

General enquiries on this form should be made to:
Defra, Science Directorate, Management Support and Finance Team,
Telephone No. 020 7238 1612
E-mail: research.competitions@defra.gsi.gov.uk



SID 5 Research Project Final Report

● **Note**

In line with the Freedom of Information Act 2000, Defra aims to place the results of its completed research projects in the public domain wherever possible. The SID 5 (Research Project Final Report) is designed to capture the information on the results and outputs of Defra-funded research in a format that is easily publishable through the Defra website. A SID 5 must be completed for all projects.

- This form is in Word format and the boxes may be expanded or reduced, as appropriate.

● **ACCESS TO INFORMATION**

The information collected on this form will be stored electronically and may be sent to any part of Defra, or to individual researchers or organisations outside Defra for the purposes of reviewing the project. Defra may also disclose the information to any outside organisation acting as an agent authorised by Defra to process final research reports on its behalf. Defra intends to publish this form on its website, unless there are strong reasons not to, which fully comply with exemptions under the Environmental Information Regulations or the Freedom of Information Act 2000.

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Project identification

1. Defra Project code
2. Project title
3. Contractor organisation(s)
4. Total Defra project costs (agreed fixed price)
5. Project: start date
end date

6. It is Defra's intention to publish this form.

Please confirm your agreement to do so..... YES NO

- (a) When preparing SID 5s contractors should bear in mind that Defra intends that they be made public. They should be written in a clear and concise manner and represent a full account of the research project which someone not closely associated with the project can follow.

Defra recognises that in a small minority of cases there may be information, such as intellectual property or commercially confidential data, used in or generated by the research project, which should not be disclosed. In these cases, such information should be detailed in a separate annex (not to be published) so that the SID 5 can be placed in the public domain. Where it is impossible to complete the Final Report without including references to any sensitive or confidential data, the information should be included and section (b) completed. NB: only in exceptional circumstances will Defra expect contractors to give a "No" answer.

In all cases, reasons for withholding information must be fully in line with exemptions under the Environmental Information Regulations or the Freedom of Information Act 2000.

- (b) If you have answered NO, please explain why the Final report should not be released into public domain

Executive Summary

7. The executive summary must not exceed 2 sides in total of A4 and should be understandable to the intelligent non-scientist. It should cover the main objectives, methods and findings of the research, together with any other significant events and options for new work.

Defra commissions a considerable amount of research in order to inform its policy, including research into sustainable farming and food, from academic disciplines across the whole spectrum of natural and social sciences. The Farming and Food Research Priorities Group set out a considered range of research priorities by which Defra might deliver the Strategy for Sustainable Farming and Food. However, it was recognised that setting priorities under the broad theme of sustainable development, across a disparate set of academic disciplines, requires a more formal framework.

This project was commissioned, by Defra, to develop such a framework for use in the Farming and Food Science team. The project set out to provide Defra with a framework that they could use for better targeting research in support of sustainable farming and food at the level of individual project assessment and appraisal as well as at higher levels of program assessment and appraisal. Development of the targeting framework was supported by evidence on the meaning and interpretations of sustainability, the use and value of research, the organisational and operational constraints on decision making, and the functionality of decision frameworks.

Evidence was collected through (i) the review of government policy and strategy documents relating to sustainable farming and food policy research and evidence, (ii) discussions with personnel who were involved at some level with Defra's decision making processes, with Defra's food and farming science, or with sustainable development in government, but who were in general independent from the day to day activities of the farming and food science administrative teams within Defra, (iii) the collation and critical review of decision making processes, in particular where these were used for targeting research funding, from organisations within the UK and overseas, (iv) regular meetings with a small client group team consisting of the project manager, plus representative departmental specialists in economics, policy and science, and access to previous years' data on proposed research projects and the information on which funding decisions had been made, and (v) the review of a panel of independent experts in academic subjects of relevance to Defra's funding.

From this evidence the design of the targeting framework was clarified as set out below;

- The Framework cannot be a mechanistic 'black box' into which data is fed and from which answers are drawn. It has rather to provide a structure to organise the considered management inputs needed to balance the trade offs implicit in a complex array of research ideas and policy needs. Implementation of these procedures is likely to be a demanding task.
- The procedure for classifying and describing research needs to start from clear high level policy objectives, with emphasis placed on the role of the proposed research in furthering policy development or delivery.
- Comparison of the relative value of research projects is dependant in the first instance on consistent classification and description and consistency in the depth of background information (supporting evidence) provided.
- Questions need to take managers through a structured process by which they describe the key elements of a project, and from which they will be in a position to make value judgements on the project.
- The process of classifying and describing a project may require a greater degree of expertise than is held by one person, involving for example the inputs of policy and economist expertise as well as scientific expertise. This fits with the direction of travel of Defra, and is not seen as a barrier to uptake.
- The framework should encourage open discussion of projects, and the challenging of ideas within the Department.
- The framework should, where possible, build on current management procedures.

