

Our approach to evidence and innovation

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Published by the Department for Environment, Food and Rural Affairs.
Printed in the UK, October 2006, on material that contains a minimum of 100% recycled fibre for uncoated paper and 75% recycled fibre for coated paper.

PB12245

Our approach to evidence and innovation

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Forward by Defra's Chief Scientific Advisor


David Miliband, Secretary of State for Environment, Food & Rural Affairs, has defined *Defra's mission* as enabling a move towards "one planet living", reducing the overall footprint of our society to a level consistent with long-term global sustainability. To be successful in this mission, Defra must deliver effective, fit-for-purpose policies and work with others to foster and enable change, using a robust and diverse range of evidence.

Work to meet this challenge includes our policy and scientific leadership on *climate change* and the *natural asset base*, to which work on *sustainable development*, *eco-innovation*, and *understanding behaviour* all contribute. Other areas of responsibility are contained in our *Five Year Strategy*, such as animal health and welfare, the sustainability and safety of the food chain, water, waste, marine and rural policy, and environmental risks.

The *E&IS project* (January 2005 to May 2006) was an analysis of our priorities and requirements for knowledge in the natural and social sciences, economics, engineering, statistics and other disciplines. The results, informed by feedback from consultees, have been fed into planning and procurement. Summaries of our plans are available in most areas from *Our Approach to Evidence & Innovation web pages*.

In addition we are now setting out our future approach to evidence and innovation – the ways by which we can effectively develop and use knowledge to achieve our goals. This document – *Our Approach to Evidence and Innovation* – draws on the response received to the issues in Part 1 of the E&IS consultation¹ and other work which have strengthened our understanding of the principles we need to follow, and how we can work with others to help deliver them.

I would like to thank again the internal contributors who made this work possible, as well as our many external partners for their valuable input.



Prof. Howard Dalton FRS

Executive summary

Introduction

The Evidence and Innovation Strategy project has been Defra's main vehicle for identifying the evidence we need to develop policy and drive innovation over much of the last two years. This document sets out the main findings from the project.

Defra depends heavily on its research-based knowledge to underpin policy development. This requires strong processes to ensure Defra's resources are used efficiently, and that we maximise the contribution obtained from others' investments.

What we did

The E&IS exercise reviewed Defra's activities and investment – around 330million a year – in order to align them with policy priorities. Working with policy areas we:

- Developed Statements of Need, which identify the evidence and innovation needed to deliver our strategic outcomes
- Reviewed the allocation of Research and Development (R&D) budgets across Defra, ensuring R&D activities support Defra's priorities
- Summarised the Statements of Need in the E&IS consultation document and received feedback on our approach

The results

Plans to meet E&I needs for every strategic area of activity across Defra are now being implemented. We have also changed Defra's R&D budget allocations in favour of our environmental priorities.

The project has increased our focus on improving the relevance and value to policy of our evidence-related activities. Through the E&IS process we have increased awareness of a range of issues, including the value of the social sciences, the need to balance secondary analysis and interpretation with longer-term research, and the importance of policy monitoring and evaluation.

Our future approach

This document sets out how we will strengthen Defra's approach to evidence and innovation to meet policy goals, under five aims which are to:

1. Improve our ability to identify priority evidence needs by working with others
2. Ensure we have effective processes for assembling and communicating existing evidence
3. Realign Defra's R&D investment with departmental priorities and maximise the value of this investment by co-operating with other funders
4. Ensure that all Defra policies are based on a robust and broad understanding of all relevant evidence
5. Enable all areas of Defra to address innovation in their policy approaches

1. Our approach to evidence & innovation

What does Defra mean by Evidence and Innovation?

- 1.1 This document is about managing the knowledge Defra requires for policy-making purposes. This knowledge comes from a range of expert disciplines, and constitutes a major area of activity – approximately 330million of programme expenditureⁱⁱ- and 265 professional staff in the core Department and many more in our wider network.
- 1.2 Effective policy-making depends on high quality policy analysis, answering questions such as:
 - What are the issues policy needs to address and who has a stake in them
 - What policy goals are achievable
 - What are the measures we can use to gauge our success
 - What can we learn from experience to improve future effectiveness
 - How can we encourage innovation – such as new processes, products or systems – which will enable us to meet our policy goals
- 1.3 The answers to these questions inform policy decisions and enable us to influence innovation in wider society.
- 1.4 Scientific research and monitoring, economic and statistical analyses, social research and the views of experts or stakeholders are some of the different sources of evidence which can be used to inform policy. The balance between the contributions each type of evidence makes in different policy areas, and on different types of policy questions, varies. Findings from different disciplines/types of evidence need to be brought together so that we understand what the evidence tells us in total.
- 1.5 Improvements in the way we scope, procure, assemble and interpret evidence will lead to improvements in the quality and effectiveness of Defra's evidence-based policymaking.

