



How to evaluate the impact of environmental research on policy: FINAL REPORT

Output from SKEP Call 2 - Science to Policy Process: Lot 1

Understanding the Impact of Environmental Research on Policy – Developing a
Framework for Research Impact Evaluation and Guidelines for its Use



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How to evaluate the impact of research on environmental policy: Final Report

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Understanding the Impact of Environmental Research on Policy – Developing a Framework for Research Impact Evaluation and Guidelines for its Use.

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Summary

This is the Final Report of the SKEP Network-funded project *Understanding the Impact of Environmental Research on Policy – Developing a Framework for Research Impact Evaluation and Guidelines for its Use*.

Project rationale

Research and evidence has a central role to play in the development of environmental policy and a substantial investment is made each year in science to support environmental protection policies. Understanding the impact of this research through evaluation is therefore important. Research impact evaluation can highlight the value of research to users, and society more broadly, but can also enhance the impacts of existing and future research by revealing insights into the processes by which impacts occur. These insights can be used to inform the commissioning and management of new research so that it is more likely to result in research of both high quality *and* high impact. Viewed in this manner allocating increased resources to impact evaluation can be a cost-effective use of resources.

Project objectives and methods

The headline objective of the project was ‘to propose guidelines for the evaluation of the implementation and uptake of environmental research, which will then be trialled and embedded into the management practices of SKEP network members’.

This objective was delivered in two stages. The first stage reviewed and synthesised existing knowledge and experience of the evaluation of the implementation and uptake of environmental research into a draft applied model for research evaluation. This involved conducting a literature review, a series of case studies and a survey of the evaluation needs and experience of the SKEP Network members. The second stage consulted on the draft applied model of research evaluation and guidelines for its use and developed a final version of these for use by the SKEP Network.

Project outputs

There are five outputs from the project including this Final Report. The central output is *How to evaluate the impact of research on environmental policy: A Seven Step Guide*. The ‘Guide’ provides a concise practical guide for those wanting to develop and use a framework to evaluate the impact of research on environmental policy. It:

- Outlines seven steps for research impact evaluation, from evaluation planning through to implementation and onto reporting and follow-up (see Figure 1 on page 31 for a summary of the process);
- Highlights how evaluation frameworks can be tailored to the circumstances and needs of the organisation and type of research being evaluated; and

- Provides links to more detailed information that may be required by those using the Guide.

The Guide is accompanied by *Guidelines and Supporting Information* which provide details on how to implement the process detailed in the Guide. In addition the *Literature Review* and *Case Studies*, which the Guide and Guidelines are largely drawn from, are published as standalone reports to provide further detail to interested users and full references to the material drawn upon in the project.

Report structure

This Final Report consists of the following sections. Section 1 introduces and gives the background to the project. Section 2 summarises the methods and findings of the Literature Review, the central research question of which was, ‘How do people evaluate the impact of research on policy and uptake?’. Section 3 summarises the methods and findings of the nine case studies which were conducted to illustrate and better understand current approaches to research impact evaluation. Section 4 gives details of the survey of SKEP Network members’ evaluation experience and needs.

Section 5 describes how the findings of the literature review, case studies and survey were used to develop the practical evaluation tool detailed in the Guide, the challenges this involved and how they were overcome. This section also includes details of how to use the Guide and Guidelines and two worked examples of their use.

Section 6 gives the conclusions and recommendations of the project. Proposing a single framework of research impact evaluation was considered inappropriate given the findings of the literature review, case studies and survey. Instead in the Guide an approach has been developed that guides users through the options and decisions required to develop an evaluation approach suited to their circumstances and needs.

Conclusions and Recommendations

Our central recommendation is therefore that the Guide and Guidelines should be used both by the members of the SKEP Network and others to develop evaluation approaches that can be used to understand and enhance the impact of research on environmental policy. We also recommend that there is a need to:

1. Increase the amount of research impact evaluation activity,
2. Build impact evaluation into research commissioning and management processes,
3. Document and publicise more research impact evaluations.

And that the SKEP Network could play an important role in co-ordinating these activities.

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1 Introduction and background to project

1.1 Project rationale

Research and evidence has a central role to play in the development of environmental policy, both in shaping its overall strategic direction and in the identification and implementation of specific objectives. A substantial investment is made each year in science to support environmental protection policies at the EU and member state level. Understanding the impact of this research is important from a number of perspectives. Funders of research will, for example, wish to evaluate the performance and impact of the researchers they have funded and also their own organisation's performance in commissioning and managing research. In addition, there is a need to demonstrate value from public investment in research and also to understand how the impact of research on policy is generated and can be enhanced.

Evaluation is often seen as a defensive, burdensome and resource-intensive activity conducted to 'justify' the existence of programmes to funders. It should be considered more positively than this. Good research impact evaluation not only highlights the value of research to users, and society more broadly, but can also enhance the impacts of existing and future research by revealing insights into the processes by which impacts occur. These insights can be used to inform the commissioning and management of new research so that it is more likely to result in research of both high quality *and* high impact. Viewed in this manner impact evaluation is a cost-effective use of resources.

1.2 Project objectives

The headline objective of the project was 'to propose guidelines for the evaluation of the implementation and uptake of environmental research, which will then be trialled and embedded into the management practices of SKEP network members'.

In order to meet this objective, two core work packages were proposed:

Work Package 1 – To review and synthesise existing knowledge and experience of the evaluation of the implementation and uptake of environmental research into an applied model for research evaluation for use by SKEP partners.

Work Package 2 – To test and consult on the draft applied model of research evaluation and guidelines for its use produced in Work Package 1, and to develop final versions of these, including a plan for implementation for the SKEP network.

The work for this project was conducted between October 2008 and May 2010. This Final Report builds on the previous interim report, presenting the findings and outputs from these work packages and the steps taken to produce these.

1.3 What do we mean by research impact?

Before presenting the detail of the project's work and findings and considering how to evaluate the impact of research on policy, it is important to clarify what is meant by 'impact'. A number of terms have been used – often interchangeably – to describe research impact, including: outcomes, benefit, payback, translation, transfer, uptake and utilisation. Whilst some organisations, such as the International Development Research Centre, try to draw subtle distinctions between these terms, they may be broadly considered to reflect a shared interest in 'change that lies beyond the research process and its primary outputs' (Boaz, Fitzpatrick and Shaw, 2008). Many research evaluation approaches remain primarily concerned with the quantity and quality of research outputs and research processes; such as research reports and contributions to the academic literature. Research *impact* evaluation looks beyond this towards the actual outcomes of the research, that is, beyond the outputs such as research reports to what has happened as a result of the research. Weiss (1998: 8) defines these outcomes as 'the end results of a programme for the people it was intended to serve'.

Outcomes may be further classified as:

- a. Initial or immediate outcomes e.g. uptake and inclusion into strategic policy documents;
- b. Intermediate outcomes e.g. implementation of strategic policy informed by the research;
- c. Final outcomes e.g. wider societal/environmental outcomes/impacts resulting from the implementation of the policy.

This project sought to explore the approaches used to evaluate each of these types of outcome, drawing on the wide range of work conducted on research impact evaluation in areas outside environmental policy and considering how this can be used to focus on environmental policy and regulatory outcomes, and moving the discussion beyond the more traditional output-focused evaluation methodologies.

1.4 Project methodology

Work Package 1 was intended to develop an applied model for research evaluation and a practical set of guidelines for the evaluation of the implementation and uptake

of environmental research based on a synthesis of knowledge and practice in the areas of:

1. Theoretical and conceptual approaches to research impact evaluation.
2. Examples and lessons from the practical application of evaluation methodologies, based on the analysis of a series of international case studies.
3. The nature of the research to be evaluated, its intended (and actual) uses and objectives.
4. The institutional frameworks and management practices that the guidelines will be used in – including an understanding of what an evaluation is intended to do and factors affecting the development of evaluation.

To bring together information in these areas, we performed two tasks. **Task 1** included a systematic review of theoretical, conceptual and practical approaches to the evaluation of the implementation and uptake of research by environmental policy-makers. **Task 2** involved a survey to understand user needs and experience of research evaluation in the SKEP Network. The main objectives of this second task were to better understand the context in which the evaluation framework that results from this project will operate; to survey the existing evaluation practice amongst SKEP network partners (where not already captured by the first task); and to engage potential users of the evaluation methodologies in the project.

