Joint Defra/EA Flood and Coastal Erosion Risk Management R&D Programme

Supporting the development of a social sciences strategy for Flood and Coastal Erosion Risk Management R&D

R&D Technical Report FD2604/TR
Social Sciences within FCERM Research: Practice and Future Prospects

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Executive summary

This project aims to support the development of a social science strategy for the Defra and Environment Agency FCERM R&D Programme. Through collaborative research and a focus on capacity building the project has developed a Vision Statement for FCERM R&D together with a series of recommendations to achieve that vision. The Vision and recommendations provide the building blocks for embedding social sciences in the FCERM R&D Programme.

The Vision Statement reads:

'**FCERM R&D focusses on research that puts people and places at the centre of its work, and locates technology and structures in a social and spatial context**.

This focus is on a **collaborative** approach to knowledge development that embraces and understands that FCERM has **many perspectives and knowledges**. FCERM R&D is a **learning system** such that all projects are evaluated in terms of: the benefits to FCERM's objectives and the **research quality**, to ensure its contribution to efficient use of research money and more effective practices in future.'

The **overall recommendation is that the building blocks for embedding social sciences in FCERM research need to be taken forward by Defra and the Environment Agency**. More detailed recommendations are included below:

R1 Embedding the Vision
We recommend that the Vision Statement and Narratives for each of the themes (and suggestions for projects within each narrative) are considered for further development by FCERM Science Theme Managers and Theme Advisory Group (TAG) members as appropriate.

R2 Embedding collaboration
We recommend that collaboration should be a central part of the research programme in order to enable more cross-theme working. Greater co-operation between themes should ensure that the benefits of research projects are shared by the whole programme and more opportunities for cross disciplinary research are provided. This collaboration should extend to wider involvement of key FCERM stakeholders on project boards / TAGs (e.g. representatives from local authorities, emergency services and voluntary groups).

R3 Capacity building through expertise
We recommend that Defra and the Environment Agency develop both in-house social sciences research expertise and further links with research organisations. Approaches include: having dedicated social scientists within Defra and the Environment Agency; having project managers with social science knowledge and experience and establishing links with the Economic and Social Research Council to enable wider research to be drawn upon. Additionally, capacity can be enhanced through the use of ESRC placement fellowships where 'in house' expertise can work alongside FCERM staff in Defra and the Environment Agency.

R4 Capacity building through structures
We recommend that Defra and the Environment Agency establish a series of structures to facilitate access to social science knowledge and expertise, sharing of research results and collaboration with other organisations. These should include developing a

social sciences network within Defra and the Environment Agency to access and share expertise.

R5 Capacity building through support
We recommend that embedding the social sciences in FCERM is supported both upstream and downstream in Defra and the Environment Agency.

- **Upstream support** would involve key senior staff at the Environment Agency and Defra in FCERM policy engaging in discussions about how to embed social sciences together with perhaps one or two key people specifically keeping a watching brief on social sciences in FCERM;
- **Downstream involvement** would ensure that staff from the Environment Agency areas are involved in all aspects of the research process as they may be asked to implement results from a research project and will have practical ideas about social sciences research topics.

R6 Capacity building through resources
We recommend that, where possible, there is an enabling of continuing professional development relating to social sciences for example through intranet-based resource materials based on the CD produced for this project. In terms of the wider issue of the proportion of research money spent on social sciences and interdisciplinary research projects we would encourage that a discussion is started on the possibility of increasing that proportion.

R7 Evaluation through benefit tracking
We recommend that the framework for benefit tracking of all FCERM research is developed taking into account the evaluation framework developed for this project and should include arrangements for assessing the quality of social science and other research outputs. The evaluations of social science projects should also be discussed at TAG meetings (perhaps annually) so that members can develop a clear understanding of good examples of research.

R8 Developing a learning system as the basis for the next programme review
We recommend that time is spent considering how lessons from evaluations can create learning. It will require either a separate process where the target audiences work through the evaluation findings and lessons to consider what these mean for them and their work, or an evaluation process that works with the potential target audiences for learning throughout. This project could be used as a case study by conducting a further evaluation in one year's time to assess how/if the learning from this project has been successfully embedded in organisations.

R9 Implications for the wider FCERM business
This research has provided an in-depth examination of how social sciences research is, and could be, part of FCERM R&D. Throughout our work we have had in mind that the issues raised within this project are wider issues for the FCERM business. The issue of the role of the 'social' is raised and examined within another FCERM R&D project 'Improving Institutional and Social Responses to Flooding'. As with this project, that project took as the starting point the strategy shift from flood defence to flood risk management, from holding back the water to making space for water and acknowledgement that solutions need to be social as well as technical. We recommend that discussion of how R&D contributes to that strategy shift is continued and reviewed.

Contents

1. Introduction

1.1 Background and project objectives

This is the summary and recommendations report for project FD2604 'Supporting the Development of a strategy for social sciences in FCERM R&D'. It is supported by another technical report:

- Current Approaches to Social Sciences in FCERM R&D

This report summarises the approach and findings of this research project and then provides recommendations for taking the work further.

The project had five interrelated objectives:

Objective 1: Develop a Vision and facilitate development of a draft strategy for social science research within the FCERM R&D programme for the next five years in a way that builds on the understanding of social science research practices, and the institutional capacity to apply these from the outset.

Objective 2: Develop practical understanding and application of social science research practices within the context of the four themes of the new FCERM R&D programme.

Objective 3: Build institutional capacity for social science research practices by developing and working with a network of 'social science champions'.

Objective 4: Make recommendations to embody the emerging understandings of social science research practice, and proposals within relevant strategy, policy and guidance documents.

Objective 5: Evaluate the whole project and establish a process to ensure post-project sustainability.

1.2 Structure of this report

Section 2 of this report briefly describes the research approach followed in this project. Sections 3 to 5 contain the building blocks and suggestions for a way forward on the development of a social science strategy for FCERM R&D. These are:

- Direction : Vision and theme narratives
- Approach: Strategy and capacity
- Evaluation: Reviewing experience

The project was tasked with providing support to the development of a strategy for the social sciences and FCERM R&D and these three aspects will be useful as building blocks for that strategy. In themselves however they are not intended to be a strategy but suggestions on what may be part of such a strategy. Any Vision and strategy will require further development and adoption by relevant personnel in Defra/Environment Agency.