Defra's approach to evidence and innovation

- 1.6 Over much of the last two years our approach to E&I has been driven through our Evidence & Innovation Strategy (E&IS) project. The E&IS has been the process through which Defra has ensured that its E&I activities support its overarching goals. Guided by the E&IS we have also implemented central requirements for the management of science including those laid down in the *Cross-Cutting Review of Science*ⁱⁱⁱ and updated in the *Science and Innovation Investment Framework*.^{iv}

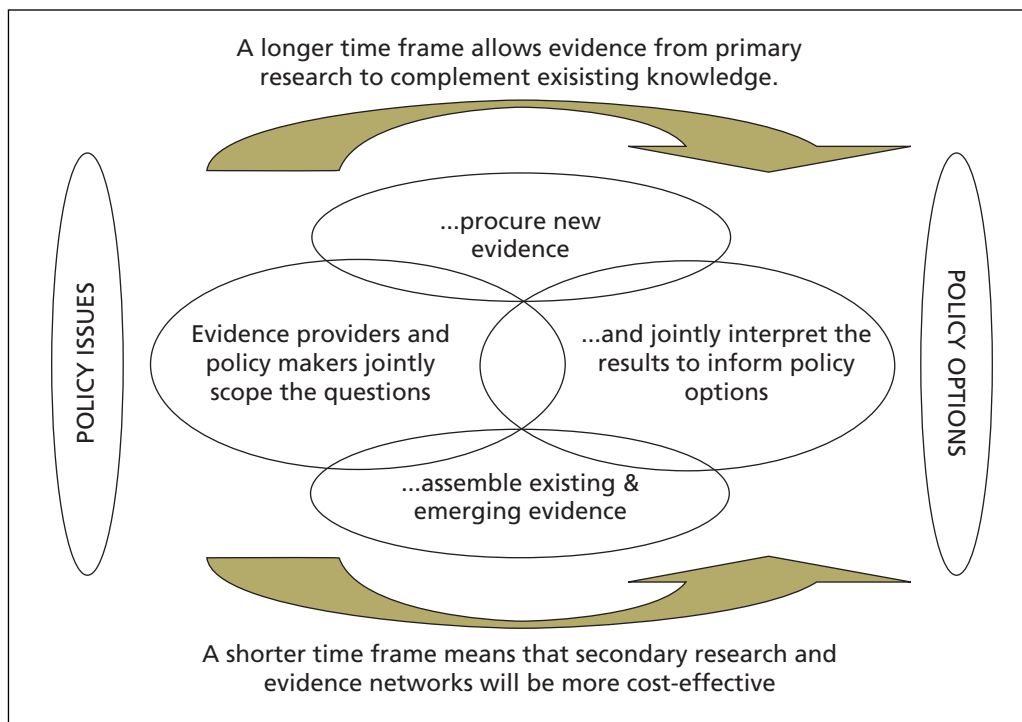
Our approach to evidence & innovation

1.7 The project involved:

- The realignment of Defra's R&D budget toward our environmental priorities
- A new approach through which Defra officials identified their E&I needs in light of strategic outcomes they are trying to achieve
- The use of insight and advice from external organisations and partners through consultation on these needs
- Analysis of how to improve our use of E&I in the future to support our mission

1.8 On the last point, our *work developing the E&IS* has enabled us to identify four sets of activities for more effective evidence-based policymaking, set out in figure 1 below.

Fig 1: Evidence for policymaking



1.9 Fig 1 identifies the activities required to achieve our goal of **policies based on the right evidence, used in the right way with the right people.**

1.10 Taking account of our work and the comments received from the consultation, we have identified **five aims for E&I**:

- To improve Defra's ability to identify priority evidence needs by working with others
- To provide Defra with effective processes for assembling and communicating existing evidence

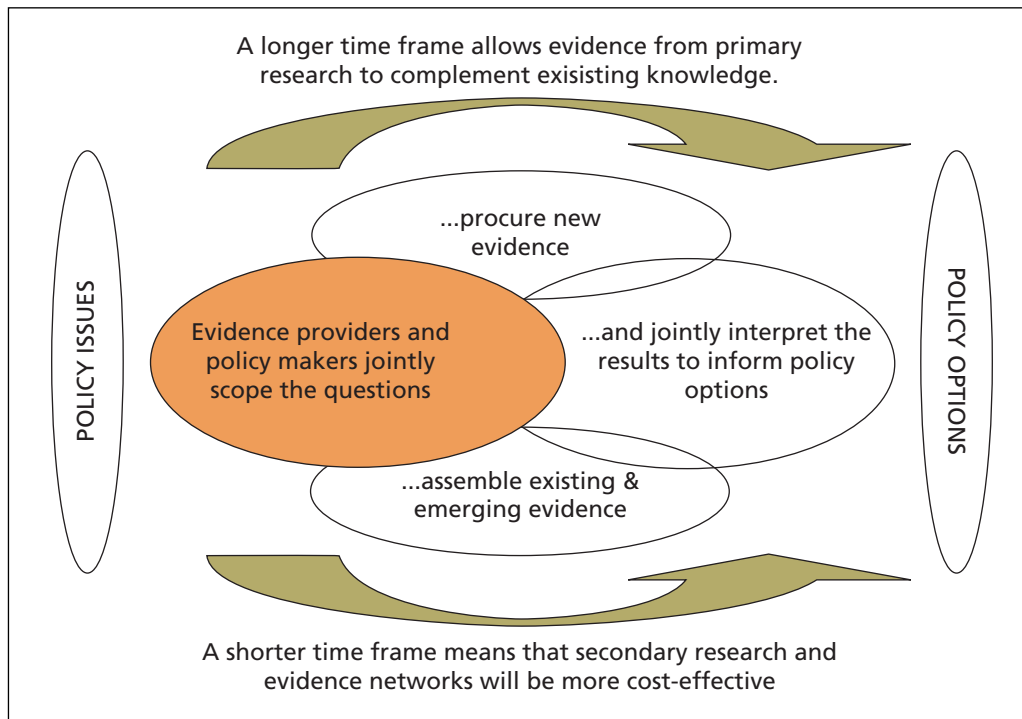
Our approach to evidence & innovation

- To realign Defra's R&D investment with departmental priorities and maximise its own investment by co-operating with other funders
- To ensure that all Defra policies are based on a robust and broad understanding of all relevant evidence
- To enable all areas of Defra to address innovation in their policy approaches

1.11 In the rest of this document we describe existing practice, and set out plans for activities that will enable us to meet these aims more effectively in the future.