The outputs from Work Package 1 were drawn together in **Task 3**, the production of the Interim Report. This included the findings of the literature review, case studies, and SKEP Network member survey and an initial draft of theoretical and applied models of research impact evaluation.

The aim of Work Package 2 was to test and consult on the draft applied model of research evaluation and guidelines for its use that were produced in Work Package 1, and to develop final versions of these, including a plan for implementation for the SKEP network.

The first task in Work Package 2 was to further develop the applied model of evaluation. This was then discussed and developed through a workshop with SKEP members held in December 2009 which informed a revised applied evaluation model and guidelines for its use. These draft outputs were circulated to the SKEP network for comment and discussed in more detail with a small selection of Network members before being finalised.

The central finding from Work Package 1 – namely that there are diverse approaches to evaluation and that any approach used should be tailored to the circumstances of its use – required a different approach to Work Package 2 to that originally envisaged. A more complex applied model of evaluation needed to be developed which is capable of assisting users in choosing between multiple evaluation options based on their

context and needs. It had originally been envisaged that a simple model of evaluation would have resulted from Work Package 1 which would be refined relatively quickly allowing the majority of Work Package 2 to be spent testing the model with users as opposed to further developing and refining an appropriate model that could address the more complex needs identified. The issues that arose in developing the model are discussed further below in Section 5.

1.5 Project outputs

There are five final outputs from this project:

1. How to evaluate the impact of research on environmental policy: **A Seven Step Guide**
2. How to evaluate the impact of research on environmental policy: **Guidelines and Supporting Information**
3. How to evaluate the impact of research on environmental policy: **Literature Review**
4. How to evaluate the impact of research on environmental policy: **Case Studies**
5. How to evaluate the impact of research on environmental policy: **Final Report**

The **Seven Step Guide** is the central output from the project and is a practical tool to guide individuals and organisations through a process that develops and implements a tailored research impact evaluation framework. The Guide is intentionally short with more detailed, explanatory information being provided in three accompanying documents.

The first accompanying document to the Guide is the **Guidelines and Supporting Information**, which provides further information intended to assist users in the implementation of the approach outlined in the Guide.

The second and third accompanying documents are the **Literature Review** and **Case Studies** which provide a further level of detail that goes beyond that of the Guidelines and allows interested users to return to the original sources that informed the Guide and Guidelines. The **Case Studies** were conducted because we found a lack of clear examples in the literature detailing exactly how research impact evaluations are done. They were originally conducted for internal project purposes but have since been brought together as a stand alone report as they are of potential use to those developing and implementing research impact evaluation approaches.

This **Final Report** describes and summarises the work done in the project, how the outputs were developed and concludes with recommendations on how the outputs could be embedded in the SKEP Network members and developed more widely.

2 Literature review: How do people evaluate the impact of research on policy and uptake?

The literature review aimed to synthesise and review existing knowledge and experience of the evaluation of research impact on policy and to use this as a building block for developing an applied model for the evaluation of the impact of environmental research on policy for use by SKEP Network members and others interested in research impact evaluation.

The review utilises and builds on the approach and findings from work that was conducted for the UK Department for Environment, Food and Rural Affairs (Defra) by two of the project partners (Boaz, Fitzpatrick, and Shaw, 2008). This previous review addressed a similar research question to this project; how to best evaluate the impact of research on policy? The previous review was international in its scope, although the focus was on English language publications. The findings of the previous review, which was conducted in late 2007, have been updated, expanded and reworked to address the specific requirements of this project.

One of the findings to emerge at an early stage of the review is that there are few good examples or sources that consider the detail of the practical approaches that have been used to conduct research impact evaluations. We have therefore compiled a series of case studies both to improve our own understanding and to illustrate to potential users the approaches that could be used to evaluate research impact. The case studies are contained in a separate standalone Case Studies report and summarised and discussed in the following section.

The update of the previous Defra review added value to this project through:

- Obtaining the most recent references in what is a fast evolving area of practice and theory;
- Allowing the collation of more detail on research impact evaluation approaches and the issues associated with their use, and in particular the practical and conceptual/theoretical approaches used;
- Allowing us to seek material of specific relevance to this project and in which the previous review had found little material.

2.1 Review research questions

The overlap in objectives with this and the previous Defra review meant that similar research questions were used in this review. However, we expanded on these questions to address specific interests relating to this project, particularly concerning the impact of research not just on policy but also regulatory uptake and implementation, and also to explore areas in which little or less material was found in

the previous review, such as the cost of different evaluation approaches. We sought material to answer the following seven questions:

Literature Review Research Questions

1. How do people evaluate the impact of research programmes in different policy contexts and countries?
2. What are the strengths and weaknesses of different approaches to research impact evaluation?
3. Which methods are most effective?
4. Which offer value for money?
5. What are the issues and challenges for evaluating the impact of research on policy?
6. Are there any specific issues for evaluating the impact of research on environmental policy, regulatory uptake and implementation?
7. What conceptual and/or theoretical studies underpin research impact evaluation?

2.2 Review methods

The literature search and analysis were conducted drawing on principles from systematic reviewing, and the methods used are documented in the Literature Review's appendices. The search process covered 11 literature databases (enabling the identification of journal literature, monographs, conference proceedings, papers and grey literature), internet searching of 42 websites, hand-searching of three important journals, citation follow-up and personal recommendations. Sources identified by these searches were selected for inclusion based on closer examination of how each source met the core review questions.

Whilst formal quality appraisal methods were not employed on the sources identified, the majority of sources had either been peer reviewed as part of formal journal peer-review processes, or represented the outcomes of large well-funded investigations using peer-review mechanisms such as panel review (e.g. by CAHS, CGIAR). Conclusions drawn from sources that did not fall into one of these categories were included only after careful consideration of the methods employed in the research studies in question and with an awareness of its potential limitations.

Data extraction sheets were completed to capture the relevant material (key findings, methodological considerations, basic reference information etc) from each selected source in a standard format. The data sheet template is given in the Literature Review's appendices.

62 references were identified for this review, building on the 156 references reviewed for the previous Defra review.

Efforts were also made to access non-English language literature, including searching European databases (such as FRANCIS), asking European project partners and SKEP members for recommendations of relevant literature, and re-running the initial Web of Knowledge searches to incorporate non-English language sources as appropriate given the language skills available across the project team. This process proved particularly challenging, largely as a result of the limited project resources available, and the need to ask people to search on our behalf who were often less familiar with the literature of interest. The limited number of articles that were identified from these efforts had largely already been identified by the English searches which could perhaps be taken as an indication that the main methodological literature in this area tends to be in English.

2.3 Summary of key findings from literature review

The review revealed a significant amount of new material concerning the evaluation of the impact of research on policy, which reassuringly highlighted findings that were consistent with the previous review. The main findings of the Defra review in relation to the question ‘how do people evaluate the impact of research?’ included:

1. Evaluation methods used should be ‘fit for purpose’, yet the variety of methods and uses for them means this decision is far from straight forward. Approaches are therefore context dependent with an important factor being the outcome of interest.
2. Much of the research impact evaluation that has been done has focused on non-policy impacts, i.e. on different outcomes of interest to the one we are interested in for this project, particularly in the area of health and clinical practice of healthcare options. This difference needs to be considered in developing policy-focused evaluations.
3. Context also affects the type of evaluation conducted. For example, in the area of international development the emphasis has been on qualitative, participatory evaluations intended to improve learning and service delivery with frequent field visits to establish practice on the ground. In other contexts, for example the United States, the emphasis has been on developing quantitative methods and performance indicators for statutory reporting requirements. In the European Union panel review has been the main method of evaluation and, while criticised in some regards, its role in building ownership across countries is important.
4. There is a common interest in developing new approaches to evaluation, for example, through network analysis and citation analysis. However, the

differing contexts and needs of users of these methods are likely to result in an ongoing diversity of approaches, and new methods being used that complement rather than replace existing methods.

