

Collaborative Research Programme On River Basin Management Planning Economics

Prospectus and Business Case



Department of the
Environment
www.doeni.gov.uk



SCOTTISH EXECUTIVE



ENVIRONMENT AGENCY



DEPARTMENT FOR BUSINESS
ENTERPRISE & REGULATORY REFORM



UKMPG
The United Kingdom Major Ports Group



Country Land &
Business Association
RURAL ECONOMY IS OUR BUSINESS

The Collaborative Research Programme, under which this report has been produced, is jointly sponsored by Defra, Welsh Assembly Government, Scottish Executive, Department of Environment Northern Ireland, Environment Agency, Scottish Environment Protection Agency, Department of Business, Enterprise and Regulatory Reform, Scotland and Northern Ireland Forum for Environmental Research, UK Water Industry Research, the Joint Environmental Programme, UK Major Ports Group, British Ports Association, CC Water, Royal Society for the Protection of Birds, National Farmers' Union and Country Land and Business Association (the "Collaborative Partners"). The Collaborative Partners have made their best endeavours to ensure the accuracy of the information contained in this report. However, the Collaborative Partners cannot assume responsibility for the content of this report or for any opinions or statements of fact expressed therein or for any actions taken as a result of consulting this report. The report does not necessarily represent the viewpoint of any individual organisation.

© 2006 Defra, Welsh Assembly Government, Scottish Executive, Department of Environment Northern Ireland, Environment Agency, Scottish Environment Protection Agency, Department of Business, Enterprise and Regulatory Reform, Scotland and Northern Ireland Forum for Environmental Research, UK Water Industry Research, the Joint Environmental Programme, UK Major Ports Group, British Ports Association, CC Water, Royal Society for the Protection of Birds, National Farmers' Union and Country Land and Business Association. All rights reserved.

WFD RBMP – Economics

Collaborative Research Programme

Prospectus and Business Case

VERSION	1.6
STATUS	FINAL
DATE	MAY 2008
AUTHOR	KEVIN ANDREWS, JONATHAN FISHER, JOHN JOYCE, CAROL SINKER

**UK Collaborative Research Programme on River Basin Management Planning
Economics**

TABLE OF CONTENTS

1	DOCUMENT DESCRIPTION	3
1.1	DOCUMENT STAKEHOLDERS.....	3
1.2	CHANGE HISTORY.....	3
2	EXECUTIVE SUMMARY.....	5
3.	BACKGROUND – COLLABORATIVE RESEARCH PROGRAMME (CRP).....	9
4.	OVERVIEW OF PROJECTS	19
5.	CONSTRAINTS AND RISKS	21
6	ASSUMPTIONS.....	23
7	FINANCIAL COSTS.....	24
8	BENEFITS	25
9	SIGN OFFS.....	25

UK Collaborative Research Programme on River Basin Management Planning Economics

1 DOCUMENT DESCRIPTION

1.1 Document Stakeholders

Stakeholder Name	Producer	Contributor	Reviewer	Approver
CRP Members	KA	KA	CRP	ESG

1.2 Change History

Version	Date	Comments
0.1	10/5/04	Initial draft for internal discussion
0.2	18/5/04	Draft for internal discussion
0.3	19/5/04	Draft for circulation to ESG and EASG
0.4	9/7/04	Draft for internal discussion
0.5	1/8/04	Draft for internal and collaborators discussion
0.6	16/8/04	Final draft for internal and collaborators' comments prior to putting on EA web site
0.7	18/8/04	Final draft revised to incorporate changes to work for projects 1, 2 and 3
0.8	27/8/04	Final draft revised after UKWIR meeting to include UKWIR collaboration
0.9	17/9/04	Final draft revised after UKWIR comments
1.0	30/9/04	JF amended project 3 note to mention input from CRP1, Sniffer study. Also mentions resources and expertise currently available for carrying out economic appraisals.
1.1	11/11/04	JF updated funds and budget totals and per project and updated project timings and details
1.2	10/01/05	CB updated project 2 Project Details
1.3	11/04/05	KA updated following comments received from Programme Steering Group. This version to be reviewed October 2005.
1.4	13/04/06	KA updated following end of 2 nd financial year and to form basis of proposal to ESRC on joint funding opportunity
1.5	16/05/06	KA updated following discussion at the May 3 rd PSG and subsequent comments from PSG members.
1.6	16/4/2008	JJ updated following discussion with KA – CS updated to reflect view looking back at how the CRP went. KA finalised draft for discussion at May 2008 PSG

**UK Collaborative Research Programme on River Basin Management Planning
Economics**

UK Collaborative Research Programme on River Basin Management Planning Economics

2 EXECUTIVE SUMMARY

Note: This document has been updated following the conclusion of the research programme in May 2008. It has been updated through the life of the programme and now represents a backward look on the aims and what was achieved. The document also includes reflections by CRP members on the process of collaboration and lessons learned for future.

The UK Collaborative Research Programme (CRP) on River Basin Management Planning Economics was set up to promote constructive dialogue and develop the methodologies needed to undertake the assessment of costs and benefits of options in River Basin Management Plans (RBMPs). It aimed to provide a clear structure for undertaking the economic analysis required under the Water Framework Directive (WFD).