Section 3 Direction: Vision and theme narratives

This section sets out a Vision Statement for social sciences in FCERM R&D together with 'narratives' suggesting what social sciences might be appropriate for the four different themes within FCERM R&D.

Section 4: Approach: Strategy and capacity

This section focusses on the 'how' of developing social sciences in FCERM R&D and consists of:

- Strategy statement with suggestions for social approaches in FCERM R&D
- A discussion of possible approaches to training including
    - Details of the training seminar held as part of the project
    - Details of the CD of resources developed as part of the project

Section 5: Evaluation: Reviewing experience

A key part of this project has been discussion of evaluation, in terms of how social sciences research can be meaningfully evaluated and this section discusses the key aspects of an evaluation framework.

2. Research Approach

2.1 Project tasks

In order to achieve the objectives and draw recommendations to embed social sciences in FCERM R&D a number of activities were carried out:

- A review of current practice of social science research within the FCERM R&D programme which drew on three sources of information:
    - Interviews with Theme Champions and managers (two interviews each with TC and TM)
    - Analysis of theme research objectives statements, workplans
    - Analysis of project lists between 2002 – 2007;

- A separate technical report provides the analysis of that review[1];

- Drawing on the review of current practice a Vision for FCERM R&D that embeds social sciences within FCERM together with narratives for each theme were developed by the project team in consultation with Defra and the Environment Agency;

- A suggested strategy or the building blocks to achieve the Vision with a focus on developing both internal capacity and links with external expertise was developed and discussed with the project board;

- The trial of different methods for building social science research capacity in Defra and the Environment Agency. These methods included preparing a background paper, organising a seminar to showcase different case studies of social science research, a workshop to discuss the post project sustainability of this work and the production of a social sciences resources CD ROM;

- Preparation of an evaluation framework for social sciences research together with the evaluation of the project both of which are aimed at increasing learning and more transparent benefits tracking from research.

2.2 Research characteristics

The approach that this project has followed had the following characteristics:

Collaborative: both within the project team and with Environment Agency and Defra staff. This project has brought together social scientists with a variety of backgrounds (e.g. spatial planning, psychology, anthropology), research expertise (quantitative, qualitative) and experience in flood risk management. This variety has enriched both the research process and provided different perspectives.

Theme Managers and champions have contributed to the research through interviews and their comments. Other relevant Environment Agency and Defra staff have been involved through specific events organised for this project (training seminar, project workshop), invitation to be part of the project's advisory group and also through links

[1]TWIGGER-ROSS, C, TAPSELL, S, AND FERNÁNDEZ-BILBAO, A. (with DAVOUDI, S, FIELDING, J, SHEATE, W, WARBURTON, D) (2008) Supporting the development of a Social Sciences Strategy for FCERM R&D: Current Approaches to social sciences in FCERM R&D 2006/7. R&D Technical Report FD2604/TR2

with other relevant projects and networks: (e.g. Improving Institutional and Social Responses to Flooding, FLOODsite Liaison Work.)

Building on what is already happening: It was realised early on in the project that there was a need for this project to build on past and current social sciences input into FCERM R&D and it was in that spirit that the work was progressed. Much of the evidence for the recommendations and the Vision has been collected through interviews with Theme Managers and champions, review of social science contributions to past, present and future projects, etc.

This project has not been disconnected from other events that have taken place through the life of the project which have had an impact on policy and research priorities (e.g. summer floods and the Pitt review). The project team have also been linked to other relevant Environment Agency and Defra projects.

Emphasis on capacity building and providing examples: The research has provided specific examples of methods to build capacity of social sciences within the project (resources CD ROM, seminar). Rather than just saying that the programme needs more social sciences the research has endeavoured to provide examples to illustrate where the social sciences or interdisciplinarity can help solve some of the current issues with flood risk management. The examples have been provided as case studies (e.g. included in the CD ROM and presented at the seminar), suggestions for specific projects and suggestions for cross-theme collaboration.

2.3 Evaluation of the project

The evaluation of the project itself drew on two main sources of feedback from participants and the members of the team, reflecting on the effectiveness and value of the project:

- A workshop, held on 5 February 2008, designed to allow the team to present and discuss with participants the findings from the research to date, and consider proposals for a new 'socio-technical' approach to integrating social science into FCERM R&D in future using a trans-disciplinary perspective where appropriate. This workshop was attended by 10 participants from the Environment Agency and Defra plus six members of the research team. The workshop was facilitated by an independent facilitator.

- An evaluation discussion at the final advisory group and project board meeting for the project held on 19 March 2008. This meeting was attended by four participants from Defra and the Environment Agency, plus 6 members of the research team. This discussion was facilitated by John Colvin (Open University / Environment Agency). Minutes of this final meeting were produced.

The workshop provided some valuable initial feedback on the value of the project and its key findings, and these have been incorporated into this final project report.

The main evaluation questions

The project board discussed the following questions:

- **Whether the project had succeeded**. This was assessed by reviewing the project objectives and the extent to which they had been achieved (see table included in

Appendix 2). Overall, it was felt that the project had achieved its objectives successfully.

- **Whether the project had worked: what had worked well and less well, and anything missing**. The feedback here was:

  - The project had worked well to provide an extensive review of what is currently being done in terms of social science within FCERM R&D; as one participant said, this was 'comprehensive enough to be an authoritative insight into where we are'. This was important to enable future developments to build on current practice.

  - The methods used by the project (interviews, discussions, workshops etc) worked well to raise awareness of social science issues, and had improved the position of social science in the overall research agenda. The workshops worked particularly well to pull information together, allow discussion to identify key issues (e.g. research methodologies), and provided a focus for discussions of the value of social science that did not exist before.

  - The project team had worked well, creating an effective team from a range of specialists in different social science fields.

  The aspects that worked less well were as follows:

  - The project was over-optimistic about the speed at which change could be achieved within FCERM R&D because of external pressures (e.g. changes in staff, the floods in the summer 2007 putting pressure on staff time). The lack of staff time to invest in the work of the project was a problem, given the collaborative approach taken by the project. The development of the network was also slower than had been expected, although there were now signs of progress.