Based on this design specification, the targeting framework was developed, with a working copy created in Microsoft Excel, using the following stages in the consideration of individual projects;

Project categorisation and consideration of Defra's objectives

- Proposed projects (as now) are allocated to a programme and sub-programme area and are given a unique identity code.
- Proposed projects are categorised by standard Defra high-level goals and a schedule of 'intended outcomes', each of which are selected from drop-down lists.

Policy considerations

- The policy driver (i.e. the policy under consideration for which evidence is required) is identified and described.
- The policy interest (i.e. the division or individual within Defra with ownership of the policy driver) is identified.

Project description

- A brief summary and rating of the current evidence base is presented.
- A working title is provided.
- A brief summary of the current evidence need is given.
- The evidence type is categorised, using Frascati classifications

Financial considerations

- The total cost of the proposed project is given.
- Information on potential sources of non-Defra funding is given, and the potential for non-Defra funding is rated.
- The total duration of the project is given.

Prioritisation considerations

At this point the compiler has been led through a series of standard queries and requests for information and in order to respond to these consideration will have been given to the proposed research project and to why and how the project may be important to achieving Departmental objectives. The compiler is then asked to make a series of six value judgements on the proposed research, to which the response can be given on a five point scale from 'minimal' to 'extremely high'. These value judgements and the guidance for the compiler on each of them is as follows;

- Technical value of output to Defra
How useful would the research be for policy development or delivery? To what extent will the research meet the evidence need?
- Political value of output to Defra
Include here meeting Ministerial needs or the demands of public opinion.
- Additional value
Consider here the wider value of the work within Defra, to other public bodies and to the science base.
- Feasibility
Consider here the availability of techniques and contractors' expertise, timing of policy requirements in relation to feasible delivery timescale and other constraints on achieving the required research outputs.
- Cost effectiveness
This is a broad assessment of value of outputs against cost. Where the value of the outputs is greater than the costs this will tend towards a higher ranking and where the value of outputs is lower than the costs this will tend towards a lower ranking.
- Certainty
All the previous questions have been based on expected outputs. Certainty is a catch-all assessment of how likely it would be that the expected outputs would be achieved in reality. Hence work at the cutting edge of scientific methodology may be regarded as having a low certainty, whereas work based on tried and tested methodologies may be given a higher ranking.
- An overall priority rating is given.
As the final element of data input the compiler must provide an 'overall priority rating', from 'reject' to 'very high', and must make a brief written statement, based on the series of questions and value judgements already completed, to justify this rating. Effectively this summarises the compiler's opinion on the relative value of the proposed project and it should be expected that the priority ratings, the value judgements and the stated evidence needs would relate to each other with a fair degree of consistency.

The spreadsheet allows for project data to be collated and presented in a variety of forms, so that consideration of projects may be made at three distinct levels;

- Individual proposals may be reviewed and compared in detail by teams of technical, policy and economics experts.
- All of the proposals within a programme area may be reviewed, as a whole, by a programme management group.
- All of the proposals in all of the programme areas may be reviewed, as a whole, by a cross-cutting steering group.

Thus the framework supports the reasoned judgements of projects and provides standard criteria for classifying and comparing the value of projects either in isolation, or within programme areas or within the whole portfolio of research supported by Defra, fulfilling the project's objective to provide Defra with a framework that they could use for better targeting research in support of sustainable farming and food so as to maximise the public interest, at the level of individual project assessment and appraisal as well as at higher levels of program assessment and appraisal.

Project Report to Defra

8. As a guide this report should be no longer than 20 sides of A4. This report is to provide Defra with details of the outputs of the research project for internal purposes; to meet the terms of the contract; and to allow Defra to publish details of the outputs to meet Environmental Information Regulation or Freedom of Information obligations. This short report to Defra does not preclude contractors from also seeking to publish a full, formal scientific report/paper in an appropriate scientific or other journal/publication. Indeed, Defra actively encourages such publications as part of the contract terms. The report to Defra should include:

- the scientific objectives as set out in the contract;
- the extent to which the objectives set out in the contract have been met;
- details of methods used and the results obtained, including statistical analysis (if appropriate);
- a discussion of the results and their reliability;
- the main implications of the findings;
- possible future work; and
- any action resulting from the research (e.g. IP, Knowledge Transfer).

1. Project objective

The overall aim of this project was to provide Defra with a framework that they could use for better targeting research in support of sustainable farming and food at the level of individual project assessment and appraisal as well as at higher levels of program assessment and appraisal.

2. Introduction

The work of Defra is focused on issues which may broadly be described as 'sustainable development'. This is encapsulated by the Department's PSA targets, which include 'to promote sustainable development in the UK and internationally' as well as more specific targets relating to single themes which sit under the 'sustainability umbrella'. In terms of strategic priorities, sustainable farming and food sits alongside sustainable consumption and production and sustainable rural communities, as well as priorities relating to climate change and natural resource protection.