2. Defra's aims for evidence and innovation

2.1 Aim 1: to improve Defra's ability to identify priority evidence needs by working with others



2.1.1 To use evidence effectively in policymaking, we need first to identify what is relevant. The systematic policy-led *approach*^v we have used gives greater focus on what we need to know to deliver our outcomes. The outputs have been fed into current procurement plans.

2.1.2 The E&IS process has given us a clearer focus on our evidence needs, but there is still room to improve our ability to identify priority evidence or innovation needs relating to policy questions:

- Engaging stakeholders to help identify and source our evidence needs will be key to this improvement. This was highlighted in the E&IS consultation responses, and a range of work^{vi} has suggested how this can be done.
- Delivery partners work with the core Department to develop and deliver evidence-based approaches to achieving shared goals. The consultation revealed wide support for better co-ordination, not limited to the Defra network.
- Issues may arise suddenly on which evidence is required. Continuing attention is needed to identify such issues, including horizon scanning by Defra staff and advisory bodies – as required by the Government Chief Scientific Adviser's *Guidelines on Scientific Analysis in Policy Making*. Horizon scanning is required both to identify specific needs in relation to existing policy goals, and broad or long-term challenges to Defra as a whole (recognising the point made in response to the consultation that we need evidence about future, as well as current, policy challenges).
- Policy evaluation has been identified as a critical part of evidence-based policymaking, where we need to ensure systematic compliance with *best practice*.^{vii}

Aim 1: future actions

Future E&I process in relation to renewing Defra strategy and business planning

Next year we will set out the timetable for our corporate E&I planning process, taking account of action outlined in this document and the timeline for developing Defra's next high-level corporate strategy.

Improving policymakers' ability to identify and prioritise evidence needs

We will develop guidance for Defra policymakers on approaches available to help in the identification and prioritisation of evidence needs. This includes how best to involve stakeholders and the potential role of public engagement.

Widening the scope of our approach to E&I planning

We will work with the relevant bodies (including the Welsh Assembly Government) to identify the potential for improving engagement with our partners on evidence and innovation issues, and evaluate if a more integrated approach would add value in future strategy rounds.

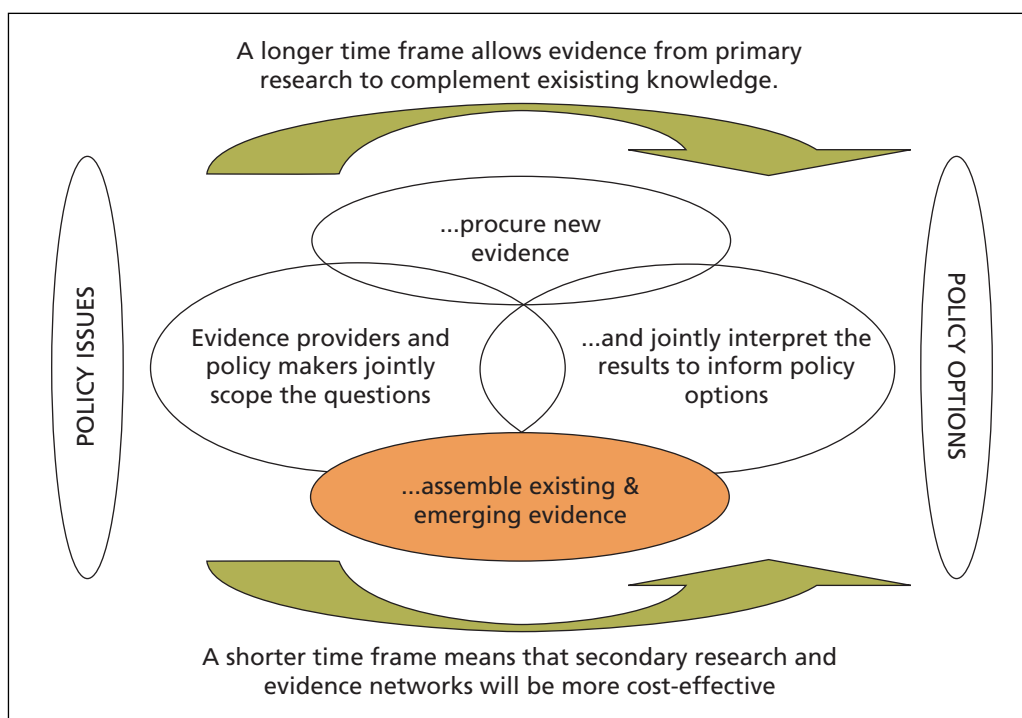
Horizon scanning and futures (HSF)

We will publish good practice and governance guidance on HSF later this year. We will establish a revised HSF programme, looking at emerging science and technology issues across Defra, and actively communicate its findings to the research base and other funders to inform their strategies.