The CRP also aimed to involve all the major stakeholders in the economic analysis for the River Basin Management Planning (RBMP) in England, Wales, Scotland and Northern Ireland. The organisational and governance structure for the CRP was set out and agreed. The CRP reported to and took direction from the UK wide Economics Steering Group (ESG)¹, again chaired by Defra. The ESG maintained links with the UK-wide Policy Group on the WFD, the UK Technical Advisory Group (UKTAG) and stakeholder and other groups in the administrations, including the Economic Advisory Stakeholder Group (EASG) in England and Wales. A Memorandum of Understanding for the Programme covered the arrangements between partners where these were not already established.

A key principle of the CRP was that the stakeholders needed to be involved in the process, collaboratively, from the start. They needed to share the principles of the programme and agree the outputs, as far as possible, to enhance the understanding and resolution of differences of opinion at later stages. Many organisations were expected to directly benefit from the CRP and it followed that such organisations should make a financial contribution where possible or provide resource inputs in kind instead or in addition to financial input. This reflected the benefits they received as well as ensuring an ongoing corporate commitment². It was inevitable that some organisations would join after some research was initiated or completed. This document serves as an ongoing record of the aims, objectives, processes and scope of work relevant to all organisations that were involved in the CRP. It outlines the benefits to the organisations already financially committed and thereby allowed other organisations to identify the benefits of joining the process.

¹ The original research proposal (Proposed Research Programme: Assessing costs and benefits of options in River Basin Management (RBM) for Implementing the Water Framework Directive (WFD): Paper for ESG and EASG meeting 23 April 2004 - (E(A)SG3/4/1)) was prepared by the Environment Agency and formally adopted by the Economic Steering Group as a collaborative research programme that would involve members of the ESG and EASG, with a secretariat provided by the Environment Agency. Guiding principles for the group (see Strategy) were discussed and adopted by the groups on the 23rd of April 2004. Note: The secretariat role was eventually passed to Defra with the use of an Independent Programme Manager from Black and Veatch.

² Some organisations, with a stake in this research, were however unable to contribute financially. In recognition of this an executive role was provided for members of the group who could provide financial or agreed in kind support (over and above attendance at meetings etc.). Those unable to provide either financial or in kind support were able to participate in the programme as observers.

UK Collaborative Research Programme on River Basin Management Planning Economics

The original programme was expected to run from 2004-2008. An extension of the programme from 2008-2013 was also considered but was not taken forward, despite longer term research needs on benefits being identified. The vehicle for taking forward these longer term research has received extensive discussion but has not yet been finally agreed.

The programme period was endorsed by a financial commitment of £1,626,000 from the Department of Environment, Food and Rural Affairs, Environment Agency, Natural England (formally English Nature), Department for Business, Enterprise and Regulatory Reform (formally Department of Trade and Industry), Scottish Executive, Consumer Council for Water, UK Water Industry Research, Welsh Assembly Government, Scotland and Northern Ireland Forum for Environmental Research and the Joint Environment Programme. In addition to the above financial resources a number of organisations contributed resources in kind. These were Scottish Environmental Protection Agency, Royal Society for the Protection of Birds, the UK Major Ports Group, the British Ports Association, the National Farmers Union and the Country Land and Business Association.

The purpose of this version of the document is to

- 1) Summarise achievements following the completion of the 2007/08 financial year;
- 2) Indicate the nature and scope of the longer term research programme, which will follow on from the conclusion of the CRP.
- 3) Review benefits, issues and lessons learned from the programme.

1. Achievements:

During the first Programme period, Projects 1, 2, 3 were successfully completed. The shorter-term projects (4a, 4b, 4c, 4d, 4e and 4f (scoping)) in the Project 4 suite were also successfully completed. During the first. In summary:

Projects 1, 2 and 3 delivered the following information:

- the overall appraisal and decision making context Project 1);
- methodologies to assess and compare the cost-effectiveness of measures (Project 2);
- guidance on the evidence required to justify disproportionate cost decisions (Project 3);

The short term projects in the Project 4 suite delivered the following information:

- Benefits workshop and report (Project 4a)
- A stated preference valuation tool that measures the benefits of achieving the outcome of Good Ecological Status in England and Wales. This is an adaptable tool

UK Collaborative Research Programme on River Basin Management Planning Economics

and can be used to obtain values for different implementation scenarios (Project 4b/c)

- Public preferences for different WFD outcomes (Project 4d)
- Literature review of the direct market benefits of implementing the WFD (Project 4e)
- Scoping study on Use and Access of water bodies in England and Wales (Project 4f)

2. Longer term research

It was proposed at the start of the first programme phase, that subject to sufficient interest and funding, the CRP would run for a second period (2008/09 - 2012/13).

It was decided that the CRP would not continue into a second programme period and will close by June 2008, following the completion and sign off of the short term projects in the Project 4 suite.

The proposed longer-term capacity building projects, Project 4f (Use and Access) and Project 4g (Science Support) will *not* be managed by the CRP. The management of these projects will be subject to a new structure. It is hoped that funding will be sourced through matching fund contributions from ESRC/NERC.

In addition Project 5 (Integrated Guidance on Assessment for River Basin Management Plans; and Project 6 (New benefits valuation studies to improve the empirical basis for decisions on disproportionate costs) were not delivered in the programme. Project 5 was not seen a necessary and the national benefits study completed under Project 4 was the main way in which Project 6 was delivered. No further empirical work was seen as being necessary until after the completion of the longer term research projects under Project 4.