The Brundtland Commission(1987) definition of sustainable development is "...development which meets the needs of the present without compromising the ability of future generations to meet their own needs" and this has been interpreted by the UK Government and Devolved Administrations as follows, "The goal of sustainable development is to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life, without compromising the quality of life of future generations..."

Defra commissions a considerable amount of research in order to inform its policy, including research into sustainable farming and food, from academic disciplines across the whole spectrum of natural and social sciences. The Farming and Food Research Priorities Group set out a considered range of research priorities by which Defra might deliver the Strategy for Sustainable Farming and Food. However, it was recognised that setting priorities under the broad theme of sustainable development, across a disparate set of academic disciplines, requires a more formal framework. This project was commissioned, by Defra, to develop such a framework.

3. Methodology

Development of the targeting framework was supported by evidence, collected by a variety of means, on the meaning and interpretations of sustainability, the use and value of research, the organisational and operational constraints on decision making, and the functionality of decision frameworks. The various means of evidence collection are detailed below.

3.1 Review of sustainability as it has been applied to farming and food.

The first stage of the project was to review government policy and strategy documents relating to sustainable farming and food policy research and evidence, and to develop a 'familiarisation document'. This document was checked for accuracy with Defra personnel and was then used as a reference point to ensure that the framework was developed so as to be consistent with Defra thinking on sustainable development in farming and food and so as to be consistent with the requirements of evidence in the development and delivery of policy.

3.2 Discussions within and outside of Defra.

Discussions were held with a selection of personnel who were involved at some level with Defra's decision making processes, with Defra's food and farming science, or with sustainable development in government, but who were in general independent from the day to day activities of the farming and food science administrative teams within Defra, as follows;

Brendan Bailey,	EFRA Spending Team, HM Treasury
Sir Don Curry,	Chair 'Sustainable Farming and Food Implementation Group'
Simon Harding,	Economics, Defra
Helen Dunn & Dave Cawley,	Economics, Defra
Sarah Moon,	Ecosystems Services, Defra
Professor Chris Pollock,	Chair 'Sustainable Farming & Food Research Priorities Group'
Anna Sergeant,	Sustainable Development Commission

3.3 Review of the prioritisation frameworks and decision making processes used within other organisations.

This stage involved the collation and critical review of decision making processes, in particular where these were used for targeting research funding, from organisations within the UK and overseas. Organisations were selected as holding a *similar* remit to Defra as regards the commissioning of research, and data was collected through internet search, email and telephone communication. Direct discussions were also held with three UK institutions:

- Food Standards Agency
- Natural Environment Research Council
- Biological and Biotechnological Science and Research Council

3.4 Client group meetings.

Regular meetings were held with a small client group team consisting of the project manager, plus representative departmental specialists in economics, policy and science. Additionally, the project team were provided with data on the previous year's proposed research projects and the information on which funding decisions had been made.

3.5 Expert Panel meetings.

An expert panel was established at the outset of the project in order to steer the programme of work and to provide guidance, within academic subject areas, as to the relevance and applicability of the framework. Panel members were selected on the basis that they were experts in their own right in a specific discipline, but held no bias towards particular institutions as a result of their current tenure. Concepts for the development of the framework were presented to the Expert Panel at three separate meetings during the framework development.

4. Principal findings

4.1 Sustainability as it is applied to farming and food

The full familiarisation document detailing how sustainability has been applied to farming and food is presented in Appendix 1. Principal findings taken into account in the development of the framework were as follows;

- 4.1.1) Environmental sustainability, which may be interpreted as 'improving environmental performance' and which incorporates actions on climate change, landscape, biodiversity, soil, air, water and waste, is the policy priority.
- 4.1.2) Economic sustainability may be interpreted as 'the commercial efficiency of the farming industry being driven by the market'.
- 4.1.3) Social sustainability may be interpreted as 'overall human welfare'.
- 4.1.4) Where sustainable development as a concept (bringing together social, environmental and economic concerns) is of use is in framing questions relating to the evidence base for policy development and delivery e.g. asking whether we know sufficiently about the interactions between economic drivers and environmental impacts.

4.2 Discussions within and outside of Defra

Summary notes of these discussions were reviewed and the principal findings taken into account in the development of the framework are detailed below.

Regarding the focus and limits of Defra-funded scientific research;

- 4.2.1) Policy (and thus research) should focus on the issues that would not be achieved without government intervention.
- 4.2.2) The cut-off point between government funded research and commercial research is however sometimes difficult to draw. In general, government funded research should not be commissioned at the cost of commercial development.
- 4.2.3) The questions should always be asked, 'What does this (research) do for policy?' and 'Where does the government add value to the public interest?'
- 4.2.4) Beneficiaries of sustainable farming and food should be defined e.g. who benefits from landscapes, social sustainability, or biodiversity?
- 4.2.5) The value of primary production to farmers in third world countries should not be ignored in accounting for the social, economic and environmental benefits of farming.
- 4.2.6) Whilst it is necessary to respect the interests of other countries, valuing the (local) environmental impacts which may occur in these was not seen as helpful in operational terms. However, global issues might be prioritised and addressed through targeted interventions.
- 4.2.7) Increasing the knowledge base through research is not of great benefit without concurrent means to transfer this knowledge to end-users.