Policy monitoring and evaluation

We will embed high quality appraisal, monitoring, and evaluation practice into policy-making throughout the Department, and ensure that from 2007 corporate measures of success are established and recognised.

2.2 Aim 2: to ensure that Defra has effective processes for assembling and communicating existing evidence



Defra's aims for evidence and innovation

- 2.2.1 Assembling existing and emerging economic, social and scientific evidence is as important as procuring new evidence – particularly when responding to urgent policy questions. This assembly takes place through a variety of mechanisms including in-house experts and systems, advisory committees, evidence networks and reviews.
- 2.2.2 We depend on a wide range of data sets including long-term environmental, social and economic data. Information Communication Technology (ICT) is offering new techniques for generating knowledge from our data assets and those held by others. Earth Observation is complementing this by rapidly increasing our access to large, cost-effective datasets.
- 2.2.3 Through the E&IS we have identified the need for greater emphasis on multi-disciplinary secondary analysis^{viii} to answer policy questions. Defra is increasing the amount of such work it commissions.
- 2.2.4 Broad expertise and strong working relationships are essential to deliver robust evidence and interpret it for policy:
- *Economics*. Defra's professional economists continue to develop our capacity for policy-focused economic analysis by strengthening links with academic economists and other Government Departments. This enables all parties to share knowledge and effort, ensuring Defra is proactive in providing a comprehensive evidence-based contribution to analysis across different areas of responsibility.
 - *Natural sciences (including engineering and technology)*. Defra's scientists maintain close links with external experts and scientific bodies. The CSA is responsible for ensuring appropriate skills and deployment of Defra scientists and facilitating links with the research base. Numerous avenues exist for dialogue with external experts.
 - *Social Research*. A recently established central social research advice and support capability has been working with policy areas on priority themes, as well as undertaking cross-cutting strategic research. This has contributed to a 'people-based focus' by linking specialist researchers and exemplar projects. Where specific social research skills – such as stakeholder involvement approaches – have not been available internally, we have drawn on external expertise through academic placements.
 - *Statistics*. Defra's statisticians collect, process and assemble data to generate information and knowledge supporting evidence-based policy. They ensure compliance with Survey Control Processes, the National Statistics Code of Practice, and other related protocols. Applied statistics are fundamental to evidence-based science, together with measures of uncertainty to quantify the strength of that evidence. Apart from supporting the information needs of policy divisions and agencies, the statisticians provide information for the European Union (EU) and a wide range of external users.

Defra's aims for evidence and innovation

- 2.2.5 Defra frequently draws on external expertise to help it consider and evaluate evidence. While much activity of this kind takes place at the level of individual policies, the department also makes use of its *Scientific Advisory Council (SAC)* with a wide range of academic, industrial and public sector experts, to provide advice and challenge its strategic science functions.
- 2.2.6 Communicating Defra's evidence base is a priority. *Defra's Publication Scheme* sets out its commitment to make information on all aspects of its work as widely available as possible. Defra maintains a science communication programme which aims to promote published research to wider audiences including the media, encouraging further discussion and understanding of the work.

Aim 2: future actions

Knowledge Management. We will continue to improve our approach to knowledge management, adapting a wide range of tools to support strategy, policy and delivery functions. This includes initiating a pilot project on knowledge communities and collaborative tools for knowledge management.

Information Management. We will collect and develop data to meet current and future needs and aim to reduce costs, for example by making more use of administrative data. Where possible we will join up our data gathering and monitoring activities with other organisations by working with bodies such as the *Environment Research Funders' Forum (ERFF)*.

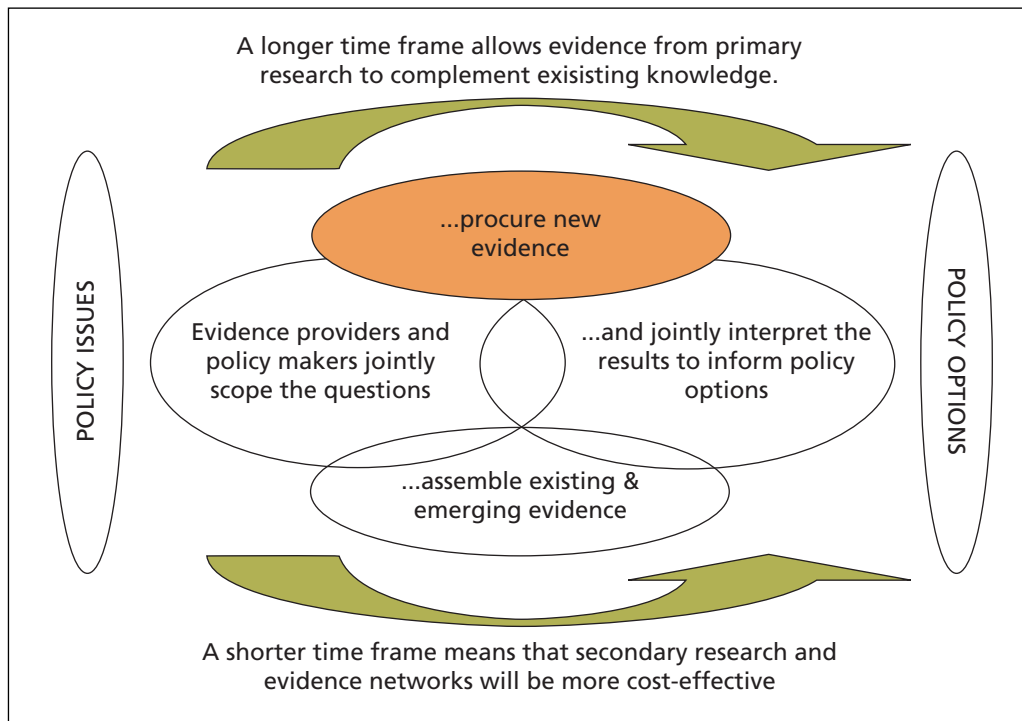
Existing tools, such as RADAR (Rapid Analysis of Disease and Animal-related Risk) and the Rural Evidence Hub, have already started to bring together diverse datasets to meet specific requirements. Initiatives will build on this with new approaches mixing static and dynamic data.