  - Although the focus on the four themes was understood as the brief for the work (and Theme Champions were the key audience), some participants felt that there were other key users who could have usefully been more involved in the project throughout, particularly Environment Agency Area and policy staff, and flood risk staff more generally (including in Defra) as these were key end users of social science research findings.

- **What were the impacts and benefits of the project.** The feedback here was:

  - Participants felt the project provided an invaluable base for the new social science researchers in the Environment Agency and Defra to work with flood risk staff across the two organisations. However, it would be vital for the project findings to be widely disseminated; ideally through a very short summary that could be circulated to spread awareness.

  - There was greater understanding of the need to include social science issues at the earliest possible stages of designing flood risk research projects. The best ways were discussed, and there were seen to be different merits in different ways of ensuring this input including involving social scientists at early stages or using 'intermediaries' who had sufficient social science knowledge to understand the different types of contribution that it could make.

- Participants felt this project was the start of a process, rather than a completed task. The profile of social science had been raised by the work of the project, and created an internal impetus, which would contribute to changing the role and status of social science in flood risk science in future.

- Given the early stages of development of the use of social science in flood risk science, it was felt that there would need to be real efforts made to ensure that this work was built on, probably by making it a specific responsibility of the new Environment Agency social science staff member. The development of the emerging network would be a priority, as well as the need for the two new staff to work closely together. The project had raised the importance of Defra and the Environment Agency working together on these issues.

- It was proposed that there should be a review of this project in 12 months time, to reassess its impacts and benefits. In addition, it was proposed that the next quinquennial review of flood risk research (in 2010 or 2011) should include recommendations from this project about the need to include social science research.

- **What were the lessons for the future.** The main lesson identified overall was that there could be benefits in future projects of this sort, that needed to use a collaborative approach to make progress, for a mix of contract and internal staff to work together within a research team. In that way, the external team could bring in any additional expertise that was needed, and the staff team could ensure that everything was embedded in internal systems.

As well as these questions which were discussed at the project board, the extent to which the objectives of the project were achieved was also evaluated. Each of the five objectives was examined by detailing indicators of success and how each objective was met and this was also discussed at the project board. The table with details of that evaluation can be found in Appendix 2.

The analysis shows that the objectives of the project were largely met. The longer term impacts and benefits of the project will depend on the extent to which the findings of this project, and the mechanisms established as a result of the project process (e.g. the network), are taken forward over the coming months.

3 Direction: Vision and theme narratives

3.1 Vision Statement

We suggest that there needs to be a Vision Statement that runs through the whole programme which will be accompanied by a tailored Vision or narrative for each of the four themes within the programme (see Section 3.2). The thrust of the Vision is that the research programme needs to promote a socio-technical framing of FRM. The Vision Statement rather than saying 'we need more social sciences research' is suggesting how FCERM R&D might be different if social sciences research were fully embedded within the programme.

Our suggested Vision Statement is detailed in the box below:

'**FCERM R&D focusses on research that puts people and places at the centre of its work, and locates technology and structures in a social and spatial context**.

This focus is on a **collaborative** approach to knowledge development that embraces and understands that FCERM has **many perspectives and knowledges**. FCERM R&D is a **learning system** such that all projects are evaluated in terms of: the benefits to FCERM's objectives, and the **research quality**, to ensure its contribution to efficient use of research money and more effective practices in future.'

The words in bold are highlighted because they embody a specific direction which we feel is currently lacking within the FCERM R&D programme and are elaborated below.

3.1.1 Collaborative

The practice of FCERM needs to be collaborative, both between organisations and between organisations and communities/individuals because of the wide range of activities that need to be managed. Indeed responses to the 2007 summer floods were criticised for the lack of connection between institutions (Pitt review, interim report[2]). We suggest that this collaboration should be a part of the research programme so that, for example, representatives from local authorities, the Health Protection Agency and possibly local communities are invited to be part of project boards where appropriate.

3.1.2 Many perspectives and knowledges

It is suggested that currently there is a lack of consideration of the different perspectives (e.g. lay and expert) on FCERM business even though it is clear that there are many perspectives on FCERM. Much of social sciences research is designed to look at different perspectives (e.g. from communities to organisations) and we suggest that is a key focus which social sciences research can add to FCERM research.

3.1.3 Learning system

Currently, whilst there is some evaluation of projects, we suggest that the evaluation that is carried out is not fed into the research process so as to create learning. As Diane Warburton comments: '*Evaluation can contribute to learning by analysing practice against agreed frameworks (e.g. against objectives or principles of good*

[2] The Pitt Review - Learning Lessons from the 2007 floods

practice), and identifying lessons for the future. However, these lessons then need to be incorporated into learning processes, which are not inherently part of social science research or evaluation, and therefore needs to be considered as a separate activity' (see section 5.3*)*. For FCERM business to really benefit from research then we suggest there needs to be emphasis on research as a learning system.

3.1.4 Research quality

Our research showed that there seems to be a combination of low levels of knowledge about social research (especially qualitative research) coupled with little evaluation of the quality of research (the very process that could help staff learn more about social research quality). Given this, we suggest that attention is given to the assessment of research quality in social science research projects.

3.2 Theme Narratives

As well as the overall Vision Statement we have developed theme 'narratives'. These are descriptions of what social sciences might look like for each of the four research themes. We suggest that these are discussed in each theme advisory group possibly when they are discussing future projects.

3.2.1 Strategy and Policy Development (SPD) Collaboration and perspectives

The SPD Theme focusses on supporting Defra and the Environment Agency in the development of flood risk management strategy and policy so that the risk from flooding is managed in a way which furthers a holistic approach to sustainable development. It will provide a strategic overview and direction and an integrated approach to FCERM issues that reconciles the needs of multiple players. It will do this by providing a sound and robust evidence base drawing on multi-, inter- and trans-disciplinary research for new flood risk management policy development. The focus will be on reviewing the strategic needs of, and providing evidence and innovation to, policy areas, including through the use of longer-term horizon scanning. New approaches to risk and appraisal will be developed along with a portfolio of flood risk management measures.