The first finding of the Defra review identifies a problem which this review has attempted to address through the collation of material relevant to the planning and development of a research impact evaluation. The previous review identified a wide range of options and highlighted the difficulty of choosing between them. This review has brought together more in-depth material on the issues to consider and address when planning a research impact evaluation. These include the questions of why, what, when and who to evaluate (see Section 3.1 of the Literature Review), and key practical issues to be addressed when developing an evaluation framework (see Section 4 of the Literature Review) which can be used to test any evaluation approaches developed.

In relation to the second finding of the Defra review, about most documented evaluations relating to non-policy impacts, this review has identified evaluation methods successfully applied to the evaluation of the impact of research on policy generally and environmental policy specifically. These include, for example, the Irish EPA approach and the Research Impact Framework. The Case Studies also give a range of examples of evaluation approaches used to understand the impact of research on environmental policy including examples from the Environment Agency for England and Wales, the Swedish Environmental Protection Agency (SwEPA) and the Finnish Environment Institute (SYKE).

This review gives greater detail of the approaches identified than in the previous review, bringing together detailed information on how they may be utilised and their strengths and weaknesses, focusing on five evaluation frameworks thought to be of particular relevance to this project's objectives. It has identified some additional data collection methods and approaches to analysis. It also adds new insights, such as the ordering of the evaluation approaches into evaluation frameworks, evaluation tools, indicators and management tools, which are important to the project's aim of developing an approach for the evaluation of the implementation and uptake of environmental research and practical guidance for its use.

3 Case studies of research impact evaluation

3.1 Why were the case studies conducted?

One of the findings to emerge at an early stage of the literature review summarised in the previous section is that there are few good examples or sources that consider the detail of the practical approaches that have been used to conduct research impact evaluations. We therefore decided to conduct a series of case studies both to improve our own understanding and to illustrate to potential users the approaches that could be used to evaluate research impact. The case study analysis had three aims:

1. To illustrate some of the approaches to evaluation that have been used to give non-experts a feeling for what is involved.
2. To draw lessons that can inform our recommendations for conceptual and practical approaches and guidelines on evaluating the impact of research on policy.
3. To contribute to a comparative review of the strengths and weaknesses of different research impact evaluation approaches.

3.2 What methods were used to identify and conduct the case studies?

Two main approaches were used for identifying the case studies. The first involved the identification of potentially interesting studies mentioned in the literature. Often these were only alluded to or mentioned in passing and therefore required further desk-based research and/or interviews with key individuals involved in the evaluation of interest. The second relied on recommendations from project partners and responses from the SKEP member survey conducted alongside the literature review. Of particular value was the work done by Dr John Holmes (a member of the project team) as part of SKEP Work Package 4 on the dissemination and implementation of environmental research (Holmes and Savgard, 2008) which touched on existing research impact evaluation processes occurring in each of the SKEP member countries.

The selection of case studies aimed to capture:

- Examples from a range of countries, including both European and wider international examples.
- A variety of approaches for evaluating the impact of research on policy, ranging from those derived from theory to more practice-based approaches.

- A variety of scales, methods and resource intensities.
- Evaluations with different objectives, including those focusing on improvements in research management, to those intended at enhancing the delivery of impacts.

Once the case studies of interest had been identified, a standard set of questions were developed to be answered by each case study (see Table 1 in the Case Studies report for details) to ensure the material from each case study was comparable and in the same form. Any available written sources were initially consulted to answer as many of these questions as possible, and these were then clarified, expanded and checked via telephone interviews with appropriate individuals involved in each evaluation.

3.3 Summaries of the Case Studies

The nine case studies conducted were:

1. Stockholm Environment Institute,
2. Irish Environmental Protection Agency,
3. Consultative Group on International Agricultural Research,
4. Defra/Environment Agency for England and Wales (FCERM) Programme,
5. The Finnish Environment Institute (SYKE),
6. Foundation for Research, Science and Technology, New Zealand,
7. Environment Agency for England and Wales Post-Project Appraisals,
8. Swedish Environmental Protection Agency,
9. Land and Water Australia.

Brief summaries of each of the case studies are presented below, followed by the overall findings from the case studies. Full details of case studies are given in the separate Case Studies report.

Case Study 1 - Who: Stockholm Environment Institute (SEI)

Where: Multiple Countries (study included seven case studies)

What: Projects, programmes, processes of impact, knowledge support activities.

Theoretical underpinning: The approach used draws on four central ideas: types of policy impact based on Weiss' categories of policy impact (see full case study for details); depth of impact; the policy cycle and policy-research interactions; and factors known to enable or inhibit impact.

Methods used: In-depth key informant interviews were conducted with both supply-side and demand-side actors, covering a range of questions linked to the four central theoretical ideas.

Methodological issues encountered: Attribution; subjectivity of respondents' recall; timescale for impacts to occur.

Case Study 2 - Who: Irish Environmental Protection Agency (IEPA)

Where: Ireland

What: Programmes

Theoretical underpinning: Evaluation frameworks used by a number of organisations were explored, but the framework adopted is most closely aligned to the Australian Research Quality Framework. It focuses on both research quality (input, output and reputational quality) and research impact (policy, commercial and collaborative impact).

Methods used: Collation and assessment of data on sub-criteria covering research impact and quality. Data collected through interviews, surveys, citation analysis, collation of proxy measures, and documentary analysis. Sub-criteria assessed by expert panel to give ratings of research quality and impact.

Methodological issues encountered: Documentation required for evidence of impact can be poor; resource intensive approach; mistrust of researchers of the motivations behind the evaluation; recall bias; timing; uncertainties associated with environmental research can affect policy-maker willingness to act on research findings.

Case Study 3 - Who: Consultative Group on International Agricultural Research (CGIAR)

Where: Multiple Countries

What: Projects, programmes

Theoretical underpinning: The approach draws on various ideas including: types of policy impact (based on work by Weiss as mentioned in SEI case study); hypothesised impact pathways; resource allocation; theories of influence.

Methods used: Creation of hypothetical impact pathways; testing with key informants and iterative approach to interviews to address subjectivity; comparison with a counterfactual; quantification of impacts and calculation of economic indices of impact and return on investment.

Methodological issues encountered: Reliability of key-informant interviews; poor documentation of activities undertaken to enhance impact; balancing breadth and depth of interviews; moving beyond traditional impact measures (e.g. citation analyses that do not correlate well with policy impact) and finding indicators able to measure less tangible impacts; the Cassandra problem (see full case study) timing and duration of impacts; attribution.

Case Study 4 - Who: Defra and the Environment Agency for England and Wales

Where: England and Wales

What: Projects and themes in broader programme.

Theoretical underpinning: Practically derived rather than underpinned by theory. It is a system-based approach which embeds monitoring of objectives, outputs and outcomes into project and programme management, from initiation to post-project, with proportionate degrees of effort.

Methods used: Central component of evaluation relies on assessing progress towards goals a SMART Benefits Delivery Plan developed by the project officer at project inception. A Programme Benefits Realisation Plan is also maintained - including a complete description of benefit, time-scales and evidence of benefits realisation – which is reviewed annually. Key themes explored include: the development of the knowledge base; policy, process and operational outcomes; and cost savings and resources.

Methodological issues encountered: Need for a common reporting and assessment system to be used on an annual cycle as a matter of routine.

Case Study 5 - Who: The Finnish Environment Institute (SYKE)

Where: Finland

What: Programmes, projects

Theoretical underpinning: Primarily a practice-based approach, but two ideas have shaped the methods used; triangulation of methodologies and multi-layer evaluations (i.e. different timescales – 10, 4 year and annual evaluations), and intervention theory (considering whether the research-based justification for the policy intervention at the outset proved valid)

Methods used: Ten-year evaluation - conducted by an independent evaluation panel with inputs of data from interviews with over 200 potential users of SYKE's work. Four-year evaluation - comprised of internal reviews that are cross-checked between programmes and with external stakeholder interviews and surveys. Annual evaluations - involve reporting on impact and effectiveness and a balanced scorecard approach. Staff self-evaluations of individual performance against organisational goals.