3. Review and lessons learned

The feedback on the first programme period has been positive for the following organisations:

Natural England (formally English Nature), Department for Business, Enterprise and Regulatory Reform (formally Department of Trade and Industry), Scottish Executive, Consumer Council for Water, Welsh Assembly Government, Scotland and Northern Ireland Forum for Environmental Research and the Joint Environment Programme, Scottish Environmental Protection Agency, Royal Society for the Protection of Birds, the UK Major Ports Group, the British Ports Association, the National Farmers Union and the Country Land and Business Association.

In particular, the organisations listed above valued the opportunity to engage in constructive dialogue and general communication with stakeholders.

The feedback from UK Water Industry Research and Environment Agency is more mixed. They indicated that decision making mechanism of the CRP was too cumbersome; and the

UK Collaborative Research Programme on River Basin Management Planning Economics

projects proposed in the second programme period were not relevant to needs of their organisations. For the Environment Agency the main problem has been the difficulty of bridging the gap between the River Basin Planning process and the CRP. As a result it has been difficult to ensure that the overall outputs are specific and simple enough to be useful for RBMP.

Defra's view of the programme has also been mixed. Given the uncertain nature of the WFD a collaborative approach was the best way forward. However attempts to produce outputs relevant to all administrations (especially England and Scotland) given differences in planned implementation meant that a great deal of compromise was necessary resulting in the production of quite generic approaches which were difficult to translate into the actual RBP process on going in the different agencies. There has also been a tension between the role of experts in stakeholder organisations as experts per se and their roles as representatives of their organisations.

3. BACKGROUND – COLLABORATIVE RESEARCH PROGRAMME (CRP)

The UK Collaborative Research Programme (CRP) on River Basin Management Planning Economics was set up to promote constructive dialogue and develop the methodologies needed to undertake the assessment of costs and benefits of options in River Basin Management (RBM) and River Basin Management Plans (RBMPs) and providing a clear structure for undertaking the economic analysis required under the WFD.

The CRP aimed to be a fully collaborative programme involving central government, regulatory agencies, industry representatives and environmental groups. A collaborative, multi-agency approach was seen as essential because decisions about the type and extent of new measures to protect UK water resources need to be made in as consistent a way as possible. If different organisations were left to devise its own method of deciding how effective new measures are likely to be, how much they will cost and when costs are disproportionate to benefits, WFD implementation would be inconsistent. Although the measures needed to meet the main WFD target of ‘good ecological status’ by 2015 will differ in each river basin, the method of assessing which measures are cost-effective should be consistent. It was the role of the CRP to provide the tools that would underpin this consistent approach.

The CRP resulted in the production of: a) a methodology to assess both the cost and effectiveness of measures aimed at protecting water resources; b) guidance on deciding when costs are likely to be disproportionate to benefits; and c) a methodology for assessing value of benefits of achieving WFD outcomes, including the benefits of measures. These three tools were accompanied by guidance and other supporting material, including a database of typical cost ranges for specific measures. This stemmed from the need for competent authorities to carry out economic analysis for implementing RBM (especially in line with Article 4 and Annex III of the Directive). This followed on from the three scoping studies commissioned by Defra in 2003/4 and similar studies undertaken in Scotland and Northern Ireland. In particular, this work builds on the project entitled *Cost-Effectiveness Analysis and Developing a Methodology for Assessing Disproportionate Costs* which was led by the UK Economics Steering Group³.

The CRP has been described as the ‘engine room’ of WFD implementation since its outputs are essential tools for those involved in developing and commenting on River Basin Management Plans and the programmes of measures they contain. Essentially, the CRP has been the environmental economics component to WFD implementation to date, with the goal of assisting decision-makers in arriving at an answer to challenging questions such as:

³ <http://www.defra.gov.uk/environment/water/wfd/economics/index.htm>

UK Collaborative Research Programme on River Basin Management Planning Economics

Which combination of agricultural and water industry measures would be most cost-effective in reducing phosphorus pollution in the South East?

Or

How much will it cost to remove barriers to trout spawning on the River Usk and how much of an impact will their removal have on the trout population?

The CRP workplan covered two programme periods, the first period (2004 to 08) provided outputs to inform the first RBMP, and a proposed second period (2009 to 13) was expected to inform later cycles of RBMP. This long-term outlook recognises the need to overcome a number of methodological challenges and missing information.

The CRP involved 18 parties and was chaired by Department of Environment, Food and Rural Affairs (Defra). The CRP was jointly sponsored by Defra, Welsh Assembly Government, Scottish Executive, Department of Environment Northern Ireland, Environment Agency, Scottish Environment Protection Agency, The Department of Business, Enterprise and Regulatory Reform (formally Department of Trade and Industry), Ofwat, Natural England (formally English Nature), Scotland and Northern Ireland Forum for Environmental Research (SNIFFER), UK Water Industry Research, Joint Environmental Programme, UK Major Ports Group, British Ports Association, Royal Society for the Protection of Birds, Consumer Council for Water, National Farmers' Union and Country Land and Business Association (the "Collaborative Partners").