R&D within the Theme will explore barriers and incentives to deliver better environmental and social outcomes and to improve the effectiveness of funding mechanisms. It will improve economic appraisal/methods whilst taking account of changing demographics, societal values and preferences.

Research within the Theme will build upon its successful history and experience of using social science methods and tools. Listed below are some past and current projects, including (in brackets) the social science approaches that were or could be applied.

- *The appraisal of human related intangible impacts of flooding; Community and public participation (sociological and economic appraisal using a largely quantitative survey approach);*
- *Developing a multi-criteria analysis methodology for application to flood and coastal management appraisals (economic multi-criteria analysis);*
- *Who benefits from flood management policies? (social policy document analysis and interviews);*
- *Social justice in the context of flood and coastal erosion risk management (sociological and political philosophy qualitative approach, cases studies and key informant interviews);*
- *Insurance review and development of the statement of principles (economics and human geography, document analysis and expert interviews);*
- *Does economic appraisal allow us to adapt? (economic review and analysis, testing of alternative economic approaches).*

In future it will look beyond the emphasis on economic benefits to include social and environmental benefits and will thus broaden its experience to encompass not only the use of economics but additional social science disciplines such as psychology and social policy in order to address key policy issues. It will encourage the use of more multi-disciplinary work with non-social sciences. Future issues that may be addressed using social science approaches (with possible disciplines in brackets) include:

- *attitudes and behaviours (incorporating understanding of physical systems and perceptions of risk and influencing behavioural change) (psychology and sociology)*
- *understanding of different groups within populations (sociology)*
- *institutional and governance issues in FCERM policy (sociology and political science)*
- *individual decision-making processes and the role of information (economics)*
- *understanding perspectives of managed realignment (sociology)*

- *consultation methodology and communication with those affected by FCERM (sociology and psychology)*
- *integration of FCERM with land use and spatial planning (spatial planning and human geography)*
- *encouraging and incentivising increased resilience to flooding (economics, psychology and sociology).*

The SPD Theme will work closely with other Themes in the development of tools and techniques to implement policy. To increase the effectiveness of FCERM, and where appropriate, SPD will also collaborate with other agencies such as Communities and Local Government (CLG) or the Health Protection Agency (HPA). It will also seek to widen its frame to integrate stakeholder and public perspectives within research projects.

3.2.2 Modelling and Risk (MAR) - Values and facts

The MAR Theme aims to develop and deliver better risk assessment and management as needed by FCERM and to develop and promote a risk-based framework that encompasses physical processes, environmental extremes, system responses, vulnerabilities and uncertainties. Development of methodologies to assess social, environmental and economic aspects of risk will be a key focus while aiming to provide simple answers, applications and procedures. Integration of physical, social, economic and environmental aspects of coastal and estuarial management and sustainability will be a key research focus. The aim will be to improve business by employing practical and useable science, including social science. This will be based on the best available data and information which focusses on both immediate and longer-term needs and on probabilities and impacts.

A combined approach to problem solving will be required to deliver MAR objectives. This will need the application of both natural and social sciences as well as technological approaches; thus inter-, multi- and trans-disciplinary approaches will be encouraged where applicable to address current issues and to promote the development of generic risk uncertainty modelling techniques. Cross-cutting risk based knowledge and methods will be used to develop tools, techniques, information and knowledge to support risk assessment and decision-making.

Historically MAR research has utilised largely quantitative approaches to provide its evidence-base, focussing heavily on the use of economic justification methods. In future quantitative and qualitative social science research will help to inform MAR projects drawing on different social science disciplines where relevant. In particular, social science will help to translate qualitative statements into quantitative tools and contribute to communicating risk and on issues such as resilience and acceptability. The Theme will use appropriate, socially acceptable and economically affordable techniques, encouraging community participation where possible. It will make use of the best expertise to address the issues and questions at hand. Spatially-based processes and models will be used to improve understanding and modelling of physical processes and social and economic aspects of flooding and coastal erosion.

MAR research will build upon the successful past application of social science methods and approaches in projects including:

- *Broad Scale Modelling (economic and social impact assessments, potential for use of social policy and political science to assess governance issues);*
- *Flood Risk to People (psychology - human behaviour, sociology and social policy to assess social vulnerability, spatial planning;*
- *Risk assessment for severe flash flooding (human geography and spatial planning);*
- *MDSF (economic appraisal methods such as MCA, stakeholder engagement, social impact assessment);*
- *Risk assessment for flood event management (human geography, potential for use of psychology for assessing response to warnings and risk communication);*
- *Methods for risk-based long term costing of FRM (economic appraisal);*
- *Risk assessment for severe flash flooding in a rapid response catchment (human geography and spatial planning).*

One key future area for research is that of social modelling to complement the physical modelling within the R&D programme. Another focus could be on interdisciplinary working on risk analysis, for example, the use of analytic-deliberative processes to develop/evaluate a process for RBMP development. MAR research is well-placed to begin a shift towards a socio-technical risk assessment model by acknowledging and

understanding the role of values in modelling and risk analysis together with examining how impacts on people and communities can be part of risk assessment, and by incorporating risk perception into such risk assessment. Social science techniques can also be employed to help refine the understanding of issues such as non-structural responses and aspects of vulnerability.

R&D within MAR should lead to a better understanding of the drivers, pressure, receptors, sources and pathways relating to flood and coastal erosion risk. Other areas where social science approaches may contribute are in options appraisal, spatial planning and people issues, including a better understanding of why people behave as they do. The development of consistent modelling, appraisal, decision support and risk communication tools and participative evaluation of risk management options are further areas that would benefit from the use of social science. Risk perception and communication on understanding tolerable risk are other key areas, where a better understanding of the changing perceptions of risk and expectations for risk reduction would particularly benefit from the use of psychological approaches and investigation techniques.

MAR will work with other R&D Themes and funders on linking tools for other policy areas and on cross-cutting research areas e.g. with IMCE in incorporating social interests into risk models, and in focussing on flood probabilities to complement IMCE's focus on consequences.

