: ‘This was a great opportunity for me to understand how politicians work, and the best way to make my science heard. It was such a valuable insight, and very few people’s offices were closed to me.

The timing was brilliant. A lot of Bills that are directly related to my work were being discussed in Parliament. I enjoyed inviting the experts from the Department for Environment, Food and Rural Affairs, the Parliamentary Office of Science and Technology and various Select Committees.

They work so much harder than I thought they did – they have so little time. I was impressed by the range and the amount of information they have to process and translate into comprehensible science and law.

I now know how politicians listen and respond to scientific information. That week, I saw people trying to get information across and failing. Exposure is the important thing – we should be much more visible as scientists.’
Information sources

See Glossary for many useful web-links, and the following:

NERC science-to-policy

Communicating your ideas - guidance notes for staff and fund-holders
www.nerc.ac.uk/publications/guidance/commyourideas.asp

Guidance for applicants: impact plans for responsive mode research
www.nerc.ac.uk/funding/application/impactplans.asp

Knowledge Exchange: Sustainable Solutions from Science
www.nerc.ac.uk/publications/corporate/knowledge.asp

NERC Science Impacts Database: http://sid.nerc.ac.uk

Some NERC inputs to major government consultations: www.nerc.ac.uk/using/publicsector/consult/

Common Knowledge, the Rural Economy and Land Use Programme’s knowledge exchange brochure
www.rel.uc.ac.uk/news/briefings.htm

Annual call for peer review college (including affiliate membership)
www.nerc.ac.uk/funding/assessment/peerreview/members-call.asp

Other science-to-policy


The European Commission’s SINAPSE scheme: http://europa.eu/sinapse/sinapse/index.cfm


Research policy news: www.researchresearch.com/ (subscription needed - your centre/institution may have one)

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House of Commons Library Factsheets: www.parliament.uk/about/how(guides/factsheets
Information offices in Westminster (which prepare research papers and briefings for parliamentarians and stock publications and reports): Commons 020 7219 4272; Lords 020 7219 3150

Online resource, supported by the Scottish Government, giving policy information and a schedule of events and activities, designed to increase policy-makers’ knowledge and understanding in the food, health, environment and rural sectors: www.knowledgescotland.org

Information on the structure of EU institutions and how the EU makes decisions

Information services

Dod’s parliamentary and civil service ‘companions’: www.dodonline.co.uk/engine.asp?showPage=products&type=all

Some information is free, but much is accessible only if you subscribe online or purchase hard copies of the ‘companions’, which list members of the various parliaments, assemblies and government departments. Swindon Office holds copies of some

General political websites:

www.epolitix.com/ (free bulletin available) and www.theyworkforyou.com.

Research policy news: www.researchresearch.com/ (subscription needed - your centre/institution may have one)
Glossary

BAS British Antarctic Survey  www.antarctica.ac.uk
BBSRC Biotechnology and Biological Sciences Research Council  www.bbsrc.ac.uk
BGS British Geological Survey  www.bgs.ac.uk
BIS Department for Business, Innovation & Skills  www.bis.gov.uk
CEH Centre for Ecology and Hydrology  www.ceh.ac.uk
CSA Chief Scientific Advisor
CST Council for Science and Technology  www.cst.gov.uk
DCLG Department for Communities and Local Government  www.communities.gov.uk/corporate/
Defra Department for Environment, Food and Rural Affairs  www.defra.gov.uk
DFID Department for International Development  www.dfid.gov.uk
DFT Department for Transport  www.dft.gov.uk
DGSR Director General, Science and Research
EA Environment Agency  www.environment-agency.gov.uk
EDM Early Day Motion  http://edmi.parliament.uk
EPSRC Engineering and Physical Sciences Research Council  www.epsrc.ac.uk
ERFF Environment Research Funders’ Forum  www.erff.org.uk
ESRC Economic and Social Research Council  www.esrc.ac.uk
European Commission  http://ec.europa.eu/index_en.htm
FCO Foreign and Commonwealth Office  www.fco.gov.uk
FST Foundation for Science and Technology  www.foundation.org.uk/
GIFTS Government Information From The Space Sector  www.bis.gov.uk/ukspacagency
I&DeA Improvement and Development Agency  www.idea.gov.uk/idk/core/page.do?pageId=1
IPCC Intergovernmental Panel on Climate Change  www.ipcc.ch
KEN NERC’s Knowledge Exchange Network  www.ipcc.ch
LARCI Local Authority Research Council Initiative  www.rcauk.ac.uk/research/xrcprogrammes/otherprogs/larci/pages/home.aspx
LARIA Local Authorities Research & Intelligence Association  www.laria.gov.uk/
LGA Local Government Association  www.lga.gov.uk/
LWEC Living With Environmental Change  www.nerc.ac.uk/research/programmes/lwec/
MRC Medical Research Council  www.mrc.ac.uk
NDPB Non-Departmental Public Body, eg NERC, government agencies, advisory committees
NOCS National Oceanography Centre  www.noc.ac.uk
Northern Ireland Assembly  www.niassembly.gov.uk
Parliament (United Kingdom)  www.parliament.uk
Parliamentary Select Committees  www.parliament.uk/about/how/committees/select
PEER Partnership for European Environmental Research  http://peer-initiative.org/html/
PML Plymouth Marine Laboratory  www.pml.ac.uk
POST Parliamentary Office of Science and Technology  www.parliament.uk/mps-lords-and-offices/offices/bicameral/post
PSC Parliamentary and Scientific Committee  www.scienceinparliament.org.uk
RCEP Royal Commission on Environmental Pollution  www.rccep.org.uk/
RIA Regulatory Impact Assessment
Royal Society  http://royalsociety.org
SAMS Scottish Association for Marine Science  www.smi.ac.uk
Scottish Government  http://scotland.gov.uk/home
Scottish Parliament  www.scottish.parliament.uk
SEPA Scottish Environment Protection Agency  www.sepa.org.uk
SET Science Engineering and Technology
SID NERC’s Science Impacts Database  http://sid.nerc.ac.uk/
SINAPSE Scientific Information for Policy Support in Europe  www.eu.int/sinapse
SNH Scottish Natural Heritage  www.snh.gov.uk
SPICe Scottish Parliament Information Centre  www.scottish.parliament.uk/business/research/index.htm
UKCIP UK Climate Impacts Programme  www.ukcip.org.uk
UKRO United Kingdom Research Office  www.ukro.ac.uk
Welsh Assembly Government  www.wales.gov.uk