Participants in the CRP required this work to be done efficiently and in particular, they:

- **Needed to understand costs of possible programmes of measures.** To this end, a major innovative work programme has been undertaken. This work programme delivered a method for even-handed assessment of costs and economic impacts of measures across very different sectors (e.g. monopoly water industry, agriculture and other diffuse sources). The outputs have met their aim of being translatable, with some additional work, into fit for purpose approaches within the Agencies.
- **Needed to enhance understanding of assessments of environmental benefits** about which there remain, considerable uncertainties (e.g. impacts on natural habitats, aquatic ecosystems, non-use values and impacts on amenity and property prices) so as to improve the basis for assessment (including use of benefits transfer) for the WFD. Project 4 of the CRP has extended our understanding of environmental benefits and produced a national benefits figure which will permit consistent and proportionate assessment of benefits for the first plan. Project 4 has also successfully scoped the longer term research needs to ensure that later rounds of RBMP can proceed on an improved evidence base.
- **Needed to build on lessons** learnt from previous cost and benefits assessments for water management in a way that is most appropriate and fitted to the particular

UK Collaborative Research Programme on River Basin Management Planning Economics

needs of the WFD. The outputs have built on existing decision making processes and not attempted to replace these where they are seen as being fit for purpose.

- **Needed to engage with major parties and stakeholders** in a productive and constructive dialogue to arrive at an appropriate method for assessing the costs and benefits of options in RBM and River Basin Management Plans (RBMPs). The CRP process has permitted extensive dialogue between stakeholders, government and regulators. This has reduced the scope for debate and focussed attention on the main issues for RBP.
- **Needed a collaborative exercise**, which will make best use of available internal and external resources, expertise and capabilities. The CRP has avoided expensive and duplicative work which would have been difficult to rationalise thereby saving resources for the UK as a whole.

A review of benefits for each of the collaborators is summarised in their own words below:

The Welsh Assembly Government (WAG)

The Welsh Assembly Government has been committed to the Collaborative Research Programme, playing a key role in the development of several of the Programme's outputs. The level of stakeholder participation is seen as a success, enabling a broad body of knowledge to be drawn upon in the development of guidance for consistent, cost-effective and proportionate implementation of the WFD in Wales and the UK as a whole. The Programme has allowed technical issues of relevance to Wales to be addressed and discussed in an appropriate forum, leading to further work in Wales in some instances.

A lesson learned for similar programmes in future would be more realistic timescales to allow for adequate stakeholder involvement; e.g. tight timescales were imposed on some projects, allowing little time for consultation with relevant Welsh stakeholders.

The Environment Agency (EA)

The CRP research has provided a valuable input into thinking about how the economic elements of the Water Framework Directive can be implemented. In developing methodologies for cost effectiveness analysis and disproportionate cost analysis it has, through collaborative working, identified the key principles behind these concepts when applied in the WFD context. The work on benefits has addressed some of the key challenges in estimating the value to society of the environmental improvement that will be delivered by the Directive. The outputs of the Programme have been an important input into the Ministerial Guidance to the Agency on River Basin Planning.

The research has also highlighted a couple of key issues:

Developing methodologies that are practicable is extremely challenging and limits the extent to which they can be directly applied. The task was made more difficult when, due to timing issues, these methodologies are developed to feed into the River Basin Planning process which itself is still in the development stage.

UK Collaborative Research Programme on River Basin Management Planning Economics

There are still significant challenges to be overcome in how we assess the value of the benefits of improved environmental outcomes. The CRP has delivered on the short term priority of a national assessment of benefit values but further research is required in the longer term to improve our approach in future rounds of planning.

Natural England (formally English Nature)

The CRP has been effective in enabling Natural England to collaborate in funding research on economic aspects of the Water Framework Directive and has provided a valuable forum for discussion and sharing of information with other stakeholders. Given the current absence of guidance from Europe on disproportionate costs, we are aware that some of the guidance provided by the CRP may be subject to subsequent revision. We look forward to working with the Environment Agency, Defra and other stakeholders in ensuring that the purpose of the Directive is delivered and resolving issues that arise in doing this.

In terms of lessons that might be learned, the programme did not cover all economic issues pertinent to the WFD (some of the cost effectiveness analysis for example) which sometimes caused a little confusion and risk of non-involvement.

Ofwat

Ofwat commissioned contractors, with financial support from DEFRA, to investigate some areas of costs relating to the water companies. The reports are on Ofwat's website. The reports provide costs information to compare across sectors. This has been further extended by the work of the water sector group (chaired by Ofwat) on deriving possible costs of water company measures for the DEFRA's preliminary cost effectiveness analysis (pCEA). The work on the CRP in initiating the work on cost-effectiveness and disproportionate costs is still a key point of discussion for implementing the WFD. The NERA/Accent project on valuing public benefits has also been a useful contribution, albeit with the caveats that have identified. We hope this work has enabled ministers to have the necessary analysis to make well-informed policy decisions.

The Consumer Council for Water (CCWater)

In general, CCWater's experience of CRP has been positive. Our view is that it has been a useful forum, facilitating a lot of discussion between members who have embraced the spirit of collaboration constructively. As part of this, the main efficiency has been that member organisations have been able to source a lot of research that they would not have been able to source by themselves.

The flipside to this is that CRP has circulated a large volume of documentation and members were often only allowed a short time to provide comments. This has put a strain on all organisations but especially those with limited resources. Also, we have concerns

UK Collaborative Research Programme on River Basin Management Planning Economics

that, in some cases, research that has been costly has not been particularly meaningful. In the future, it may be possible to build extra stages into any project plans to allow for more discussion to avoid such problems.