Earth Observation. To help define and fulfil our Earth Observation (EO) goals and objectives, the CSA is investing in a strategy that will:

- achieve the 'intelligent customer' vision allowing Defra to match the right technology to the right need in the most effective way
- address cross-cutting needs in a coordinated manner to deliver the greatest return on investment
- develop our approach to meet EO needs at national and global scale, ensuring policy makers have access to the EO-derived evidence and data they need, when they need it
- take a long-term view of technology requirements and set out a roadmap to procurement of our EO evidence needs
- support Defra to best represent HMG requirements in *Group on Earth Observations (GEO)* and *Global Monitoring for Environment and Security (GMES)*.

Defra's aims for evidence and innovation

2.3 Aim 3: to realign Defra's R&D investment with departmental priorities and maximise the value of this investment by co-operating with other funders



2.3.1 Defra spends approximately 150million per year on R&D. Over the past year we have reviewed how this money is allocated between broad policy areas, and readjusted it where necessary to ensure that funding is in line with strategic priorities. The *approach* we used took account of the expected value of R&D in delivering Defra's priorities, and the long-term impacts of shifts in funding between areas. Figures were set out in the E&IS consultation document for budgets for 2006/07; however these are subject to change. Further shifts are planned during the Comprehensive Spending Review 07 period up to 2011.

2.3.2 Defra relies on the UK and international research base as a primary source of knowledge, including both research and data collection. Defra must use its own resources to maximise strategic value in meeting our policy objectives, recognising our responsibility to contribute to the direction and sustainability of the UK research base in line with the recommendations of the RIPSS report.^{ix} Defra responsibilities are therefore:

- To inform all strategy processes by identifying future areas of public policy need, engaging members of the UK research base in order to obtain their views
- To ensure the maintenance of essential strategic capabilities within the UK research base on which Defra relies – including in responding to emergencies and countering major risks – via joined-up strategic planning
- To engage with business to influence and stimulate investment in R&D in support of our wider goals.

- 2.3.3 Defra also draws on the research resources of its laboratory agencies – *Cefas* (Centre for Environment, Fisheries and Aquaculture Science), *CSL* (Central Science Laboratory), and *VLA* (Veterinary Laboratories Agency). These agencies provide world-class, strategic expertise and facilities in areas of science with direct relevance to Defra's remit. Through its Laboratory Strategy, Defra is working with these agencies to secure their long-term future and to preserve Defra's access to essential scientific services.^x
- 2.3.4 The department has recently introduced a system through which it ensures the science it procures is of a suitably high standard. This is particularly important if Defra is to continue to build on its reputation among scientists and the general public as a department that relies on sound evidence.

Maximising our investment through collaboration with others

- 2.3.5 We continue to improve our collaboration with others, both in terms of those who commission research of interest to Defra, and to promote better use of our funded research by other policy-makers and opinion-formers. This is important because we need to be efficient in our spending plans and because many of Defra's policy goals are partially achieved by other players.
- 2.3.6 Productive relationships already exist with the Research Councils, beyond those born out of investment and the contractor-customer interaction. Strategic co-operation and dialogue with the Research Councils is strengthened with two-way representation on boards, working groups, committees and other scientific forums. Defra is also a leading member in a number of forums which bring together public funders of research, such as the ERFF.
- 2.3.7 International engagement is a key aspect of collaboration that offers opportunities to influence international decisions, address common policy challenges through joint research, exploit the complementary strengths of different national research programmes, and achieve the critical mass needed to fund large-scale projects. There are a large number of international organisations and programmes that contribute to our understanding of areas of major policy.^{xi} Defra also participates on UK and international coordination committees that seek to promote international engagement on science and innovation^{xii} and we promote and support researcher collaboration and mobility in the EU and internationally.^{xiii}

Defra's aims for evidence and innovation

Aim 3: future actions

UK Research Base. We will continue to seek closer co-ordination and collaboration with other investors both in the UK and internationally in research, building on existing methods such as cross-representation on science committees, including ERFF and EU Framework Programmes. In particular:

- We are collaborating with the *Biotechnology and Biological Sciences Research Council* (BBSRC) and its Institutes with a view to developing better strategic understanding on land-based research and to facilitate adjustment to lower levels of Defra investment in traditional areas of agricultural science, taking a longer-term view of our evidence needs.
- We are engaging closely with the *Natural Environment Research Council* (NERC), in particular on climate science, and aim to strengthen this collaboration.
- Defra has established a joint post-doctoral fellowship scheme with the *Economic and Social Research Council* (ESRC) to increase our analytical capacity. We are exploring the scope for similar initiatives with other Research Councils.