Regarding the operation and use of the Framework;

- 4.2.8) The time available to implement the findings of the Framework may be a limitation; the Framework would benefit from being 'broad brush' and easy to apply and the process may be as important as the content.
- 4.2.9) There is a significant problem of 'knowing what is already known'. The previous body of research is vast and this, coupled with staff turnover, can lead to gaps in knowledge of the current evidence base.
- 4.2.10) The reason why the information (from research) is needed should be made clear.
- 4.2.11) The role of other funding bodies should be taken into account.

4.3 Review of the prioritisation frameworks and decision making processes used within other organisations.

A full report of the decision processes used in other organisations is presented in Appendix 2. Principal findings taken into account in the development of the framework were as follows;

- 4.3.1) Formal multi-criteria decision analysis is not entirely appropriate for this type of decision framework, because it would require an unrealistically high level of input and commitment from expert staff.
- 4.3.2) Whilst a small number of organisations have attempted to introduce forms of decision frameworks, the final prioritisation of research funding tends to be made by a small number of individuals without reference to standardised criteria.
- 4.3.3) Where decisions are made on the basis of simple and restricted criteria (e.g. to increase profitability, or to achieve the best scientific outputs) external expertise and independent evaluators are often used.

4.4 Client group meetings.

Client meetings served to shape the development of the framework. A number of issues arose during these meetings which were of direct relevance to the development and design of the framework, as follows;

- 4.4.1) Decisions on the prioritisation of research require input at a technical level, but must also be accessible at a higher managerial level.
- 4.4.2) The Framework should be adaptable by the department and accessible to a wide range of departmental actors. Therefore, the software for the development of the framework should also be both widely available and user-friendly.
- 4.4.3) The format of the Framework should be applicable to the review of projects at a number of levels, from the detailed scientific level through to the strategic managerial level.
- 4.4.4) The Framework should also be capable of summarising the important elements of the whole portfolio of work.
- 4.4.5) Guidance will be necessary for those using the Framework to ensure consistency between individuals and between projects.

4.5 Expert Panel meetings.

The notes of each of the Expert Panel meetings are available upon request from Delta-innovation. A number of issues arose during these meetings which were of direct relevance to the development and design of the framework, as follows;

- 4.5.1) The Framework must help Defra to ensure that a balanced portfolio of research is in place when all projects are commissioned in the Farming and Food Science Team.
- 4.5.2) Questions might be asked of whether additional funding could be levered through or for the research.
- 4.5.3) Criteria should incorporate the importance of the policy objective and the size of the target issue.
- 4.5.4) Policy development and policy implementation might be of equal importance.
- 4.5.5) Sufficient value should be placed on long-term research compared to short-term research, which may be more readily commissioned in response to immediate policy issues.
- 4.5.6) Questions might be asked of which other organisations should be supporting the research in the UK or the EU, and which might be interested in collaboration.

5. Design of the Framework

Based on the evidence collected and ongoing discussions with the client group, the design of the framework was clarified as set out below.

- 5.1 The Framework cannot be a mechanistic 'black box' into which data is fed and from which answers are drawn. It has rather to provide a structure to organise the considered management inputs needed to balance the trade offs implicit in a complex array of research ideas and policy needs. Implementation of these procedures is likely to be a demanding task.
- 5.2 The procedure for classifying and describing research needs to start from clear high level policy objectives, with emphasis placed on the role of the proposed research in furthering policy development or delivery.
- 5.3 Comparison of the relative value of research projects is dependant in the first instance on consistent classification and description and consistency in the depth of background information (supporting evidence) provided.
- 5.4 Questions need to take managers through a structured process by which they describe the key elements of a project, and from which they will be in a position to make value judgements on the project.
- 5.5 The process of classifying and describing a project may require a greater degree of expertise than is held by one person, involving for example the inputs of policy and economist expertise as well as scientific expertise. This fits wit the direction of travel of Defra, and is not seen as a barrier to uptake.
- 5.6 The framework should encourage open discussion of projects, and the challenging of ideas within the Department.
- 5.7 The framework should, where possible, build on current management procedures. These are outlined below.

Current management structures for prioritising research

- 5.7.1) Research conducted through the Sustainable Farming and Food Science team is currently categorised within four Programme Areas, each of which has its own Programme Manager.
- 5.7.2) It is the role of these Programme Managers to capture the research needs within their Programme Area through discussion with relevant policy, economics and scientific staff and with external technical and scientific experts. Programme Managers are responsible for making the case, including an estimate of likely cost and duration, for each candidate research project put forward for funding.
- 5.7.3) Programme Managers are helped in this task by Programme Management Groups, which consist of policy, economics and scientific staff from across Defra and which provide input into the assessment of candidate projects. Individuals may sit within more than one programme group. Following informal discussions, the Programme Management Groups must meet annually to agree the R&D priorities to be commissioned in the following financial year.
- 5.7.4) The head of the Sustainable Farming and Food Science team presents the complete schedule of candidate projects, from across all four Programme Areas, to the Cross-Cutting Steering Group, which approves the total budget for the team on an annual basis. The CCSG is made up of relatively senior Defra personnel (Grade 5 and above) from across the Department.