3.2.3 Sustainable Asset Management (SAM) Evaluation

The overall objective of SAM R&D is to reduce the risk of flooding and coastal erosion through the application of sound science in developing sustainable asset management systems. The aim is to reduce the uncertainty surrounding flood and coastal erosion performance, through the introduction of risk based techniques and decision support frameworks to assist decision making and optimise funding. The main focus of SAM is on structures (assets) and making them work, making it the most techno-economic of all FCERM R&D Themes. Thus SAM's vision is that R&D will ensure that flood and coastal erosion risk management infrastructure remains appropriate to the changing conditions in which it must contribute to the management of flood or coastal erosion risk, and that over its life it minimises the loss of life from flooding and provides best value. SAM aims to enable assets to perform in an optimal manner and to achieve the best outcome for people and both the built and natural environment; it thereby aims at sustainability from both engineering and human perspectives.

Although the past use of social science methods has been very limited, in future a socio-technical perspective will also be applied, where relevant, to reflect the move from defending to managing floods. This perspective could be applicable when looking at a whole systems approach in addressing the local context of how assets are built, used and maintained. SAM therefore sits within a wider context of management and processes, which include social processes and decision-making. The use of social science within the SAM Theme in the future will help in developing decision support frameworks and in a more socio-technical framing of sustainable asset management.

Several key areas can be identified where social science approaches can contribute to SAM R&D. The first is by contributing to the concept of building sustainable communities and achieving wider benefits alongside flood risk management, such as regeneration. This will lead to improved interaction between asset systems and the local environment, both social and natural. Secondly, social science research can help in improving understanding of the concepts of sustainability as related to asset management, by investigating and developing approaches that are more adaptable to long term changes in site conditions.

There will be an additional need to understand how human processes influence what is built, and how it is built, in order to improve delivery and reduce negative environmental impacts. This would lead to a more holistic view of communities that embraces physical, social and perceptual interactions. It will also develop better understanding of new techniques and build on best practice to increase public confidence. There will be a need for an interface between asset management, where the water goes and community responses.

SAM project titles which could include a social science element (outlined in brackets) include:

- *Delivering the sustainable constructed asset (economic and social appraisals);*
- *PAMS3: establishing a performance based asset management system for flood defences (economic appraisal);*
- *Coastal asset management (sociology – community acceptance, involvement);*
- *Pollution of managed realignment at Orplands and Tollesbury (sociological and human geography approaches to assess public acceptability);*
- *Temporary and demountable defences (sociological and human geography approaches to assess public acceptability);*
- *Landscape and environmental design guidance (landscape design, urban planning – to determine appropriate natural, social and aesthetic outcomes);*

- *Guidance on design and implementation of managed realignment (sociological approaches for community preferences and engagement).*
- *Perception of being defended. Impacts of visible flood defences on risk perception.*

Key future questions and issues to be addressed with the use of social science approaches could include:

- *What is the asset for? Who benefits from it, who manages it and how? (economics and sociology);*
- *How are decisions about management made? (economics);*
- *What is the most cost-effective option? (economics);*
- *How to do sustainable and functional designs e.g. for defence, amenity, aesthetics (sociology, landscape design);*
- *Public use of information e.g. what sort of information would help in discussing flood defences? What do people do with information about flood defences? Do they know what flood defences are for, what their functions are and what happens if they overtop? (sociology, human geography);*
- *Withdrawal of asset maintenance e.g. for agricultural land (sociology;)*
- *Third party assets (sociology);*
- *Safety issues (social policy);*
- *Environmental knowledge (human geography, social anthropology);*
- *Evaluation and engagement with stakeholders, including stakeholder perceptions - particularly in managed realignment (sociology, psychology);*
- *Evaluation of community involvement with assets (sociology).*

Future SAM aims will be achieved through greater collaboration with government, local planning authorities, landowners, local communities and other stakeholder groups. Stronger links will also be developed with other Themes. In particular, joint projects with IMCE will be beneficial, for example from sharing results from IMCE research on collaborative working and partnerships and perception issues and with SPD on development control and planning.

3.2.4 Incident Management and Community Engagement (IMCE) Socio-technical systems

The ultimate aim of IMCE R&D is to manage and reduce the consequences of flooding to people and the environment by means other than hard defences and through the application of sound science in developing effective flood incident management systems. Improved understanding and measuring of impacts on people will enable the better management of such impacts. IMCE R&D aims to reflect the business needs of the Environment Agency and to develop tools and guidance to support these needs; it aims to address both strategic and operational issues. The IMCE vision is also to enable the Environment Agency to meet future performance targets for flood incident management and community response to flood events while helping reduce the consequences of flooding. Specific objectives of IMCE R&D focus on organisation (e.g. of system operation, uncertainty handling, coverage, training and support, and technical issues such as best practice models and techniques).

To date projects have largely been separated into those which focus on either social or technical issues (techno-engineering or socio-technical focusses). The Theme demonstrates a number of examples of successful social science projects, these include:

- *Improving flood warning awareness in low probability and medium-high consequence flood zones (sociology and psychology – risk communication – qualitative interviews and quantitative survey case studies);*
- *Improving institutional and social responses to flooding (sociology, human geography, psychology – qualitative approaches using document analysis, interviews, workshops);*
- *Understanding critical infrastructure failure during flooding (economic and social impacts appraisal);*
- *Public understanding and perception of flash flooding (human geography, sociology - qualitative and quantitative approaches);*
- *Flood warning for vulnerable groups (social policy, sociology using qualitative and quantitative interviews and survey approaches);*
- *The social performance of flood warning communications (human geography, sociology - document analysis and qualitative interviews);*
- *Public response to flood warning (sociological approach using qualitative and quantitative interviews and surveys);*
- *Managing the social consequences of floods (sociological qualitative approach, document analysis and interviews);*
- *Community engagement with its flood history (human geography, social anthropology, oral histories, diary keeping, workshops, exhibitions);*
- *Duty officer support and training needs (sociology, social policy).*

In the future there will be further building upon these projects and the encouragement of more multi- and trans-disciplinary projects, where feasible, linking together socio-technical elements and developing expertise in understanding all parts of the system. IMCE will seek technical and social solutions to future problems. This could encompass work on a social systems approach to the detection-response cycle which would include understanding stakeholders (their concerns, needs, capabilities etc.), relationships, decision-making and data at each point of the cycle.