International Collaboration. We will continue to support the developing European Research Area, primarily through participation in the EU Framework Programme (FP), and will seek to 'match fund' FP7 projects that will meet our priority evidence needs and where working at the EU level will add value. Defra will also fund an FP7 National Contact Point promotion and support service for the Environment and Food areas^{xiv}

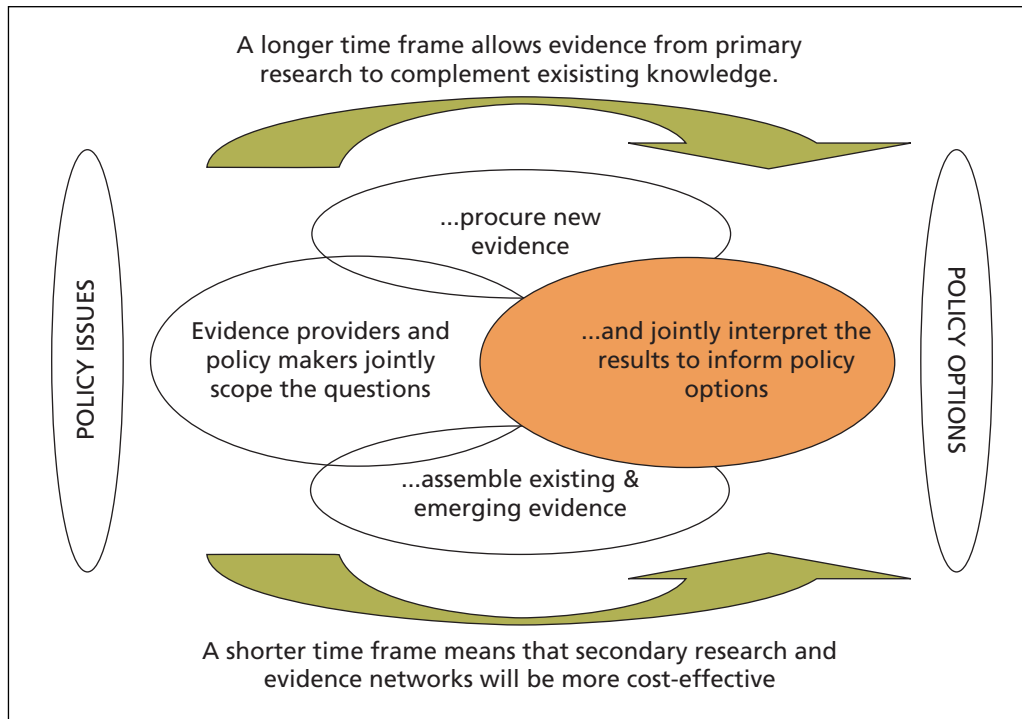
We will participate in *ERA-NETs* established during FP6, support the joint research activities carried out by these networks^{xv}, and promote Defra participation in relevant ERA-NET activities in FP7. Defra will also participate in the activities of the *European Technology Platforms* (through mirror groups) where appropriate.

Improving our Procurement Efficiency

Securing value for money is as important in E&I activities as in any other area of public expenditure. Defra has initiated an Evidence and Innovation Procurement Project to drive further improvements in the Department's approach to procuring evidence and innovation activities. The project aims to deliver:

- consistent and professional supplier and contract management standards
- clear and simple support for internal customers
- an integrated approach for reference data
- incremental cost savings

2.4 Aim 4: to ensure that all Defra policies are based on a robust and broad understanding of all relevant evidence



- 2.4.1 Managing the interpretation of evidence for policymaking relies on close engagement between evidence providers and policymakers to translate or 'broker' knowledge into policy – sometimes termed the 'intelligent customer' role.
- 2.4.2 Defra's own specialists – such as scientists, economists, social researchers and statisticians – have a key role to play in bridging the gap between evidence and policy. To be effective, specialists must be able both to interpret evidence properly and fully understand the requirements and nature of policy, and for this purpose they are often closely linked to policy teams.
- 2.4.3 Collaboration between wider expert communities and policymakers is of great value in improving the accessibility and policy use of research findings. Defra funds the *Sustainable Development Research Network* which plays an important role in bringing together researchers and policymakers, and exploring barriers to the uptake of research findings. During the UK's Presidency of the EU in 2005 Defra supported the latest EU '*Science meets Policy*' workshop. This made a series of recommendations for engaging researchers and policymakers, and we are now working closely with those, such as the NERC, who share our commitment to improving the transfer of knowledge into policymaking.
- 2.4.4 We have already developed guidelines to help assess how robust evidence is^{xvi}, but we recognise that evidence in most forms is open to interpretation and challenge, and this should be reflected in the evidence base for policy and the options put before Ministers. External experts have a key role in helping Defra consider and evaluate different interpretations.