6. Consideration of proposed projects

The first stage of the framework is a spreadsheet-based data collection form, through which the 'compiler' (i.e. the person collating the details and justification for a particular project) is required to categorise each proposed project and to provide details of how it fits with policy needs, how it will develop the evidence base and how much it will cost, and to make judgements on the value of the project across specific criteria. A copy of the project input form is presented in **Figure 1**, and a description of the data input is set out below.

Project categorisation and consideration of Defra's objectives

6.1 Proposed projects (as now) are allocated to a programme and sub-programme area and are given a unique identity code.

These programme areas and sub-programmes are set by Defra, and they provide a convenient and sensible means by which projects may be aggregated. Provision is made within the spreadsheet for Defra to add to and amend these programmes and sub-programme headings, so that the Framework can be maintained in the light of changing priorities.

6.2 Proposed projects are categorised by standard Defra high-level goals and a schedule of 'intended outcomes', each of which are selected from drop-down lists.

The project team recommend that these intended outcomes (i.e. 'objectives') are reviewed, with respect to their inclusion in the Framework, at a high level within Defra, on a regular (e.g. annual) basis, to ensure that they continue to be relevant and of sufficient scope and to ensure that 'redundant' intended outcomes are flagged up.

Policy considerations

6.3 The policy driver (i.e. the policy under consideration for which evidence is required) is identified and described.

The compiler is asked to 'provide brief details of the policy driver and of the public interest that is being addressed'. This and all subsequent free-text entries have a character restriction, so as to encourage clear, concise communication and so as to avoid the misinterpretation of the volume of text as being related to the importance of the proposed project.

6.4 The policy interest (i.e. the division or individual within Defra with ownership of the policy driver) is identified.

This is an operational requirement, intended to encourage the compiler and others (e.g. those reviewing the programme of research) to involve the policy owner in setting out their research needs.

Project description

6.5 A brief summary and rating of the current evidence base is presented.

The compiler is asked to summarise the current research evidence base, in the area of the proposed new research, with the guidance that, 'Sufficient evidence should be provided e.g. by reference to published reports'. To aid the interpretation of the quality of the evidence base, compilers are asked to rate it from 'very good' to 'none'. It is expected that those using the Framework will use this as a means of checking the appropriateness of proposed research ideas; wherein areas for which there is no current evidence base they may find themselves 'feeling their way', whilst areas with a strong established evidence base may justify highly specific and targeted research projects.

6.6 A working title is provided.

The working title is requested to aid in the discussion of proposed research projects. The guidance states that this should be a simple, clear title that should convey the aim and method of the project.

6.7 A brief summary of the current evidence need is given.

The guidance is provided that the compiler should state 'the specific evidence that is needed to further policy development or delivery?' This, in effect, provides a concise description of the policy issue and the way in which new research evidence will help to address that issue.

6.8 The evidence type is categorised, using Frascati classifications

The Frascati classifications are used throughout government to describe research activities (e.g. for general statistical comparison of research outputs). The use of this classification is intended to allow those taking an overview of each research programme to ascertain how appropriate the suggested research proposals are given the descriptions of the evidence base and evidence need. The definition of 'experimental development' within the Frascati classification would appear to serve the need for 'innovation' to be accounted for.

Financial considerations

6.9 The total cost of the proposed project is given.

The total cost of a proposed project will at this stage be only an estimate of the actual cost that is incurred in completing the project. However, given the extensive experience within Defra of commissioning and managing research projects, these estimates are likely to be sufficiently accurate to provide an overview of the relative costs of each project and the total costs of each programme and sub-programme of work.

6.10 Information on potential sources of non-Defra funding is given, and the potential for non-Defra funding is rated.

There are two questions to be answered here; what are the opportunities for funding or co-funding from outside Defra (e.g. through the Research Councils, or through LINK), and what is the justification for Defra funding when other routes are also available? By rating the potential to gain non-Defra funding the compiler flags-up where, with additional work, the Department may be able to make its research budget go further.

6.11 The total duration of the project is given.

This project duration together with the total costs allows for the annual costs of each project to be estimated. The assumption is made that spending on all projects is flat-profiled.