The greatest potential for social science input into IMCE R&D will be in relation to external interfaces i.e. the targeting of and response to flood warnings; vulnerable groups, building flood resilient communities; improving inter-agency planning and response, and improved methods of warning dissemination. The aim is that people will

receive clear information aimed at their particular needs, will know how to act when faced with flood information and will take appropriate action to mitigate losses, damage and risk to life. A key aim for IMCE is to help people to live with flooding, and to link with adapting to climate change. This theme is about understanding the *people* aspects while looking at the technical tools to deliver these aims. Therefore a strategic approach is needed that has the best outcome for *people*.

Future projects will be informed by people's needs, wants and hopes and there will be a focus on community engagement before, during and after flooding. Social science approaches can help in formulating and issuing flood warnings to vulnerable locations and populations and in improving response to flooding by individuals and agencies to minimise the impacts of events. Post-event recording and analysis are other areas that will benefit from social science input. A long-term Vision will be developed that asks the questions from the receiving end rather than the driving end, for example: how can flood warnings be disseminated more quickly? Future IMCE questions that social science disciplines such as sociology, psychology and economics can help to address will include:

- *How can we predict the behaviour of natural systems and people?*
- *Who should flood warnings be targeting?*
- *Why do people not respond to warnings?*
- *Why do people do things the way that they do?*
- *Why do some people take actions and others do not?*
- *How do we get people to do things differently?*
- *What things should they do?*
- *What do people want? How do they behave and react?*
- *How can probabilistic forecasting be developed so that it works for people?*

In particular major new initiatives for the next five years will include:

- *Risk-based Flood Incident Management;*
- *Community planning and response;*
- *Flooding risks from other sources e.g. non-river flooding – better understanding of causes and properties of groundwater and urban flooding to help plan effective response;*
- *Information requirements;*
- *Measuring system performance.*

The IMCE Theme will work with other R&D Themes to achieve its objectives and will particularly work with other Themes in encouraging stakeholder and community engagement.

4. Approach: Strategy and capacity

4.1 Introduction

In this section we discuss how the vision might be realised by looking at strategy and capacity. By strategy we mean the types of areas where there needs to be activity in order to be able to move towards the Vision and we suggest four areas for change. By capacity we mean knowledge, awareness and expertise and we provide two examples, used in this project, of methods of developing capacity in Defra and the Environment Agency. In the following sections we discuss the issues around each of these areas: detailed recommendations for each of these areas are presented in Section 6: Conclusions and Recommendations.

4.2 Strategy

The tendency is to consider a 'strategy' as a document and of course it is important to document what activities are taking place, but we suggest that everything that has been done as part of this project to build capacity and raise awareness is part of the strategy because it is aimed at building capacity.

To enable FCERM to move towards the Vision outlined in the previous section there are a number of key organisational aspects that we suggest would need to be put in place. We have identified four key areas where changes should happen:

- *Expertise: in-house, external, in-depth, supervisory*
- *Structures: networks, training, seminars*
- *Support: up-stream and down-stream*
- *Resources: people, time, money*

4.2.1 Expertise

Currently, there are few members of staff with general dedicated social sciences training and experience and fewer with flood risk management experience and social sciences experience within Defra and the Environment Agency. Defra has had a placement fellowship within flood risk management who has been very effective in providing social sciences expertise, but essentially it is recognised that the social science expertise is spread too thinly within Defra and the Environment Agency. This echoes findings from the sub-group of the Defra Science Advisory Group on social science[3]:

> *'The sub-group found that the small central team of social researchers in core Defra were doing excellent work but were clearly overstretched.'* p.2

As well as having more social sciences specialists there is an increasing need for more science project managers who have some knowledge of social sciences. People who understand enough about social sciences to be able to ask the right questions of contractors, to evaluate research quality and to be able to translate research findings into practice or policy. This is another key role for social sciences expertise. In

[3] Defra Science Advisory Council (SAC) Social Science Sub-Group (SAC-SOC) Social Research in Defra – Final Report (1/11/2007)

addition, there are operational staff who have an interest in social sciences research and who could be invaluable in making links between research and practice.

Further expertise and capacity exists with contractors. Currently, as noted in the current approaches report[4], there is still a dominance of engineering consultancies carrying out the research programme and even when there are social sciences projects or elements of projects these consultancies tend to lead the projects. Capacity and expertise in social sciences and flooding has developed within consultancies and universities over the past ten years and is available as a further resource.

The point at which those people with that expertise get involved with project specifications can vary as well and it was felt by those in our workshop that a key issue was to get social science involvement 'up front' when project outlines are being discussed. Currently, there is some involvement of external social scientists with the IMCE theme at the Form A stage which could be extended. In addition, some social science specifications are sent out to peer review, but it is not clear if this is practiced across all the themes. The value of getting social sciences expertise in at the question framing stage of the research process is highlighted again in the SAC report[5]:

> *'When advice from Defra's professional social researchers was not sought by the instigators of research, it seems probable that social research questions had often been poorly framed or not asked in the first place; resulting policy and associated research may not then have been fit for purpose (insofar as that purpose / those purposes had been fully articulated in all respects' p2*

Other organisations (e.g. Forestry Commission, Food Standards Agency) have similar issues, that is, topic areas that are dominated by natural sciences yet increasingly are recognised to need social sciences input and collaboration. It is important to recognise that Defra and the Environment Agency are not the first organisations to meet these issues nor are they alone in trying to tackle them.

Overall there needs to be an increase in capacity and knowledge of the social sciences and the role of social sciences needs to be at the beginning of the research project development process. Both internal and external expertise need to be nurtured and developed, and networking across organisations should be explored.

4.2.2 Structures

In order for social sciences knowledge and expertise to become embedded within Defra and the Environment Agency it will be important to create structures that facilitate the spread of that knowledge. Many organisations have seminar series focussed on specific topics or to showcase current issues and research (e.g. Defra has a lunchtime seminar series for a range of topics). As part of Defra's progress on implementing its Sustainable Development Action Plan it has had sustainable development monthly seminars and is developing sustainable development enthusiasts who are staff with an interest and active involvement in promoting sustainable development[6]. Sharing research findings is a key way to increase awareness and understanding of social sciences approaches and results.