Defra's aims for evidence and innovation

Aim 4: future actions

Roles of policy-makers and specialists in interpreting evidence. We will continue to improve our ability to interpret and use evidence. This will build on the requirements for policymakers within *Professional Skills for Government*, and on the work within each specialist discipline's Head of Profession function – including the CSA's role as head of Scientific Profession – to train departmental specialists in the interpretation of evidence for policy needs.

Interpreting existing evidence in new ways. As discussed under Aim 2, we will improve the assembly and synthesis of existing evidence through better knowledge management, which will improve our ability to interpret evidence.

Collaboration. As part of our drive to make better use of science when we formulate environmental policy, we will continue to work with NERC, the European Commission and other EU Member States. Together we will take forward the recommendations of the 2005 'Science meets Policy' workshop, and exploit other opportunities for international collaboration on best practice in this area.

Using External Advice and Expertise. We will continue to explore how to make better use of external expertise and advice in interpreting evidence, including the use of Defra's Science Advisory Council.

2.5 Aim 5: we will enable all areas of Defra to address innovation in their policy approaches

- 2.5.1 To achieve our 'one planet living' mission we require the capability to scope, appraise and enable major step-change innovation in relation to a wide range of issues. The Government's 2003 Innovation Report, *'Competing in the global economy: the innovation challenge'*, identified the environment as a key driver for future innovation.
- 2.5.2 Whilst most innovation takes place in the private sector, Government has a pivotal role to help identify – with stakeholders – potential goals and targets; introduce policy instruments and other measures to overcome barriers or market failures; and promote sustainable innovation through its own activities, such as public procurement.
- 2.5.3 The ways in which innovation develops are uncertain. We must maintain a broad perspective across the disciplines, of potential avenues of innovation, levers for change and alternative policy approaches, including international practice.

Eco-innovation

- 2.5.4 Eco-innovation is any form of innovation – including the use of environmental technologies^{xvii} – which contributes to sustainable development by reducing negative impacts on the environment, or achieving a more efficient and responsible use of resources.
- 2.5.5 Eco-innovation can help tackle many environmental challenges and contribute to the EU's Lisbon Strategy^{xviii} by creating new jobs and businesses, and helping the transition to a sustainable, knowledge-driven economy. Supporting eco-innovation will be fundamental to the Government meeting its Sustainable Consumption and Production goals. The Government is committed to promoting new green technologies and industries in the UK and internationally.

Defra's aims for evidence and innovation

- 2.5.6 Eco-innovation is an area of cross-Government interest, where a united approach is critical. Defra is already working with other Government departments to ensure a clear, consistent policy framework to encourage eco-innovation. The objective is to support penetration of the market by innovations that reduce carbon emissions, air pollution or waste, or optimise the use of natural resources.
- 2.5.7 Following the Government's commitment to integrating sustainable development through the Department of Trade and Industry's (DTI) Technology Strategy, collaboration between DTI and Defra will be vital. Under the EU Environmental Technologies Action Plan, the UK is sharing best practice and pursuing joint initiatives with other Member States in these areas. Government has developed a wide range of initiatives to promote eco-innovation and improve the take-up of environmental technologies, including:
- Funding research and development (e.g. support for collaborative R&D through the Government's Technology Programme)^{xix}
 - Working with business (e.g. the *Environmental Innovations Advisory Group* (EIAG) and the *Waste and Resources Action Programme's* (WRAP) business development work)^{xx}
 - Providing information and raising awareness (e.g. the *Environment Direct* website and aspects of the Energy Savings Trust's work)^{xxi}
 - Mobilisation of finance (e.g. the financing work of the *Carbon Trust*^{xxii})-economic instruments and state aids (e.g. Enhanced Capital Allowances (ECAs))^{xxiii}
 - Sustainable procurement (e.g. the ^{xxiv}Forward Commitment project to drive markets for environmental innovations through public procurement)
 - Acting globally (e.g. the *Sustainable Development Dialogues*)^{xv}

Aim 5: future actions

Understanding Innovation. We will continue to develop our understanding of the drivers for innovation and potential policy approaches to delivering both radical and incremental innovation. Horizon scanning and futures research has a critical role to play here as an appreciation of possible futures will provide intelligence for understanding the context for long-term innovation and the opportunities presented by emerging technologies.

Working with others. Defra will work more closely with DTI and HM Treasury (HMT) to encourage innovation in more environmentally beneficial technologies, materials, processes and products, and use this as a way of increasing competitiveness and building new markets. In particular we will:

- Aim to focus the Technology Programme on innovation that supports our overall aim of one-planet living;
- Take forward Sustainable Consumption and Production as a joint Defra/DTI responsibility, including through a potential SCP Innovation Platform; and
- Develop the new joint Defra/DTI Environmental Transformation Fund to boost investment in renewable energies and other technologies aimed at reducing carbon emissions, details of which will be announced in the Spending Review for launch in 2008.