Prioritisation considerations

6.12 Value judgements

At this point the compiler has been led through a series of standard queries and requests for information and in order to respond to these consideration will have been given to the proposed research project and to why and how the project may be important to achieving Departmental objectives. The compiler is then asked to make a series of six value judgements on the proposed research, to which the response can be given on a five point scale from 'minimal' to 'extremely high'. These value judgements and the guidance for the compiler on each of them is as follows;

i. Technical value of output to Defra

How useful would the research be for policy development or delivery? To what extent will the research meet the evidence need?

ii. Political value of output to Defra

Include here meeting Ministerial needs or the demands of public opinion.

iii. Additional value

Consider here the wider value of the work within Defra, to other public bodies and to the science base.

iv. Feasibility

Consider here the availability of techniques and contractors' expertise, timing of policy requirements in relation to feasible delivery timescale and other constraints on achieving the required research outputs.

v. Cost effectiveness

This is a broad assessment of value of outputs against cost. Where costs and benefits are roughly proportionate (e.g. high cost and high benefit, or low cost and low benefit) then cost effectiveness should be ranked as moderate. Where the value of the outputs is greater than the costs this will tend towards a higher ranking and where the value of outputs is lower than the costs this will tend towards a lower ranking.

vi. Certainty

All the previous questions have been based on expected outputs. Certainty is a catch-all assessment of how likely it would be that the expected outputs would be achieved in reality. Hence work at the cutting edge of scientific methodology may be regarded as having a low certainty, whereas work based on tried and tested methodologies may be given a higher ranking.

6.13 An overall priority rating is given.

As the final element of data input the compiler must provide an 'overall priority rating', from 'reject' to 'very high', and must make a brief written statement, based on the series of questions and value judgements already completed, to justify this rating. Effectively this summarises the compiler's opinion on the relative value of the proposed project and it should be expected that the priority ratings, the value judgements and the stated evidence needs would relate to each other with a fair degree of consistency.

Figure 1. 'Project input form'



Project summary sheet
Objective Prioritisation Tool

Project identifiers	Programme area	Sub-programme	Unique identifier										
1 Defra objectives	High level goal	Intended outcome											
2 Policy driver			<i>i</i>										
3 Policy interest			<i>i</i>										
4 Current evidence base			<i>i</i>										
			Please rate evidence base:										
			<table border="1" style="width: 100%; text-align: center;"> <tr> <th>V. good</th> <th>Good</th> <th>Fair</th> <th>Poor</th> <th>None</th> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	V. good	Good	Fair	Poor	None	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
V. good	Good	Fair	Poor	None									
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>									
5 Working title			<i>i</i>										
6 Current evidence need			<i>i</i>										
7 Evidence type	Primary	<i>i</i>	Secondary										
8 Total cost													
	Potential sources of non-Defra funding												
			Potential for non-Defra funding										
			<table border="1" style="width: 100%; text-align: center;"> <tr> <th>None</th> <th>Slight</th> <th>Moderate</th> <th>High</th> <th>V. High</th> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	None	Slight	Moderate	High	V. High	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
None	Slight	Moderate	High	V. High									
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>									
9 Project duration	Years	+	Months										
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16 Case for high/low priority													
19 Overall priority rating	<i>i</i>	<table border="1" style="width: 100%; text-align: center;"> <tr> <th>V. High</th> <th>High</th> <th>medium</th> <th>Low</th> <th>Reject</th> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>		V. High	High	medium	Low	Reject	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Climate records	Resource records	Environment records	Sustainability records										
Social records	Record Summary	Compare projects	Overall summary										
Delete Record	Copy Data	Edit Data											

7. Comparison of proposed projects

The second stage of the Framework is the consideration and comparison of proposed research at three distinct levels within Defra;

- Individual proposals may be reviewed and compared in detail by teams of technical, policy and economics experts.
- All of the proposals within a programme area may be reviewed, as a whole, by a programme management group.
- All of the proposals in all of the programme areas may be reviewed, as a whole, by a cross-cutting steering group.

In order to accommodate the different needs at each of these levels, data from individual projects is presented in a variety of forms.

7.1 Review and comparison of individual projects

Review and comparison of individual projects (and their relative merits) requires the detailed data from the input-form to be presented in a consistent manner. The limitations on text-entry allows for easy side-by-side comparison of projects in terms of policy considerations, project descriptions and financial considerations. The standard project summary sheet, as would be used for an individual project, is presented in **Figure 2**.

For consistent comparisons of the values placed on projects this data is presented as a spider-diagram. Such presentation is intended to reduce the extent to which these value judgements might be seen as additive, while providing a simple pictorial overview of the relative merits of any one project.

A further output sheet is provided for use in collecting value-judgements from technical experts within the department. This provides all of the data from the standard form with the exception of the value-judgements. In place of these, a matrix is provided for individuals to complete, providing their own judgements based on project information provided by the compiler and their own expertise. This sheet is presented in **Figure 3**.

7.2 Review of all the proposals within a programme area

Review of all the proposals within a programme area may require that the data from a range of projects is presented in summary form as a 'broad overview'. This is achieved through three separate means.