Methodological issues encountered: Involving potential users from the outset of the research design process; maintaining awareness of the political context to science and longer-term science needs; attribution; timing; uncertainties associated with environmental research can affect willingness to act on research findings.

Case Study 6 - Who: The Foundation for Research, Science and Technology (FRST)

Where: New Zealand

What: Thematic research programmes

Theoretical underpinning: Based primarily on practical considerations and advice from evaluation consultants rather than conceptual/theoretical models.

Methods used: Three methods: key informant interviews with research users to provide depth of information; a web-based questionnaire to provide breadth; and programme case studies which are researcher-focused but with external stakeholder input. Questions asked in the interviews and surveys aim to determine level of awareness of the research amongst potential users, relationships between FRST researchers and users, nature of benefits obtained from the research, rating of usefulness of FRST research for achieving benefit, rating of impact of each benefit on user organisations, and barriers/gaps in the research.

Methodological issues encountered: Attribution; diversity of users and research such that not all research will be perceived to be of value; mechanisms for improving the links between researchers and users to improve uptake; diversity of users and impact pathways for different types of environmental research.

Case Study 7 - Who: Environment Agency for England and Wales

Where: England and Wales

What: Projects

Theoretical underpinning: Practically derived.

Methods used: Workshop format with key players and Agency project managers, covering: project background, overview benefits delivery, project processes, and conclusions. Only a sample of the existing projects were evaluated – approx 5-10 out of 300.

Methodological issues encountered: Need for clarity on outputs and outcomes; specification of intended benefits at the outset; responsibility for post-project monitoring; staff turnover; staff buy-in to the process; timing; need for evaluation to reflect the interdisciplinary nature of environmental research.

Case Study 8 - Who: Swedish Environmental Protection Agency (SwEPA)

Where: Sweden

What: Projects (ad-hoc), and quality, relevance and management of research

Theoretical underpinning: None cited – evaluation of the impact of research on policy tends to happen in an ad-hoc way, or is considered in planning cycles when considering why a particular environmental goal has or has not been achieved.

Methods used: Identification of research that has contributed to national environmental goals; bibliometric analyses two years after project completion. Ad-hoc evaluations are used to gain insights using a variety of methods e.g. interviews, tracking direct use of research in policy negotiations.

Methodological issues encountered: Need for standard methods to allow comparison of different projects and programmes – these could be supplemented with more ad-hoc evaluations tailored to needs and circumstances; need to involve users at an earlier stage; poor availability of data.

Case Study 9 - Who: Land and Water Australia

Where: Australia

What: Projects

Theoretical underpinning: Key aspects of the approach are the management of knowledge assets post-project completion (no projects are considered closed), and the integration of user needs into research programme design, management, communication, monitoring and evaluation.

Methods used: The approach aims to understand research impacts *and* policy-makers' knowledge-seeking behaviour. LWA evaluation guidelines suggest a range of possible methods – e.g. targeted stakeholder surveys, narratives, records kept by research teams, cost-benefit analyses - the choice of which will depend on the evaluation questions chosen.

Methodological issues encountered: Attribution issues, timing of evaluation, ensuring evaluation is integral to programmes rather than an isolated or retrospective process.

Whilst Land and Water Australia has recently been abolished, their proposed approach was interesting as it explicitly goes beyond assessing research impact, combining it with an assessment of how to *enhance* impact.

3.4 Key findings from the case studies

A number of findings can be drawn from this case study analysis, primarily concerning: the considerable diversity in the objectives, scope and scale of research evaluations conducted; the types of methods employed; the challenges faced; and the challenges faced specifically with respect to the evaluation of the impact of *environmental* research on policy. This section explores each of these in more depth.

Diversity in the objectives, scope and scale of research evaluation

Most of the impact evaluations conducted had multiple objectives, including accountability to funding organisations and justification of their investment, and improving the effectiveness, relevance and wider impacts of the research programme (learning). For some, such as the CGIAR, the accountability side was paramount and therefore economic valuation of impact was a high priority. For others, learning was more important. The SEI, for example, was more interested in unpacking the concept of policy impact; what it is, and how can it be measured and enhanced.

Most of the case studies explored programme-level evaluations, though the SEI and CGIAR focused on a number of individual projects. The scope and scale of the research impact evaluation largely depended on the resources available, ranging from

an ad-hoc non-structured approach in the Swedish Environmental Protection Agency, to the incorporation of research impact as a consideration in wider evaluation processes as seen at SYKE and the Irish EPA, to much more in-depth focused approaches at the CGIAR and SEI. Whilst some organisations focus primarily on research uptake and management processes (SwEPA and EA), others attempt to explore wider impacts and more long-term outcomes (New Zealand FRST, SEI, CGIAR, SYKE).

Types of evaluation approaches employed

The approaches used for evaluating the impact of research on policy were most commonly derived from practical need and tended to be process-driven, with the exception of the more academic organisations such as the SEI and CGIAR, who drew more heavily on existing theoretical and conceptual frameworks.

Most of the case studies employed the use of key informant interviews with researchers and/or intended policy users. In some cases these were accompanied by surveys to broaden the reach of the evaluation, as in the New Zealand case study, or by bibliometric and documentary analyses to supplement the information gained from the interviews, or to help identify the key informants. The Environment Agency for England and Wales tested a slightly less resource-intensive approach, choosing to hold workshops with key players and Agency project managers to consider and discuss the benefits delivery of the research projects in question. In general it was felt that multiple methods were needed to overcome many of the challenges associated with evaluating the impact of research on policy, particularly for environmental research.

Generic challenges faced in evaluating the impact of research on policy

These case studies and the literature review highlighted numerous challenges faced when evaluating the impact of research on policy, and raised a number of mechanisms to try to address such challenges.

First, and most commonly raised, is the issue of **attribution**; how to measure the impacts specifically of research on policy when so many factors influence the policy process, and furthermore, how to attribute impacts to one particular research project or research organisation when policy decisions tend to be based on the culmination of findings from various projects and programmes. CGIAR suggests this issue may be addressed in three ways:

- The use of a counterfactual to identify what the policy outcome would have been without the input of a specific piece of research (though developing a counterfactual can itself prove challenging).
- Demand-side approaches to impact evaluation (as opposed to supply-side), which use major policy events as the starting point and work retrospectively

to establish the separate influences of the many research suppliers and other factors on the policy responses.

- Institutionalising the process of impact evaluation, i.e. ensuring that staff and management take responsibility for recording outputs, outcomes/influences and policy responses related to their research (as illustrated by IFPRI in the CGIAR case study). Independent evaluators can verify these and translate them into meaningful measures of their impact on economic welfare, assessing to what extent any changes in welfare can be attributed to policy research institutions and their partners.

Second is the issue of the **appropriate timing** for the evaluation process and how to capture the duration of research impact. If the evaluation is conducted too soon after the completion of the research, no impacts may yet be apparent. However, research results can set the stage for a policy change that occurs at a much later date when the original research results are forgotten, i.e. if the evaluation is conducted too late, the link between the earlier research and the substantially later policy change is broken, and key informants may no longer make the connection. The Environment Agency for England and Wales therefore suggested a two-stage process for future evaluations; the first stage would rely on documentation and a small number of interviews shortly after project completion, and the second stage would adopt the workshop format and would be held once potential benefits of the project are expected to have emerged.

Related to this is the third issue, the **reliability of information from key informant interviews**; some key informants will have been much more closely engaged with the research than others, some may play more central roles in the development of policy, some may have more or less reliable and objective recall of key conversations and critical events, and some will have changed posts and lost contact with the programme/policy in question before final decisions were made. The New Zealand case study used the interesting approach of using independent consultants to help identify appropriate key informants. They focused on selecting 'key players' or 'information nodes' rather than drawing from the general pool identified by researchers. The consultants used a matrix template with the type of research on one axis and type of user organisations on the other axis to ensure a comprehensive coverage of users.

Fourthly is the challenge of determining **which methods to use to capture as many impacts as possible**. There is a need to look beyond the use of traditional research impact indicators such as the number of publications in leading journals and subsequent citations, as studies (such as those by CGIAR) increasingly indicate that this measure does not correlate well with policy influence or wider impact. Indicators need to be developed that can identify less tangible impacts, such as changes in common ways of examining policy processes that lead to multiple changes in policy decisions across countries, institutions, and/or individuals.