References

- i An analysis of the consultation responses is available at <http://www.defra.gov.uk/corporate/consult/ei-strategy/index.htm>
- ii This includes approx. £150m of research and development, a similar amount of monitoring and surveillance, as well as lesser expenditure on analysis and advice.
- iii The HM Treasury Science and Research cross-cutting review included a review of funding of the UK science base, and the effectiveness of departments' own science and research programmes to ensure that they deliver maximum long term benefits to the economy and quality of life.
- iv HM Treasury, DfES, DTI (2004), *Science and Innovation Investment Framework 2004-2014* (HMSO: Norwich).
- v Information on the statements of need process is available from the science strategy team upon request. Please e.mail research.policy@defra.gsi.gov.uk
- vi Including the SFF Research Priorities Group, the pilot project to construct the SCP evidence base, the Ashridge study on managing the SCP evidence base from a relational perspective, the Environment Research Funders Forum, and Defra's use of stakeholder fora and deliberative processes.
- vii A recent review of monitoring and evaluation in Defra combined an assessment of current Defra practice with an examination of practice across Whitehall. Available at http://www.defra.gov.uk/science/project_data/DocumentLibrary/SD14001/SD14001_3473_FD.doc
- viii Primary research involves data collection, through experiment, observation, survey, etc, and usually the immediate analysis thereof. Secondary research analysis focuses on data that has already been produced and may be applied to identifying lessons to be learned, risks, options or providing a new perspective rather than 'creating new knowledge' in the strict sense.
- ix Defra is actively seeking to implement the recommendations of the *RIPPS report*
- x In June 2006, a written ministerial statement was issued, which announced the next stage of the laboratory strategy:

For *CEFAS*, it has been decided that the best way to secure a sustainable future is to consolidate its activities out of facilities at Lowestoft and Burnham-on-Crouch, which are not suitable for future needs, into a new fit for purpose site in Lowestoft along with growing its non-Defra business and making further efficiencies.

For *CSL*, it has been decided that further work should be undertaken to develop a new business plan, which better reflects Defra's future changing demand requirements and wider Government needs. Consideration would also be given as to whether a change in status would bring additional business benefits to secure a long-term sustainable future.

For *VLA*, Defra is continuing to work with the Biotechnology and Biological Sciences Research Council (BBSRC) to consider the future relationship between VLA and the Institute of Animal Health (IAH).

- xi For example, the European Commission, the Organisation for Economic Cooperation and Development, the United Nations Environment Programme, the UN Food and Agriculture Organisation, the World Health Organisation, and the Intergovernmental Panel on Climate Change.
- xii For example, the Global Environmental Change Committee, the Global Science and Innovation Forum (and its Strategy for International Engagement in Research and Development), and the EU Standing Committee on Agricultural Research (working towards a common agricultural research agenda supported by SCAR Collaborative Working Groups).
- xiii Through the seventh EU RTD Framework Programme (FP7) and by providing financial support to and/or participating in the management of initiatives such as the European Cooperation in the Field of Scientific and Technical Research (COST) and the OECD Cooperative Research Programmes.
- xiv In co-operation with the Food Standards Agency.
- xv Defra currently co-ordinates or participates in ERA-NETs in the fisheries, flood management, plant health, biodiversity, organic farming and accidental marine pollution research areas.
- xvi <http://www.defra.gov.uk/science/how/DefraActivity.htm> and the *Defra Science Quality Assurance Team* website
- xvii The term environmental technologies covers any products and processes that reduce negative impacts on the environment or achieve a more efficient and responsible use of resources than the technologies they replace. Examples range from wave power technologies to the manufacturing of bricks using recycled materials to energy efficient lighting systems.
- xviii EU Lisbon (Growth & Jobs) Strategy – http://ec.europa.eu/growthandjobs/index_en.htm
- xix The Technology Programme is underpinned by a long-term funding commitment of £320 million over the period 2005-2008. It is delivered through three main products: Collaborative Research and Development, which helps industry and research communities to work together in strategically important areas of science, engineering and technology, Knowledge Transfer Networks to enable the sharing of ideas and facilitation of innovation, and Innovation Platforms to align efforts across Government and the private sector to promote innovation in particular areas of combined societal need and UK market opportunity.
- xx The *EIAG* is a business led group established in July 2003 to provide Government with an industry view on actions to enable innovation in the environmental sector. *WRAP* works with Government and industry to increase levels of consumer and business recycling and to support the recycling industry by developing new and existing sustainable end markets for recycle.
- xxi *Environment Direct* will give consumers a wealth of information and advice on how to reduce their environmental impacts and exercise more sustainable choices in purchasing and consumption. The *Energy Savings Trust* encourages and promotes energy efficiency and the integration of renewable energy sources into the economic fabric of society, through advertising programmes and marketing campaigns, advice centres and the endorsement of energy efficient products.

References

- xxii The *Carbon Trust* looks to accelerate the development of new and emerging low carbon and energy efficient technologies in the UK. It provides a funding continuum across the low carbon innovation process that invests in projects and leverages further funding.
- xxiii *Enhanced Capital Allowances* (ECAs) reduce the cost of financing new technologies by giving up-front tax relief on the cost of making capital investments. ECAs currently exist for the most innovative energy-saving technologies and for water efficiency technologies.
- xxiv The Forward Commitment project seeks to apply in the public sector the approach taken by business in using supply chain management and procurement to promote investment in new and innovative products. By articulating its future needs and providing a credible promise of future sales, public sector organisations could help to provide the security that suppliers need to invest in innovation. Government is currently developing case studies to demonstrate the Forward Commitment model and define how it operates in practice.
- xxv In the UK, *Sustainable Development Dialogues* are currently under way with five key emerging markets: China, India, Brazil, South Africa and Mexico. The dialogues include a focus on exchanging best practice on environmental technologies.

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PB12245