First of all, a programme area summary sheet (**Figure 4**) provides a schedule of all the projects within a programme area and for each one presents the following information;

- Unique identifier
- Working title
- Policy driver
- Evidence need
- Project duration
- Project spend
- Overall priority rating
- Case for priority rating

That is, all of the background information (policy interest, current evidence base, sources of non-Defra funding) is hidden, and only those elements of the information which would be used to justify a project are presented.

Secondly, financial figures are provided for each sub-programme, and three additional breakdowns of resource allocation are presented: by 'intended outcome', by 'evidence type' and by project duration.

Thirdly, the option is given for a series (e.g. for an individual programme area) of spider diagrams, together with overall priority ratings and supporting statements, to be viewed together.

Figure 2. Project summary sheet

Project identifiers		Programme area <input type="text"/>	Sub-programme <input type="text"/>	Unique identifier <input type="text"/>
Defra objectives	High level goal <input type="text"/>	Intended outcome <input type="text"/>		
Policy driver <input type="text"/>				
Policy interest <input type="text"/>				
Current evidence base <input type="text"/>				Rating of evidence base <input type="text"/>
Working title <input type="text"/>				
Current research need <input type="text"/>				
Evidence type	Primary <input type="text"/>	Secondary <input type="text"/>		
Total cost	<input type="text"/>			
Potential sources of non-Defra funding <input type="text"/>				Potential for funding <input type="text"/>
Project duration	Years <input type="text"/>	Months <input type="text"/>		
Case for high/low priority <input type="text"/>				
Overall priority rating	<input type="text" value="3"/>			

Return to data entry form

Print

Figure 3. Summary sheet with value matrix

This form is for printing only - data should not be entered directly and cannot be uploaded from here.

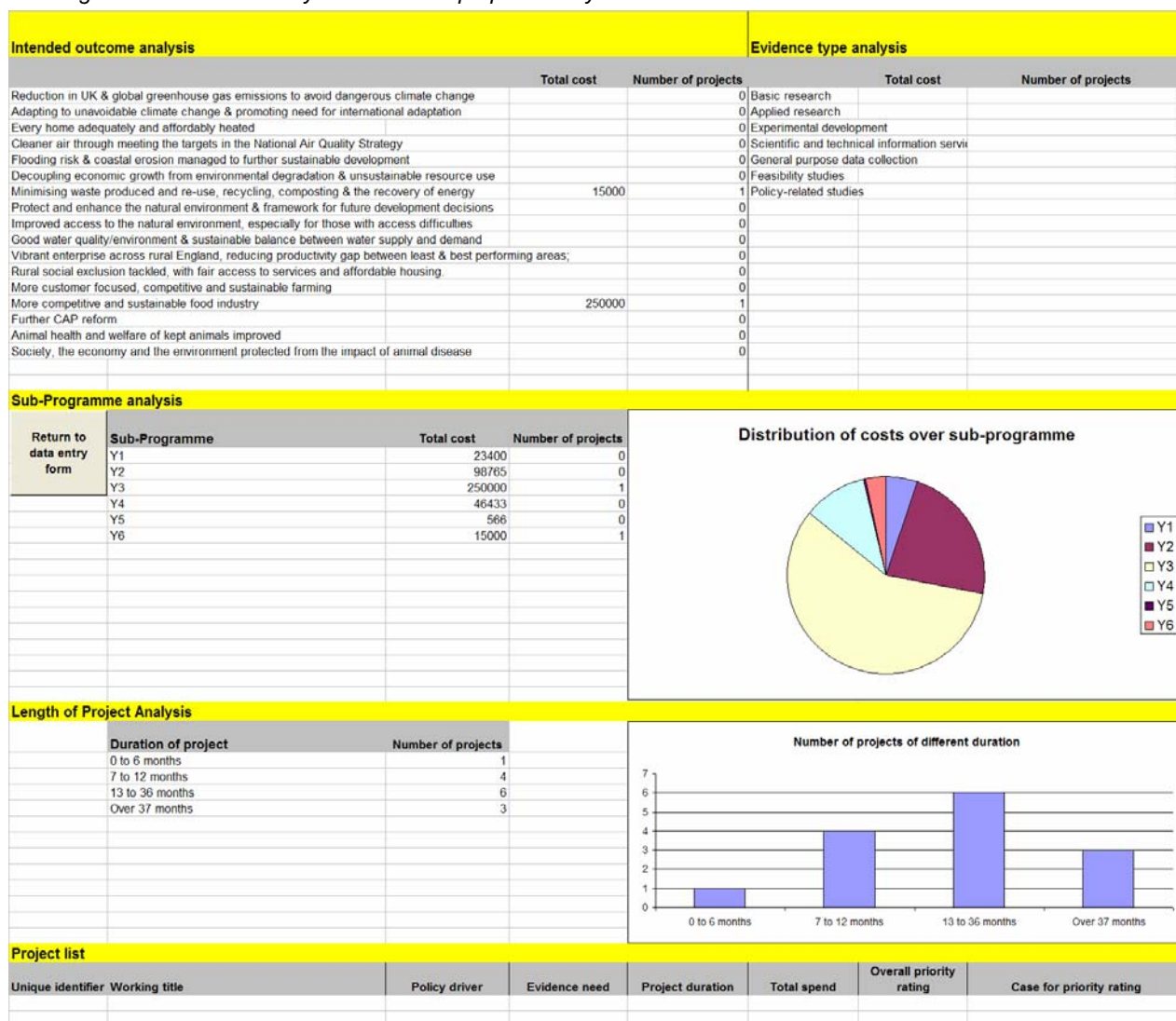
Project identifiers	Programme area <input type="text"/>	Sub-programme <input type="text"/>	Unique identifier <input type="text"/>											
Defra objectives	High level goal <input type="text"/>	Intended outcome <input type="text"/>												
Policy driver	<input type="text"/>													
Policy interest	<input type="text"/>													
Current evidence base	<input type="text"/>		Rating of evidence base <input type="text"/>											
Working title	<input type="text"/>													
Current research need	<input type="text"/>													
Evidence type	Primary <input type="text"/>	Secondary <input type="text"/>												
Total cost	<input type="text"/>													
Potential sources of non-Defra funding	<input type="text"/>		Potential for funding <input type="text"/>											
Project duration	Years <input type="text"/>	Months <input type="text"/>												
Case for high/low priority	<input type="text"/>													
Overall priority rating	<input type="text" value="3"/>													
Technical value of output to Defra	<table border="1" style="width:100%; border-collapse: collapse;"> <tr style="background-color: #f4a460;"> <th>None</th> <th>Slight</th> <th>moderate</th> <th>High</th> <th>V. High</th> </tr> <tr> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> </table>				None	Slight	moderate	High	V. High	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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Political value of output to Defra	<table border="1" style="width:100%; border-collapse: collapse;"> <tr style="background-color: #f4a460;"> <th>None</th> <th>Slight</th> <th>moderate</th> <th>High</th> <th>V.High</th> </tr> <tr> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> </table>				None	Slight	moderate	High	V.High	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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Cost effectiveness	<table border="1" style="width:100%; border-collapse: collapse;"> <tr style="background-color: #f4a460;"> <th>None</th> <th>Slight</th> <th>moderate</th> <th>High</th> <th>V.High</th> </tr> <tr> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> </table>				None	Slight	moderate	High	V.High	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
None	Slight	moderate	High	V.High										
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Certainty	<table border="1" style="width:100%; border-collapse: collapse;"> <tr style="background-color: #f4a460;"> <th>None</th> <th>Slight</th> <th>moderate</th> <th>High</th> <th>V.High</th> </tr> <tr> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> </table>				None	Slight	moderate	High	V.High	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
None	Slight	moderate	High	V.High										
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>										
Reviewer name	<input type="text"/>													