These sorts of impacts are difficult to trace and capture, and doing so becomes increasingly difficult beyond the project level as more actors become involved, together with exponentially greater information sources and motivations for use. SYKE highlighted the particular difficulties in tracing uptake and impact of ‘blue skies’ research, as research planned and executed without the input of or initial demand from policy-makers is rarely taken up directly or immediately by policy-makers.

Linked to this is the **‘Cassandra problem’** (Ryan and Garrett, 2004); is it possible to capture and value ‘good research advice’ that is not taken? Or delays in taking the advice? It is suggested that an evaluator could calculate the opportunity costs of a ‘wrong decision’ (i.e. estimate the cost of the alternative to not taking the advice). Alternatively, so-called ‘good advice’ may have arisen from flawed research, in which case it is to the policy-makers’ benefit if they did not choose to accept it.

Finally there is the challenge of the **resource intensive nature of impact evaluations**. Due to the many challenges associated with impact evaluations, evaluators often try to employ multiple methods in order to identify the impacts from several perspectives. There is a need, however, to find the best approach based on the limited resources available.

The New Zealand case study, for example, tries to find the best balance between conducting in-depth interviews with a few key informants and facilitating wider engagement through the use of written survey questionnaires (the latter is less resource intensive and enables contact with more research users, but also potentially provides less details and credibility).

The Irish EPA highlighted that many organisations have conducted impact evaluations but many fail to document these processes in detail, thereby forcing the evaluator to move beyond straightforward documentary analysis. They also found that the scientific and academic community were often not particularly interested in answering questions about the wider impacts of their research, such that considerable time and effort was required to meet the researchers involved on an individual basis to explore and highlight the benefits of evaluating the impact of research and thereby encourage cooperation. The Environment Agency for England and Wales evaluation found that it was the senior staff on the customer side that were often more reluctant to participate in the evaluation process, although where they did attend the workshops, they found them to be enjoyable and beneficial.

Challenges faced specifically with respect to the evaluation of the impact of environmental research on policy

A number of research impact evaluation challenges are particularly pertinent to environmental research.

Environmental research programmes are often very **diverse** and may cover wide-ranging subject matter – e.g. from research targeted at the land environment, to the marine, to more people-based environmental behaviours research. The potential user population may therefore be very diverse, such that not all the research in a programme will be of value to everyone. The impact pathways may be also very different for different types of environmental research, which can complicate efforts to develop generic impact evaluation criteria suitable for all projects funded by a particular programme that will still capture the level of detail required in each evaluation. A distinctive characteristic and further complicating factor linked to the evaluation of environmental research is that it is often interdisciplinary, and increasingly brings together the natural and social sciences. The evaluation approach therefore needs to reflect this interdisciplinarity.

A further challenge is that environmental research is likely to produce **environmental benefits for society**. It can be difficult to quantify such benefits as they tend to lack market values, and the development of effective environmental valuation techniques continues to prove difficult. Similarly, **intangible outcomes** produced by much environmental research are considered to be very valuable but these are also more difficult to measure. In the New Zealand case study, for example, users regarded new knowledge which might lead to a change in awareness or understanding of an environmental problem as being important to the development of a new management tool. This is quite different to many other research areas, where the main outcomes are tangible benefits (e.g. manufacturing research). They addressed this by ensuring questions were included in the web surveys and key informant interviews to capture these benefits and their impact, and by following these up with a cost benefit study.

SEI suggested that a particular challenge in assessing the impact of environmental research is that the findings of much environmental research **will only have a significant ultimate impact if policy-makers act on them immediately**, which rarely happens. Due to complex feedback systems and lag times associated with climate change science, for example, research into the effectiveness of climate change mitigation measures may recommend mitigation measures that will ensure climate change targets are met, but only if implemented immediately. It is therefore important to assess the actual impact of environmental research rather than its *potential* impact.

A significant reason why policy-makers do not tend to act on environmental research recommendations immediately relates to the **considerable uncertainties and caveats** often associated with environmental research (e.g. climate change research). Impact evaluations may therefore need to consider how these uncertainties have been explained to the policy community, to fully understand how uncertainties may have compromised the potential uptake of the research.

4 What are the evaluation needs and practices of the SKEP network members?

This section reports on our work to understand user needs and experience of research evaluation in the SKEP Network and beyond. This was conducted early in the project in January and February 2009 in parallel with the literature review and case studies.

The primary objective of the survey was to gain information on SKEP Network members' current approaches to the evaluation of the uptake and implementation of environmental research and to understand their future needs in this area. The results were fed into the development of the Guide and Guidelines and also led to the selection of a number of SKEP Network members as subjects for detailed case studies. These case studies include the Irish Environmental Protection Agency, the Environment Agency for England and Wales, the Swedish Environmental Protection Agency (SwEPA) and the Finnish Environment Institute (SYKE) and are summarised in Section 3 above and the separate Case Studies report.

The survey additionally sought to capture literature and references not likely to be found in standard databases, for example, internal working papers and grey literature. This request was particularly targeted at capturing non-English language sources.

4.1 The SKEP Network members

At the time of the survey the SKEP Network consisted of 17 government environment ministries and agencies, from 13 European countries. The members are all linked to the funding of environmental research but their roles vary depending on their mandate.

- The most common role is that of the ministries with responsibilities for the environment or sustainable development. As part of the government they plan, advise, and make decisions, and often also support the implementation of environmental policy.
- In addition, they all fund policy relevant research. The Ministry of Ecology and Sustainable Development (MEDD) in France, The Ministry of the Environment (FiMoE) in Finland, the Federal Ministry for Land and Forestry, Environment, and Water Management (BMLFUW) in Austria, the Ministry of the Environment and Protection of the Territory (MATT) in Italy, and the Ministry for Housing, Spatial Planning & Environment (VROM) in the Netherlands can be counted as organisations with the above roles.
- Some of these organisations have a division that concentrates solely on research funding. This is the case in MEEDATT and, to some extent, in BMLFUW. In FiMoE and VROM research is coordinated mainly through

separate units. In these organisations there is a clear objective to fund research that supports their own duties such as decision making and advising the government and parliament.

4.2 The survey of SKEP members

The survey was sent to 29 people representing all 17 SKEP member organisations and 13 countries. This was followed up in most cases by personal correspondence between the SKEP representative and project staff, offering the opportunity to respond verbally.

Table 1 provides summary background information for the nine organisations that responded to this survey and the rest of this section summarises the responses to each of the survey questions.

Table 1: Background information of survey respondent organisations

Organisation	Abbreviation	Country	Number of staff	Function
Swedish Environmental Protection Agency	SwEPA	Sweden	550	The central environmental agency in Sweden
Ministry of Spatial Planning and the Environment	VROM	Netherlands	4,000	Policy making - spatial planning and the environment
Ministry of the Environment	FiMoE	Finland	350	Ministry
Flemish government - Environment, Nature and Energy Department	Fg-ENED	Belgium	500	Environmental policy preparation and evaluation
Environmental Protection Agency	EPA	Ireland	300	Environmental permitting and enforcement, monitoring and assessment
Umweltbundesamt (Federal Environment Agency)	UBA	Germany	1,400	Scientific support, implementation and public engagement
DRI – SR (Direction de la Recherche et de l’innovation – Service de la Recherche) - MEEDDAT	DRI – SR (MEEDDAT)	France	100	Fund & manage research on behalf of MEEDDAT

ADEME – SPR	ADEME		900	Public agency for Environment and Energy management – implementing incentive policies for sustainable energy and Clean Technologies.
National Centre for Research and Development	NCRD - PL	Poland	€15m/yr	Fund and oversee research and application
Environment Agency for England and Wales	EA	UK	-	Permitting, monitoring and enforcement, wildlife protection & flood defence and informing policy

4.3 The organisations who responded to the survey

As illustrated in Table 1, nine organisations responded to the survey and one organisation provided documentation of the evaluation approach which is under deployment (Environment Agency for England and Wales). Nine different countries were therefore represented. Four respondents represented government departments, four environment agencies/ regulators and two research agencies. The reported approximate size of organisations measured by staff numbers ranged from 100 (MEEDDAT) to 4,000 (VROM). The mean was 1,013.