Finally we felt that the management of the programme was exemplary!

Neil Edwards (CRP PSG Member for JEP – Joint Environment Programme)

It was clear to us from the outset that the interpretation of the economics framework within WFD would be crucial in determining the consequences of WFD. Participation within the UK CRP therefore provided an opportunity to ensure that any issues that might emerge for the power sector were properly represented in stakeholder thinking. For example, we were asked to indicate the potential cost associated with the 'measure' of moving a power station!

Perhaps not surprisingly, it became evident early on that on the whole the active participants in CRP were coming from an economics specialist background and had limited awareness of the technical challenges facing many other aspects of WFD. In our view this led to an unrealistic perspective within CRP of the limitations in other vital areas (eg the limitations of 'science' regarding the relationships between aquatic ecology and changes in the aquatic chemical and physical environment and also the importance of consideration of the non-aquatic environment in considering benefits and disbenefits associated with measures) which surfaced in particular in the benefits assessment project and also, to some extent, in the cost effectiveness projects. Whilst all the participants approached the exercise constructively, it became clear that there were significant differences of opinion between the Scots participants and those of the other administrations which appeared, to a peripheral player, to cause difficulties for the project as a whole. Without doubt the most important element of the CRP from the outset was in assisting in developing thinking on Disproportionate Cost (DC) since, along with technical feasibility, DC is the only element which provides a 'check' on attainment of default objectives set on the basis of sound science alone (irrespective of wider environmental and socio-economic consequences). CRP Project 3 was beset by the difficulty of interpretation of meaning as greater understanding developed in all parties and in the end, an increasing recognition of the need for European consideration of DC appeared to lead to it being to some extent overtaken. However, to the extent that it helped formulate the thinking of all involved (some of whom have had and continue to have influence in the European arena), it was doubtless worthwhile though considerable uncertainty continues to remain.

Overall, we hope that CRP will prove ultimately to be of value in providing a sounder basis for decision making in RBMP1 and later phases than otherwise would have been the case. However, as of late April 2008, our experience of RBDLP and the development of the draft RBMPs is that the profile of the economic aspects of Programmes of Measures and

UK Collaborative Research Programme on River Basin Management Planning Economics

Objective Setting, which CRP thinking could have and should have informed, remains disappointingly low.

UK Water Industry Research (UKWIR)

Overall, UKWIR's involvement in CRP has been a useful experience, particularly in terms of the opportunity to work with other stakeholders and to hear some of their perspectives on WFD issues, and as a forum to discuss the latest developments in environmental economics, specifically as applicable to WFD. However bringing such a varied group of individuals with different levels of understanding has inevitably affected speed of progress and it remains slightly disappointing that more has not been achieved and that there is little visibility of the tools that have been developed being used so far in RBMP development. There remains work to be done to integrate better the evidently diverse disciplines of economics and water science, and this lack of integration has not helped the practical application of the CRP tools. It is clear that there is still significant work to be undertaken to establish exactly how the benefits of WFD-driven improvements will be evaluated at the local level and particularly in how decisions regarding disproportionate costs will be taken.

Nonetheless, we welcome the contribution that the CRP has made to ensuring that significant WFD spend by the water industry does not occur without strong scientific evidence and the contribution of other sectors being taken into account. We are pleased that the CRP has made a significant contribution to the benefit valuation of environmental assets and that it recognised the difficulties with using benefit transfer from individual studies. This has built on previous UKWIR reports on environmental benefits assessment. We look forward to exploring what further contributions collaborative approaches such as the CRP will bring to this area in the future, particularly to tackle the difficulties of valuing the environment compared to other public and private benefits. We hope and expect that such future work will enable the derivation of tangible and transferable benefit values for future RBMP cycles.

The National Farmers' Union (NFU)

The NFU's involvement in the CRP process has been an overwhelmingly positive experience. The programme exemplifies the transparency and participatory approach embedded in the Directive, and has achieved higher standards in this respect than most other parts of the implementation process that we have seen so far. The opportunity to participate in the development of the methodology, to explore its application to our sector as part of an even-handed application of WFD principles across the spectrum has helped to develop a collaborative approach.

Participation in steering a major research programme, challenging outcomes and developing consensus over the outputs has built our confidence in the underlying principles, although putting them into practice will clearly be a major challenge for the competent authorities. Aside from the methodologies it has delivered, the Programme has

UK Collaborative Research Programme on River Basin Management Planning Economics

made a very material contribution to enabling us as stakeholders to be engaged and to participate in the delivery of WFD objectives.

Royal Society for the Protection of Birds (RSPB)

The RSPB has valued the opportunity of being involved in the CRP. It has been useful to collaborate with other stakeholders to develop a greater understanding of the economic issues associated with the WFD. The CRP has also been a constructive forum for discussion between member organisations.

It has sometimes been unclear, however, to relate the research and products produced by the CRP to the River Basin Planning process. This has been complicated by the overlapping timeframes between developing the River Basin Planning process, the European processes dealing with economic issues within the WFD and the research activities of the CRP.

Department for Business, Enterprise & Regulatory Reform (BERR)

BERR (formerly DTI) believes that the CRP exercise has made a valuable and worthwhile contribution to our understanding of the potential costs and benefits of the Water Framework Directive. CRP has delivered useful and practical frameworks that will enable a more informed assessment of available programmes of measures and gives some confidence that disproportionately costly measures will be avoided. The real test of whether these frameworks are a success will obviously come with implementation.