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Figure 4. Programme area summary sheet

Note: figures inserted manually for illustrative purposes only



7.3 Review of all the proposals in all the programme areas

Review of all the proposals in all the programme areas may require further summarisation of the data in order to provide a complete overview. This is achieved through a simple summary statement, preceding the use of the programme area summaries (above), and providing brief detail on;

- Total projects per programme area
- Total spend per programme area
- Total projects per sub-programme area
- Total spend per sub-programme area.
- Total projects and total spend

In this manner the relative investment in research between programme areas can be viewed, and the review can work towards achieving a balanced portfolio of research projects.

8. Guidance on the use and development of the Framework

- 8.1** The framework is designed to be adaptable to changing departmental ambitions and priorities. In particular, the categorisation of research by programme and sub-programme area and by high level goals and intended outcomes may be changed by the controller of the framework.
- 8.2** Further to this, the spreadsheet for data input has been designed using Microsoft Excel, meaning that it may be easily amended within the Department without recourse to the time and expense of external consultants. Moreover, should additional summaries be required, these may easily be added provided that the required data is being collected at the input stage.
- 8.3** On their own the spreadsheet outputs do not provide the Department with the prioritisation of research, a task which is left to the programme-groups and cross-cutting steering group. The framework is not a substitute for the reasoned judgement of projects but is intended to support such judgement.
- 8.4** It is important that the scores attributed to the value judgements and presented in the spider diagrams are not treated as additive or as being on equivalent scales. They are not!
- 8.5** Conversion of previous year's input data to the current form revealed a degree of inconsistency in the way that data requirements might be interpreted. It is possible that this will continue and an element of support may therefore be required for those new to completing the framework input.
- 8.6** It is the project team's intention that the output sheets should be open to challenge within the Department and that upon completion they should not be seen as 'static' but should be open to improvement and tailoring. This would fit with the Department's moves towards programme based teams.
- 8.7** Resource requirements for using the framework are as yet unknown. However, by the use of standardised questions across all programme areas it is hoped that the framework will in time reduce the resources needed for prioritisation. Responsibility for maintaining and developing the framework will require further resource commitments from within the Department.

References to published material

9. This section should be used to record links (hypertext links where possible) or references to other published material generated by, or relating to this project.