4.4 Research overseen by the organisations who responded to the survey

Survey respondents reported that research **budgets** range from €7m (Belgium, Fg-ENED) to €298m (France, MEEDDAT). The mean is €57m. The **scope** of research overseen was mostly related to the function of environmental regulators. The research is intended to be **used** in policy in all cases but also typically used by the public, businesses and NGOs in most cases.

4.5 Approach to evaluation by SKEP member respondents

Seven organisations reported on their evaluation processes; two organisations did not have any processes in place. The reported evaluation objectives mostly relate to assessing outputs and outcomes, but four organisations also highlighted their aim to use such evaluation processes to steer future research. The reported scope included quality evaluation in all but one case (VROM relies on institutes for quality evaluation) and uptake/outcomes in some way for all cases. All respondents claimed

interest in assessing performance beyond contractual delivery. Most cited the value of outcomes, and one included the development of researchers as an outcome of interest. All but one (the French programme, ADEME) evaluated at the project (i.e. sub-programme) **level**, and three evaluated at the programme level.

All but one member **started** evaluation after research projects have ended, with two organisations starting within months/weeks of completion and one organisation adopting a three-stage approach (research, policy and environmental outcomes). The duration of these evaluation processes varied by organisation; one took up to three years, one less than a year, and one follows the process through to environmental outcomes.

Given the findings of the earlier Defra review, we were particularly interested in how SKEP members attempted to address the challenge of **attribution**. Amongst those that responded to the survey, such efforts mostly included an element of judgement, with one organisation adopting self assessment and stakeholders to attribute outcomes, and another also monitoring the press.

4.6 The evaluation needs of respondents

Five particular **evaluation needs** were reported by respondents: two highlighted the need to evaluate policy relevance in some way; one requested simplicity; one asked for explanatory background; one highlighted the transdisciplinary issues; one focuses on the need for versatility, and one requested a project level focus.

When asked how prescriptive they would like to see our research impact evaluation guidelines to be, responses ranged from 5.5 to 8 (with 10 representing the ‘most prescriptive’).

Respondents were also asked ‘what do you consider the most important outcome of research to be?’ In response to this, three cited impact on policy in some way; one considered post-policy outcomes to be the most important, and one considered changes and practices via practical application of results to be the key outcome of value.

4.7 Conclusions

The survey of SKEP Network Members usefully orientated the project team in terms of understanding the evaluation needs and experience of Network. It prompted more detailed explorations through the Case Studies of the evaluation experiences and needs of four of the SKEP Network members. The project workshop held in

December 2009 and described in Section 5 was used to further clarify the needs of the Network

5 Developing an approach for the evaluation of the impact of research on environmental policy and uptake.

This section outlines how the information gathered in the literature review, case studies and survey of SKEP Network members was used to develop the practical evaluation tool, *How to evaluate the impact of research on environmental policy: A Seven Step Guide* and the accompanying *Guidelines and Supporting Information*.

5.1 The challenge of developing an applied model of evaluation

The literature review, case studies and survey of the SKEP network revealed a wide range of approaches to research impact evaluation and that these were being conducted in a diversity of settings with varying objectives and constraints. Material was also brought together on the strengths and weaknesses of the different approaches and other key aspects of interest to the SKEP Network.

One of the key findings of the literature review is that an evaluation methodology needs to be tailored to the circumstances of its use. The survey of SKEP Network members revealed a variety of experience of and needs for research impact evaluation

These findings presented a significant challenge for the project team in terms of recommending an applied model of evaluation and guidelines for its use. Different models of evaluation will be appropriate in different circumstances and the guidelines for use will therefore vary according to the model used. Developing a mechanism that assists the tailoring of evaluation approaches without resorting to expert advice is not a trivial task.

The challenge for the project was therefore not that there is a lack of approaches that can be used to evaluate the impact of research on policy – there are plenty – but rather how to choose between them. This choice can be either in terms of which existing framework to use and how to modify them, or how to assemble the varied components of evaluation into a new framework.

5.2 Developing an applied model of evaluation

Our initial approach to developing an applied model of evaluation, which was outlined in the Interim Report, was based on 12 questions that needed to be answered to help select and develop an appropriate framework and a staged organisational development of capacity to conduct impact evaluation. These 12 questions provided a checklist of issues that need to be addressed in developing an evaluation framework. The staged development was intended to ensure that organisations developed their evaluation approaches in a staged way, i.e. starting with evaluation basics before

moving to more ambitious approaches. However, while the 12 questions are useful as a checklist for ensuring that a framework meets its intended objectives – and they have been reworked and included in Step 5 of the Guide – they are less useful for guiding the development of a framework, i.e. while they may highlight that a problem with a particular evaluation framework exists, they do not explain what to do to resolve it.

It was therefore necessary for the project team to consider how to develop an approach that provides specific practical guidance on the development and implementation of a research impact evaluation appropriate to an organisation's needs, while retaining the flexibility to adapt in response to changing circumstances.

The project team spent a considerable amount of time resolving this challenge and considered a number of options for doing this before settling on the approach outlined in the Seven Step Guide. These alternative options included, for example, developing a range of typical evaluation scenarios with different models and guidelines for each, or a matrix-based approach summarising the strengths and weaknesses of the different approaches. However, these were felt to be either too prescriptive and/or not to assist users in making decisions on the development of a tailored evaluation framework.

5.3 Developing the Guide

The final version of the Guide is a process-based approach that guides users through the steps and decisions required to develop and implement a research impact evaluation suited to their needs.

To develop the Guide the findings from the literature review, case studies and SKEP Network member survey were revisited in light of the challenge of developing an applied model. This analysis resulted in the following observations:

- Of the 24 approaches for structuring and interpreting evaluation data identified in the Literature Review (see Table 4 of the Literature Review) only five are complete frameworks for evaluation, as opposed to supplementary tools; indicators and metrics-based approaches; or research management and objective setting tools.
- Each of the five frameworks identified follows a broadly similar set of generic steps of implementation (see Figures 2 and 3 in the Guide)
- The literature review section on planning an evaluation, the identified SKEP Network members' and 12 questions noted above, can be used to generate a set of criteria that can be used to judge the suitability of an evaluation framework.
- These criteria can be used to pre-rank the five frameworks to reduce the need for expert input in the choice of framework and to identify where their

weaknesses lie and whether these weaknesses can be addressed using the supplementary tools/data collection methods.

This led to the development of the initial version of the Seven Step Guide which:

- Is process-based covering the steps of evaluation from planning through to implementation, analysis and reporting;
- Is based around five different evaluation frameworks that have been used and adapted successfully in practice, display an element of flexibility in their use, and have the potential to be of value in addressing the needs of the SKEP Network;
- Guides users to a framework most closely suited to their needs and then modifies or adapts this to better suit their needs.

5.4 Gaining user input to the Guide

A revised applied model/initial version of the Guide was produced as a *Discussion and Briefing Paper* for a project workshop held in London, on 7th December 2009. This workshop brought together members of the SKEP Network and the project team to discuss the approach and how it should be developed to best meet the needs of the Network. The workshop resulted in useful comments on the presentation and development of the Model/Guide. In particular it was felt that greater consideration should be given to: the justifications for the evaluation; the intended users of the evaluation outputs; the resources required and institutional context. Additionally, a desire was expressed for two worked examples of the use of the Guide to be produced to illustrate its use.