As a process, CRP has provided valuable opportunities for BERR to engage with, influence and contribute to the research and to hear the concerns of all stakeholders. CRP has provided answers to some of the many questions posed by WFD on costs and benefits. But it should be acknowledged that many questions remain yet unanswered, in particular on the science and ecology of water bodies and hence too regarding the costs and benefits. We hope that we can continue to work with Defra and other stakeholder to address these questions in the future.

UK Collaborative Research Programme on River Basin Management Planning Economics

3.1 Guiding Principles

The CRP was overseen by a Programme Steering Group (PSG). The PSG was responsible for the overall strategy and was chaired by Defra. Programme Management services were provided by Black & Veatch Ltd, through an independent Programme Manager and programme support.

Independent project management of the benefits projects was provided by John Joyce, an independent environmental economist.

Guiding principles, for the PSG, agreed at the Economics Steering Group/Economic Advisory Stakeholder Group meeting on 23 April 2004. These are detailed in Annex 1.4 but in summary covered the areas of:

- Overall objectives,
- Steering group membership and leadership
- Quality of work
- Compliance with existing government guidance
- Overall approach
- Transparency

These principles agreed at an early stage were very helpful in guiding the work of the various groups.

3.2 The WFD Process

The Water Framework Directive (WFD) is a major piece of environmental legislation that was negotiated by EU Member States and agreed in 2000. Its overall goal is to ensure that EU waters are in a good state by 2015. Having agreed the Directive's terms, the challenge faced by Member States has been to implement its requirements within the prescribed timescale.

The WFD requires that all EU Member States shift to a new method of assessing the quality of their coastal waters, estuaries, rivers, lakes, streams, canals and groundwaters. Instead of categorising water quality on the basis of a limited range of chemical and biological indicators, as has been the case for several decades, national regulators must determine whether water bodies are of 'good status' in ecological and chemical terms. Those water bodies that do not meet good status criteria will have to be improved. In general terms a water body at good status should differ only slightly in its biological, physical and chemical characteristics that would be expected in water unaffected by

UK Collaborative Research Programme on River Basin Management Planning Economics

human activities. All planning and implementation activities must be undertaken at the River Basin District scale.

As required, under the terms of the WFD, the UK environment agencies have produced an initial 'characterisation' of the nature and extent of pressures on water bodies. The 'Article 5' reports submitted to Europe by the UK Government outline the results of these assessments by dividing the UK into 12 river basins: Anglian, Dee, Humber, Northwest, Northumbria, Scotland, Severn, Solway Tweed, South East, South West, Thames and Western Wales⁴. Northern Ireland also submitted an Article 5 report.

The Article 5 analysis suggests that the majority of UK water bodies are considered as being at risk of not achieving 'good ecological status'. On-going characterisation work has aimed to refine the risk assessment. The main reasons for this are pollution – which has three main sources: agriculture, urban run-off, and industrial discharges – and physical alterations to water courses, such as diversion and culverting, etc. Another challenge is that in some areas too much water is being removed from water bodies by farmers, water companies and other water-intensive enterprises.

Key dates in WFD implementation can be summarised as:

- December 2004: Assess the current state and pressures on UK waters
- December 2006: Preliminary cost-effectiveness analysis of the draft Programmes of Measures
- December 2007: Publish overview of significant water management issues facing each River Basin District
- December 2008: Publish draft River Basin Management Plans for consultation
- December 2009: Publish River Basin Management Plans, and establish Programme of Measures and environmental objectives for each River Basin District
- December 2012: Programme of Measures to deliver environmental objectives must be operational
- December 2015: All inland and coastal waters should achieve the objectives set in the 2009 River Basin Management Plans.
- review achievements & update River Basin Management Plans every six years

For the first time, Member State governments have been given a great deal of flexibility in terms of how they achieve the goals of a water-related Directive, in this case, the WFD's 2015 goal of ensuring that waters are of good ecological status. Instead of prescribing the exact technical steps governments should take to improve their waters, the WFD requires that decisions on which measures to introduce must be taken in a transparent and consistent manner. Consideration must be given to all pressures, not just those pressures that are easiest to tackle. Another requirement set out in the Directive is that the cost-effectiveness of measures must be a central component in decision-making. An understanding of both the costs of the measures and their environmental effectiveness must form the basis of WFD implementation. The Directive allows certain alternative

⁴ www.defra.gov.uk/environment/water/wfd/article5

UK Collaborative Research Programme on River Basin Management Planning Economics

objectives to be set if the cost of introducing the measures needed to meet the default objectives is judged to be disproportionate to the benefits they will deliver. As such sound economic analysis is essential for successful implementation of the Directive.

UK Collaborative Research Programme on River Basin Management Planning Economics

4. Overview of Projects

The CRP was based on the following sequential project areas⁵.

The final strategy to achieve these objectives was defined by the Programme Steering Group; the plan was to meet the following minimum specific research objectives.

Project 1: Set out overall appraisal and decision-making context

- 1a Economic Analysis and decision making for Programme of Measures under the Water Framework Directive – initial identification of processes and issues
- 1b Consistent economic appraisal approaches with respect to the Water Framework Directive River Basin Management Plans
- 1c Screening of water pricing policies, cost recovery mechanisms and economic instruments for inclusion in Programme of Measures and in relation to Article 9 of the WFD
- 1d Catchment Sensitive Farming, Non-Agricultural Diffuse Pollution and the Spending Review in the context of the WFD: economic analysis & appraisal

Project 2: Developing a methodology to assess and compare the cost effectiveness of the main pollution control measures across sector

- 2a Development of a methodology to determine the effectiveness of combinations of measures for the WFD
- 2b Developing a methodology to assess and compare the cost effectiveness of the main pollution control measures across sector
- 2c Estimating approximate benchmark costs of the main measures across the main sectors
- 2d Development of peer reviewed tailored proformas for deriving cost estimates for individual sectors
- 2e Deriving the costs and effectiveness of delivery mechanisms

Project 3: Guidance on the evidence required to justify disproportionate cost decisions under the WFD formerly known as Scoping and characterising contentious options and their key benefits and assess, test and develop appropriate assessment systems

Project 4: Analysis to specify environmental benefits

- 4a Expert workshop to agree the strategic approach

⁵ These have been updated and amended during the development of the programme.

UK Collaborative Research Programme on River Basin Management Planning Economics

- 4b Benefits Context Study for WFD formerly known as Context study to determine what factors determine and limit benefits
- 4c Overall benefits survey of options for the first Programme of Measures
- 4d Public Preferences for WFD Outcomes [Prioritisation] formerly known as Survey of preferences/attitudes to risk to aid in prioritisation for the first Programme of Measures
- 4e Direct Market Benefits formerly known as Direct benefits study to improve understanding of direct benefits
- 4f Use and Access of Water Bodies in England and Wales formerly known as Waterbody use and access to improve the ability to predict the benefit of status improvements

A separate programme dependency diagram, project plan, programme plan and project timeline was available to Programme Steering Group Members and reviewed at each PSG meeting.

5. Constraints and risks

The projects entailed the following risks and constraints concerning:

- i. Identifying suitable contractors or consortia with the necessary expertise for the proposed individual research projects.
- ii. Developing an appropriate methodology involved inter-disciplinary work as well as advances in practical application of latest research and methodologies. It was necessary to ensure that these were practicable and fit for purpose for RBM.
- iii. Identification of suitable case study sites required close co-operation with the Agencies' Head office policy and technical staff and area/region staff.
- iv. Co-operation of key participants and stakeholders such as: Defra, Ofwat, and English Nature, UKWIR, SEPA and Scottish Executive, NFU, RSPB concerned with assessment of costs and benefits in the WFD.
- v. Difficulties in managing a large programme, especially where it involves extensive liaison and collaboration with other stakeholders.
- vi. Difficulties in managing the financial transactions.

A competitive tendering process minimised possible risks identified under point (i). There was a careful selection of those contractors best placed to do the work together with awareness raising activities to improve the quality of tenders received. Contractors were carefully managed to ensure that they delivered the necessary products to achieve the objectives on time, and on budget. This was not always possible and there were difficulties in identifying project executives, project managers and steering group members.

The projects had a peer review processes built into their planning. The work was let through several contracts. The programme was undertaken collaboratively with the stakeholders to address (v) and (vi) and also to make best use of the available limited research capacity. On (vi), Black and Veatch as the programme manger coordinated the financial transactions. Collaborators transferred funds to Defra to manage the specific projects as they were tendered. The Steering Group reviewed the payments from the funds to the contractors as the projects progressed.

Issue (ii) was addressed by working closely with the other experts both within and outside the collaborators in terms of close liaison with other disciplines (eg on social issues) and technical and policy experts in each organisation. Contractors had multi-disciplinary expertise and a capability to work across the disciplines.

The risks identified under (iii) are common to field based studies and were controlled by close liaison with policy and technical staff and regional and area staff.

UK Collaborative Research Programme on River Basin Management Planning Economics

Where there were dependencies on external events e.g. decisions coming from the WFD Common Implementation Strategy, a phased approach was adopted with break points at appropriate decision points. This allowed adjustment of projects to reflect external constraints, including the opportunity to NOT progress certain parts in the next phase if this was deemed to be inappropriate. This optimised resource allocation. A particular example of this was the break between project 3 and project 4 which enabled consideration of the strategic approach to benefits. The strategic approach obviated or changed the needs for subsequent projects (Project 5 and 6 were no longer needed in the form planned).

A separate risk register, reviewed at each Programme Steering Group meeting, was available to PSG members. This was regularly updated by project executives.

6 Assumptions

A number of critical assumptions were made:

- That the overall target budget would be met. This proved to be the case although this required additional financial input from Defra to complete the work.
- A programme manager co-ordinated the work into the overall project for economics in the Agencies and in the Agencies' projects for RBMP and Programmes of Measures. This was the case.
- Individual projects were awarded to the best contractors through competitive tender. In most cases this was possible, although in some cases single tender action was used where appropriate.

UK Collaborative Research Programme on River Basin Management Planning Economics

7 Financial costs

The following table summarises outturn expenditure.