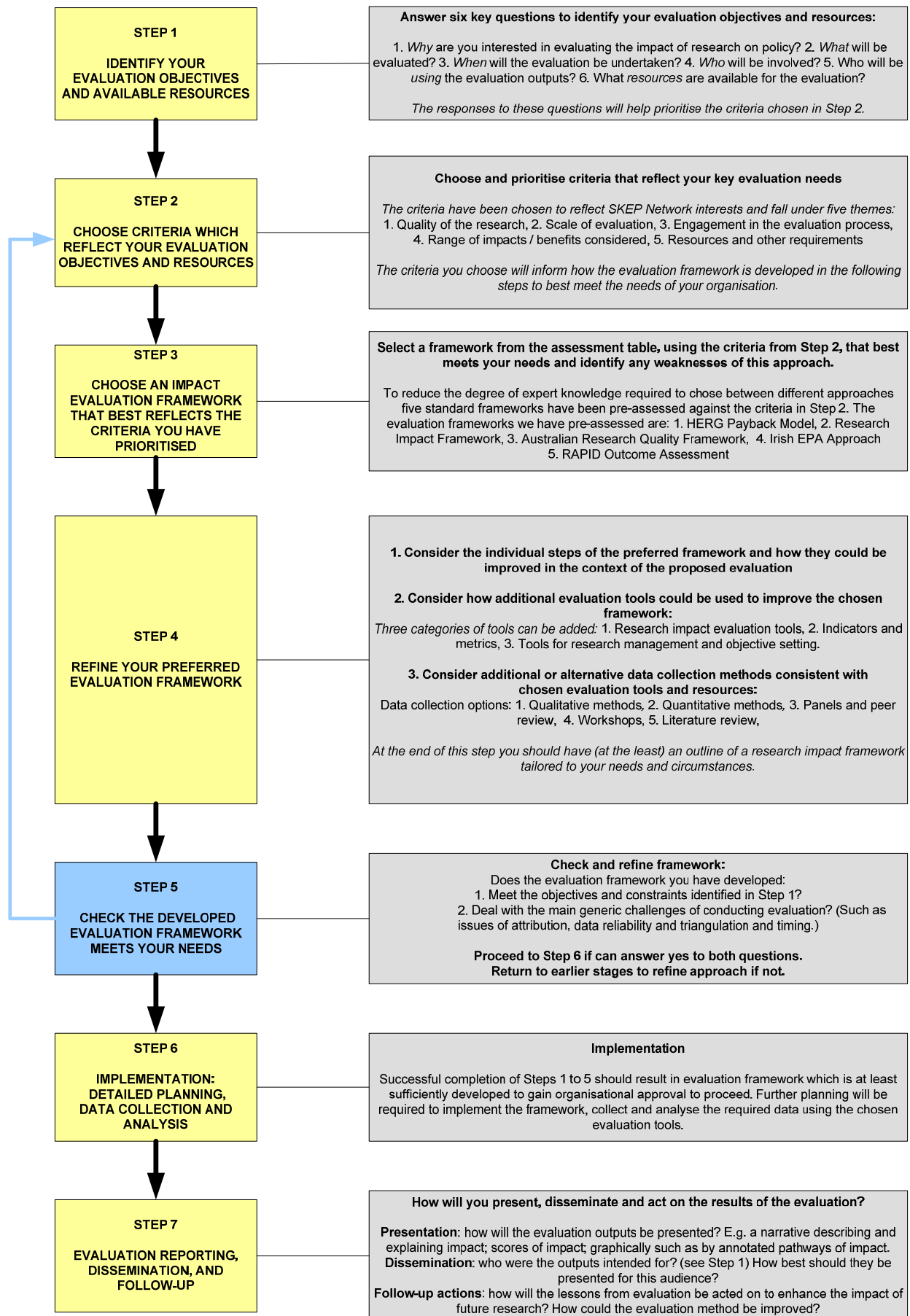
Following the workshop, the *Discussion and Briefing Paper* was revised to produce a draft version of the Guide which was circulated in February 2010 alongside a draft of the *Guidelines and Supporting Information* which were intended to provide further details relevant to the implementation of the Guide. Comments were sought on these drafts from the whole SKEP Network (and project team). The Guide and Guidelines were tested further internally and the two worked examples produced by the project team. The Guide was discussed verbally with two members of the Network and it was tested in detail with one of the SKEP Network members before being revised into its current final form.

5.5 Using the Guide and Guidelines

The Guide provides a concise practical guide for those wanting to develop and use a framework to evaluate the impact of research on environmental policy. It:

- Outlines seven steps for research impact evaluation, from evaluation planning through to implementation and onto reporting and follow-up (see Figure 1);
- Highlights how evaluation frameworks can be tailored to the circumstances and needs of the organisation and type of research being evaluated; and
- Provides links to more detailed information that may be required by those using the Guide.

Figure 1: How to evaluate the impact of environmental research on policy – summary



The Guide and the Guidelines can be read quickly to gain an overview of the issues that need to be addressed when planning and delivering an evaluation of research impact. Alternatively, individual sections can be read for advice on specific evaluation issues or methods. However, more time and staff input will be required in order to actually develop an evaluation framework using the Guide and Guidelines. A few hours to a day working through the steps and discussing and agreeing the outputs from them should result in an outline research evaluation framework suitable for seeking organisational approval to proceed. More time will be then required to refine and translate the framework into a detailed evaluation plan and guidance is provided on the issues that will need to be addressed in doing this.

Ready-to-use evaluation frameworks

In recognition of the fact that not all members of the SKEP Network interested in research evaluation will necessarily want, or have the time, to work through this Guide to develop a tailored research impact evaluation framework, the process described in the Guide was used to develop two complementary ‘ready-to-use’ evaluation approaches; the worked examples. These were developed to respond to two common research impact evaluation needs identified in the SKEP Network.

The first need identified was the requirement for a pragmatic quick and light-touch impact evaluation framework to be used where time and resources for research evaluation are limited. The second was the need for a more strategic impact evaluation framework which would be used to facilitate organisational learning and better planning and management of research programmes in order to both monitor and enhance the impact of the research outputs. Summaries of these examples are provided below, and full details are given in the Guidelines, together with an account of how the Guide was used to develop the two frameworks.

5.6 Worked example 1: A Quick and Light-touch Research Impact Evaluation Framework.

When to use this approach:

This approach can be used when resources (including funds, time and expertise) are limited and it is suitable for externally-driven, project-related impact evaluations which are to be carried out in-house by researchers and research managers with limited evaluation experience. The primary motivation behind this evaluation is to justify and demonstrate value from the public funds spent on a programme of (largely) commissioned research. The focus is primarily on the instrumental impacts of applied research, particularly those occurring in the immediate or intermediate term.

Key evaluation needs:

‘Essential’ criteria considered when developing this impact evaluation approach included the ability to: evaluate projects effectively; be conducted quickly at low cost

without the need for significant internal evaluation expertise; and to provide a summary impact score. ‘Desirable’ criteria included the ability to: consider the quality of research; engage external stakeholders; and to supplement the impact score with a brief description of project impacts.

The evaluation approach:

An adapted version of the Research Impact Framework (RIF) (see Section 3 of Guidelines for details) best meets the needs of this type of evaluation. Adaptations to the basic RIF seek to enable a summary impact score to be produced, allowing comparison of multiple projects, and to encourage greater user-engagement in the evaluation process than in the original RIF. This approach therefore consists of:

1. Refining the RIF impact themes and sub-themes of interest to focus on environment-related impacts rather than health: (see Table 4 Guidelines).
2. Development of a short impact questionnaire, based on the RIF impact themes of interest, to identify, capture and score project impacts.
3. Double scoring of impacts in each RIF sub-theme: both the research project manager and the research contract manager will be asked to complete the impact questionnaire. Identified impacts will be described briefly (a sentence or two per impact) and scored in each of the defined impact sub-themes to give an overall project score and an indication of the types of impact resulting from the project. Impact questionnaires could also be sent to the intended research user(s) to allow triple scoring of impacts to increase confidence in results if desired and resources allow.
4. A project impact summary report is produced (approximately one page in a standard format) by the contract manager bringing together the material from the returned impact questionnaires.
5. Short workshop/evaluation meetings with researcher team, contract manager and research users held to discuss summary report, reconcile any divergent views on impacts reported and scored and agree a final project summary report.
6. The evaluation manager collates summary impact reports from all projects evaluated and prepares a draft report on overall programme impacts and benefits, e.g. summary of project impacts; ranking of projects and key categories of impact, discussion of broader project and programme benefits and confidence in them; and any lessons on mechanisms of impact.
7. Workshop to bring researchers, contract managers and users from across the programme together to discuss and verify project impacts identified by the impact questionnaires and discuss overall programme impact and any other relevant issues.
8. Production of final evaluation report.