CRP Budget Overview 07 July 2008

INCOMING FUNDS

Amounts in (£k)	Year					Grand Total
	2004/5	2005/6	2006/7	2007/8	2008/9	
Organisation						
NEE	50	50	126.2	151	50	427.2
Anal & Innovation Fund				50		50
Defra WO	0	200	200	210		610
DTI Bus Rel	20					20
DTI Sus Dev	10	10	20	10		50
EA	70	90	185			345
EN	10	10	10			30
JEP		10	10	10		30
SE	25	25				50
Sniffer	0	10				10
UKWIR	0	30	0	150		180
WAG		20	20			40
CC Water			5	6		11
Funding Total	185	455	576.2	587	50	1852.2
Estimated Bal carried forward	0	79.8	0	0		
Estimated total available budget	185	534.8	576.2	587.0	50.0	
Annual Spend (Actual/ Estimated)	105.2 (Actual)	536.5 (Actual)	576.2 (Actual)	559.1 (Actual)	52.1 (Estimate)	1829.1

BUDGETED SPEND

Within the Forecast figures:

Blue = Committed

Green = uncommitted

Project	Sub Project	Original Budget	Status and Year					Forecast	Forecast
			Actual 2004/5	Actual 2005/6	Actual 2006/7	Forecast 2007/8	Forecast 2008/9		
1	A	20.0	16.8						16.8
	B (including extension)	25.0		22.9	27.9				50.8
	C	68.0		76.6	2.2				78.8
	Peer review	7.5		7.5					7.5
2	A (covered by SNIFFER)								0.0
	B	152.0	67.4	46.0					113.4
	Peer review			12.7					12.7
	C	108.0		91.5	16.5				108.0
	C Entic compensation				5.0				5.0
	C Aggregation Extension				30.0				30.0
	C Post pCEA update					20.0	5.8		25.8
	Peer review	6.9		6.5	4.6				11.1
	D-SEPA Proforma	10.2			10.2				10.2
	D-England & Wales testing	20.0			5.0				5.0
	E	30.0			34.7				34.7
	Peer review	3.3			4.1				4.1
		116.1		98.8	20.2				119.0
3	Extension					17.3			17.3
	Updates Oct contingency								0.0
	Peer review	15.1		10.5	10.5				21.0
4	A	90.0			1.9				1.9
	4 b/c/d	1150.0			137.0				137.0
	4 b/c/d peer review					16.4			16.4
	4 b/c/d extrn pilot (1) + focus grps				43.0	41.3			84.3
	4 b/c/d extrn pilot (2) + focus grps					31.4			31.4
	4 b/c/d survey - ONS Omnibus 7s					8.6			8.6
	4 b/c/d survey					131.2			131.2
	4 b/c/d survey addtl map prod WRc					8.4			8.4
	4 b/c/d survey analysis					49.1			49.1
	4 b/c/d extension PM work					5.3			5.3
	4d Prioritisation					80.0			80.0
	E	150.0			26.0				26.0
	E additional work								0.0
	F scoping	20.0			18.0	1.0			19.0
	F scoping peer review - Riccardo Scarpa					2.0			2.0
	F	430.0				20.0	20.1		40.1
	F peer review						3.5		3.5
	G	300.0							0.0
	G peer review				2.5				2.5
	H - NO GO	150.0							0.0
	Peer review - NO GO				5.0				5.0
5		200.0							0.0
	Peer review								0.0
6		800.0							0.0
	Peer review								0.0
	Projects Total	3872.1	84.2	373.0	404.3	432.0	29.4		1322.9
Additional Work	Complex testing workshop	15.0		19.6					19.6
	Benefits Workshop				4.9				4.9
	Database translation work	10.0		4.3	1.5				5.8
	Extension to TraC work	15.0		20.0					20.0
	Project management Proj 4	113.0			56.5	56.5			113.0
	Dissemination workshop Nov 06				1.8				1.8
	Illustrations for 4b/c/d					8.7			8.7
	Benefits Workshop 16/11/07					5.3			5.3
	Oxera				14.0				14.0
	Additional Work Total	153.0	0.0	43.9	78.7	70.5	0.0		193.1
Programme	Prog Mgmt	291.0	8.0	111.7	92.3	55.4	22.5		289.9
	Proj Supp	13.5	6.0	2.6					8.6
	Expenses - catering for mtgs	0.0	7.0	5.3	0.9	1.2	0.2		14.6
	Programme Management Total	304.5	21.0	119.6	93.2	56.6	22.7		313.1
	Grand Total	4329.6	105.2	536.5	576.2	559.1	52.1		1829.1

(project 2a covered by SNIFFER - not included in calculations)

UK Collaborative Research Programme on River Basin Management Planning Economics

The funding of the expenditure came broadly from the partners to the CRP with the most significant contributions from Defra, Environment Agency and UKWIR.

The total funding from CRP partners was £1,853.2 from 2004/05 to 2007/08, as detailed in the incoming funds table above.

8 Benefits

The benefits of this collaborative research was to provide the UK with required information needed to meet the water quality standards of the WFD in the most cost effective and efficient way possible. There are significant benefits, in terms of efficiency savings and avoided infraction costs, on top of the benefits from meeting the water quality standards. Benefits to individual partners have been summarised above.

9 Sign Offs

This signoff for formal approval of the Business Case and authority to proceed to the next stage of the WFD RBMP Economics Collaborative Research Programme is contained within the following documents:

- Memorandum of Understanding (or equivalent for EA/SEPA/Ofwat)
- Financial contributions letters (signed by all financial contributors)
- Agreement to proceed following project 2a/2b (signed by all partners)

Copies are available from the Programme Manager, Carol Sinker