Evaluation reporting:

Upon completion of the data collection, a short one-page impact summary will be produced for each project evaluated, structured around standard headings, e.g. description of project under evaluation; identification of those involved in the evaluation process; impacts identified; average impact scores; degree of consensus regarding impact and attribution of impact; summary narrative on impacts and commentary on any discrepancies about impact.

This report will be submitted by the research project manager to the programme evaluation lead who will synthesise the project evaluation outcomes in a final report to senior programme managers and funders.

5.7 Worked example 2: A Strategic Research Impact Evaluation Framework

When to use this approach:

This approach can be used when resources are more readily available, for an internally-driven, programme-related impact evaluation carried out by an experienced, independent evaluation lead (perhaps as part of a wider organisational strategic development process). The primary motivation behind the evaluation is to facilitate organisational learning about how to enhance the impact of research, and the effectiveness of existing impact-related activities and institutional structures. The evaluation seeks to explore the ‘enlightenment’ function of research programmes, i.e. the contribution to knowledge rather than direct use, as well as more tangible, instrumental impacts. Up to six months are available for completion of the evaluation, and it is expected to engage a wide array of stakeholders and potential users.

Key evaluation needs:

‘Essential’ criteria to consider when developing this impact evaluation approach include the ability to: evaluate programmes effectively; provide opportunities for consensus building and organisational learning; engage external stakeholders; explore mechanisms behind research impact, allowing narrative description/explanation; and to produce results with high confidence and rigour. ‘Desirable’ criteria include the ability to: consider short-term to long-term impacts; ensure independence; consider quality of research; and to be conducted at relatively low cost and relatively quickly.

The evaluation approach:

An adapted version of the HERG Payback Model best meets the needs of this type of evaluation. The adaptations seek to reduce the resource-intensity of the original HERG framework and to help build greater consensus and organisational learning. A revised HERG framework would therefore be conducted by:

- **Refining the impact payback categories** of interest to focus on environment-related impacts rather than health.
- **Completion of light-touch ‘payback’ questionnaire** to obtain breadth of input from potential research users in a relatively low cost manner. This could involve web-based questionnaires to explore insights on impact and mechanisms of impact from researchers, contract managers and research users.
- **Project case studies** to obtain detailed insights into impacts and the mechanisms by which they occur by for a selection of project in the programme of interest.
- **Workshop** with researchers, contract managers and research users to explore and verify pathways and mechanisms of impacts proposed from the analysis and engage a wider group of researchers and users in the process and the use of its outcomes.

Evaluation reporting:

Upon completion of the data collection and analysis, a full impact evaluation report and executive summary document would be produced which could include: Description of programme and projects under evaluation; identification of those involved in the evaluation process; impacts identified and described; detailed narrative explanation of impacts and pathways to impact; case studies illustrating impacts and pathways; lessons and recommendations for enhancing the impact of future research on policy for researchers, funders and users.

The key findings of this report should be presented and circulated to research teams and research commissioning teams and management. Additional actions will need to be taken to ensure the findings are embedded in the research plans and research management activities.

6 Conclusions and recommendations

6.1 Embedding and developing research impact evaluation in the SKEP Network and beyond

The headline objective of this project was ‘to propose guidelines for the evaluation of the implementation and uptake of environmental research, which will then be trialled and embedded into the management practices of SKEP network members’.

We have developed an applied model of research impact evaluation (The Guide) based on a detailed consideration of the literature, theory and practice of research impact evaluation. The fundamental challenge in developing the Guide was highlighted by the main findings of the literature review. Firstly, an evaluation framework should be tailored to the circumstances of its use, and secondly, there are a wide diversity of frameworks and methods of evaluation to choose between. Proposing a single framework of research impact evaluation was considered inappropriate and we have instead developed a model that guides users through the options and decisions required to develop an evaluation approach suited to their circumstances and needs. The Guidelines and more detailed information contained in the Literature Review and Case Studies is intended to support users of the Guide by providing more detail on the issues and options that need to be resolved at each step of the Guide.

In terms of embedding the approach developed in the management practices of the SKEP Network there is no single applied evaluation framework resulting from this work that can be rolled out across the Network. Even if we had recommended a single framework, embedding this in the management practices across the Network would have presented a significant challenge, especially given the variation in existing evaluation practice in the Network: some SKEP members have made significant progress in evaluating research impact, others much less. A single new system would have needed to have been suitable for all members whatever their level of evaluation experience and also consistent with multiple existing systems.

Instead we recommend that members of the SKEP Network should commit to increasing evaluation activity concerning the impact of their research on policy and to using the Guide and Guidelines to develop evaluation approaches that are best suited to their needs and circumstances. We are conscious that evaluation is considered expensive and burdensome and as a defensive activity, which may represent a barrier to organisations developing and implementing impact evaluation.

In response to these concerns, we would reiterate the comments made at the beginning of this report on the benefits of impact evaluation in terms of improving the cost-effectiveness of research. Effective research impact evaluation not only highlights the

value of research to users, and society more broadly, but can also enhance the impacts of existing and future research by revealing insights into the processes by which impacts occur. These insights can be used to inform the commissioning and management of new research so that it is more likely to result in research of both high quality *and* high impact. Viewed in this manner impact evaluation is a cost-effective use of resources.

6.2 Recommendations

This work has focused on developing a practical tool to enable the evaluation of research impact on policy. Our central recommendation is that this tool should be used both by the members of the SKEP Network and others to develop evaluation approaches that can be used to better understand and enhance the impact of research on environmental policy.

Our recommendations fall in three main areas:

1. Increase the amount of research impact evaluation activity

There is a need to increase the amount of research impact evaluation activity conducted, especially in the area of environmental policy. SKEP Network members should commit to using the Guide and Guidelines to develop new and existing approaches to evaluation and increasing the amount of evaluation they do over time. For organisations that currently conduct little impact evaluation this can start with small steps, for example, the adoption of the approach suggested in Worked Example 1 (see Section 5).

2. Build impact evaluation into the research commissioning and management process

Impact evaluation should be built into research commissioning and management processes from an early stage when considering the research objectives, rather than being conducted retrospectively. This not only focuses attention on the impacts that are desired from research before a project has even started but also enables impact evaluation to be conducted much more easily both during the research and following its completion. Project management systems should be used to capture basic information that can be used to evaluate impact, e.g. recording the intended users of research and their involvement in the work, dissemination activities and so on.

3. Document and publicise research impact evaluations.

A greater emphasis should be placed on capturing and documenting the work done to evaluate the impact of research on policy and putting this in the public domain. This project identified a large amount of material on options for evaluation but less on the detail of how to conduct evaluations or the findings resulting from evaluations. If practice is to develop in this area it could be significantly enabled by a focus on

capturing and sharing the detail of evaluation methods used, the impacts identified by evaluation and the insights into how impacts occur and can be enhanced. The SKEP Network should commit to capturing the approaches that result from the use of the Guide and Guidelines and any other research impact evaluation activity in the Network. In doing so it could significantly expand the number of documented examples of evaluations of environmental research and policy, an area which was found to be lacking in the review. The SKEP Network should also consider the value of adopting a wider role in capturing and disseminating work on research impact evaluation and providing a forum for discussing its implications.

Given the ever increasing challenges identified by environmental science for climate change, biodiversity and resource use policy, there is a need to improve the impact of research on policy. It is fortunate therefore that research impact evaluation is a fast developing area, albeit a complex area. The Guide, Guidelines and additional material in the final report, literature review and case studies are intended to provide an accessible and practical approach that can deal with this complexity. Developing the Guide and Guidelines has been a challenging task. However, we hope this work will make a useful and significant contribution to practice in the evaluation of the impact of research on environmental policy. We also hope it will allow the SKEP Network to take a central role in this debate both with its members but also with the wider community of organisations commissioning and using research to shape policy.

7 References

The following sources are referred to in this report. The other outputs from this project contain detailed reference lists, particularly the Literature Review and Case Studies.

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