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[4] Twigger-Ross and Tapsell, 2008 Current Approaches to Social Sciences in FCERM R&D 2006/7

[5] See footnote 2 above

[6] Sustainable Development Commission, 2005, Assessment of Defra's Sustainable Development Action Plan.

Further, as will be discussed in more detail in Section 5, knowing if social sciences research is robust requires good evaluation. There is evaluation of research projects but the focus, not surprisingly, is mostly on whether the research is used in policy or practice rather than on the quality of the research. To develop social sciences research to a high quality within Defra and the Environment Agency it will be important to evaluate and reflect on projects.

4.2.3 Support/Organisation

In order to make the changes suggested above, support within the organisation for those involved will be essential. This should include support from senior members of the organisation, perhaps with one or two key people specifically keeping a watching brief on social sciences in FCERM. Also, it is important to involve staff from the Environment Agency Areas who may be asked to implement results from a research project.

4.2.4 Resources

Implementing the recommendations for a Strategy, particularly in terms of Expertise and Structures will require either additional or a reallocation of existing resources. These resources could be *money*, e.g. put more of the research budget into social sciences and interdisciplinary projects; fund new staff with social science expertise etc; *staff time*, to go on dedicated CPD courses, to attend events and network meetings; provide a *web site* of resource materials.

4.3 Approaches to building capacity

As part of this project we worked with a number of staff who expressed interest in social sciences. We developed and carried out a training seminar as well as producing a resource CD. We would suggest that these are approaches that could be used to build capacity amongst interested staff and these are presented below.

4.3.1 Example 1: Training Seminar

The training seminar was held on 23 October 2007. The full report of the seminar is in Appendix 1. The aim of the half day seminar and workshop was to exchange experience and to discuss how social science research techniques might be useful to FCERM research.

The objectives were to:

- Bring together a small network of champions in the field of social science and flood risk management research;
- Exchange experience of practical examples where social science and/or interdisciplinary perspectives could add value to FCERM research projects;
- Draw lessons for helping to apply social science perspectives and techniques where appropriate to future research projects;
- Help develop resources to support staff in developing and applying social science research skills.

The seminar was attended by Defra and Environment Agency staff. The participants had a range of social science and/or flood risk management expertise. The first part of the seminar consisted of four presentations of case-examples each chosen because they were assessed as being good examples of social sciences research. The presentations were followed by questions and discussion. The four case studies covered:

- A longitudinal study of health impacts of flooding;
- Segmentation of car and non-car using day visitors to National Trust Properties;
- The provision of flood damage data and related flood and coastal management benefit assessment techniques;
- Environment Agency research on the benefits for regeneration of environmental improvements.

The second part of the event consisted of a workshop session with two exercises focussed on using the participants' core expertise (either social research or FCERM). In the first workshop session participants were grouped according to their main area of expertise, i.e. flood risk management (FRM) or social science research: there where two flood groups and one social science group. The groups were asked to consider the following questions, with individuals pooling post-it notes to agree group answers:

- FLOOD GROUPS - What questions could usefully be addressed by Social Science?
- SOCIAL SCIENCE GROUP - What could social science offer to flood risk management research?

For the second group exercise participants were spilt into two mixed groups, i.e. with both flooding experts and social scientists. They were asked to consider the following question:

- How could social science be more usefully integrated into flood risk management?
- What would be the effect of doing so?
- What would you hope to achieve?

Each participant was asked to write three post-it notes. Post-its were then pooled in the two groups and a few examples of how to achieve integration of social science into flood risk management were agreed by the group.

Discussion

The training seminar provided an opportunity for staff to learn about some pieces of research that were relevant (either directly or indirectly) to FCERM. The research team spent time summarising research into readable, short documents in order to make the information as accessible as possible. These were circulated before the meeting and were the basis for the presentations. The discussions following the presentations were detailed, focussing on issues of sampling, robustness, methods and ethics. We feel that a cornerstone of any capacity building programme has to be the provision of information about good quality social research projects that are relevant to the staff and are presented in an accessible way. The sharing of good practice in research was highlighted as something that would be important in the development of capacity in social sciences. Further, it was suggested that emphasis could be put on 'telling a story' through the research, and using pictures to enliven documents.

Usefully, the workshop allowed staff to reflect on the role of social sciences in FCERM research. As with the interviews collected, it is clear that there are FCERM questions that staff feel the social sciences can help address, for example: understanding people's attitudes, perceptions, etc in terms of understanding flood risk; preparing for and responding to flooding; understanding community resilience and the factors that may affect it.

Finally, having staff with both social research backgrounds and FCERM backgrounds meeting together meant that there was a chance for mutual benefit and it was felt by the research team that there were some very useful synergies and potential collaborations established through the seminar.

4.3.2 Example 2: Resource CD-ROM

Linked to the training seminar a Resource CD-ROM was developed during the research project to help support the establishment of a social science champions' network, by providing FCERM staff with resources to help them find out more about social science research. The CD-ROM helps in answering a number of key questions which emerged through the research and addressed by this report:

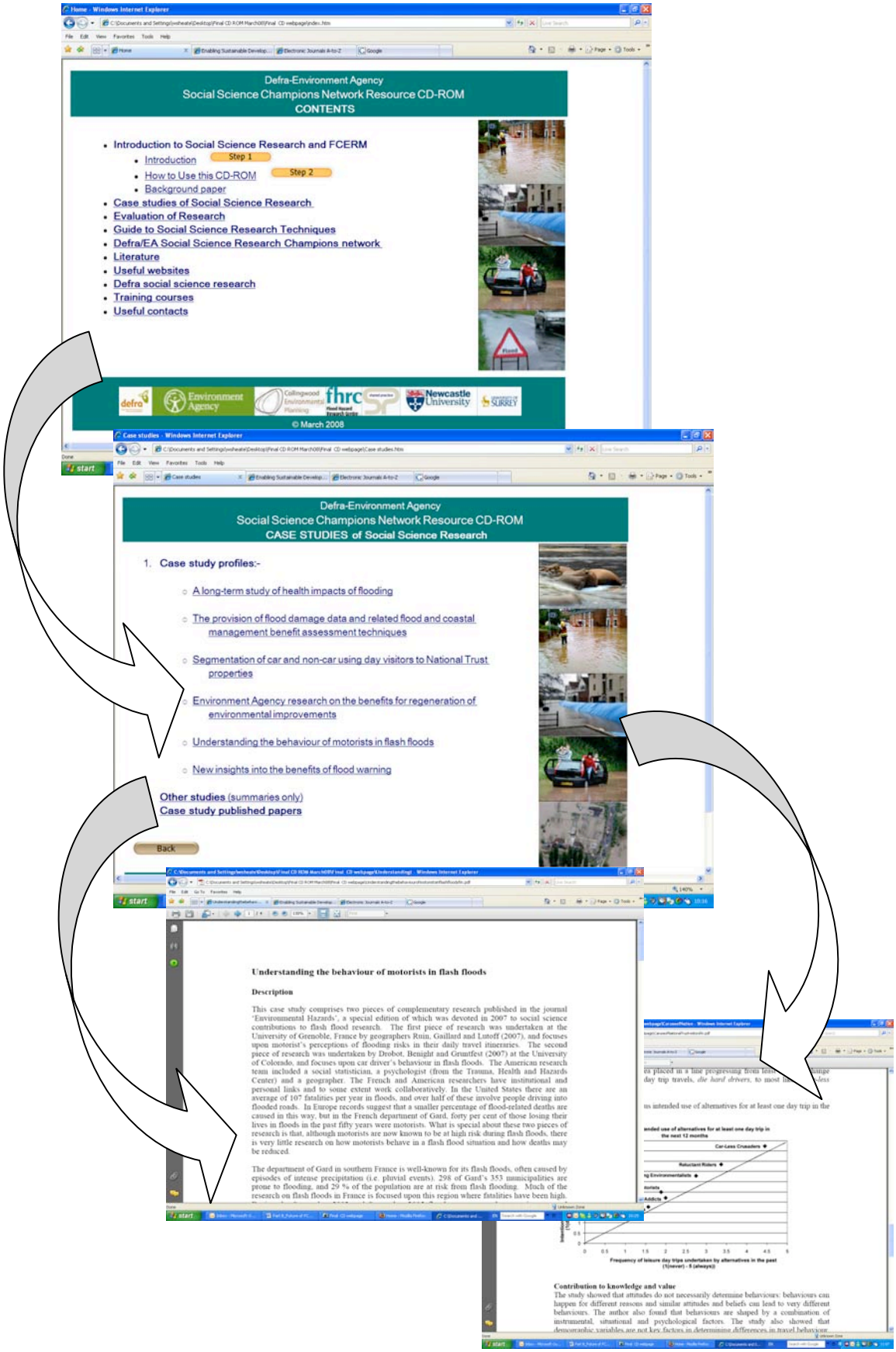
- How can we understand what social scientists are saying?
- How can we know if social science research is robust?
- How can we use social science in FCERM?
- How is social science information different from common-sense?
- How can we measure human attitudes and behaviour?

The CD-ROM provides a resource library to help answer these questions and support those interested and involved in social science research in relation to flood risk management in Defra and the Environment Agency. It contains:

- A set of case studies to illustrate where social science has been influential on policy and implementation and has provided an important perspective that might otherwise have been missing from the research;
- Summaries of other social science research studies;
- Some key outputs from the research project on 'Supporting the development of a Social Science Strategy';
- Information on the social science champions network;
- A summary guide to key social science research methods;
- Useful literature sources, including pdf versions of key documents and reports;
- Useful web links;
- Information on possible training courses;
- Defra's own social science research and lunchtime seminars;
- Useful contacts within Defra and the Environment Agency.

The CD ROM is presented in a basic web layout to facilitate ease of access via the front page and from there to documents and files. Clicking on the links from the front page takes the reader to individual pdf documents or folders of documents. Web links can also be accessed via the pdf documents or directly. The pdf documents provide an easy and accessible way of printing out information for later reference, if that is needed. Figure 4.1 illustrates examples of screenshots from the CD, specifically the case study examples.

Figure 4.1: Example screen shots from the Resource CD-ROM



The CD ROM is designed to support individuals in finding out more about social science and how it might be relevant to their area of work within FCERM, particularly through learning lessons from examples of good social science research (the case studies), including from areas outside flood risk management. The case studies were originally presented and refined through the training seminar above (Example 1). A draft of the CD ROM was also distributed among FCERM staff to trial before final refinement.

The CD RO< was not intended to be developed as a part of a training package, but it could be developed further as a supporting resource to a distance learning package, for example. As a starting point the CD ROM could be networked through the intranet for easy access by Defra/Environment Agency staff. Web links have been made to high level URL addresses to minimise the risk of links being changed over time.

While the CD ROM was not developed as a precursor to a website, it clearly provides an example of how a more fully functioning website could be developed if resources and appropriate responsibility were identified and put in place within Defra/Environment Agency. Such a site could provide an important element to raising and maintaining the profile of a social science strategy for FCERM within Defra and the Environment Agency, as well as facilitating networking and awareness among relevant staff.

5. Evaluation: Reviewing experience

5.1 Introduction

One of the barriers to an increased role for social science is uncertainty about how to assess the quality and benefits of social science research projects. There are few commonly shared and understood frameworks for assessing the quality of social science processes (e.g. that the methods are rigorous and reported findings are robust), or for assessing the impacts and benefits of social science research and drawing lessons for the future.

This section offers an initial contribution to developing thinking on evaluating the quality and benefits of social science within the FCERM R&D programme.

5.2 Introducing evaluation

Evaluation is a process of review and analysis to assess the value (including benefits) and quality of a project according to an agreed framework. Frameworks against which to evaluate activities may include the following; full evaluations may want to use elements from all of these:

- **Objectives -** analysing the activities and results of the project against the stated and/or implicit objectives of the project.

- **Principles of good practice** - analysing the methods and processes used in the project against agreed principles of good practice in social science research (see Appendix 3 for a relevant model of good practice in social science research adapted from Cabinet Office guidance).

- **A theory of change**[7] **-** developed at the beginning of the project to identify the pathways of change the project is expected to follow. 'Theory surfacing' and testing initial assumptions about the theoretical implications of the work can then be undertaken from the beginning and continued throughout the project.

- **Realistic evaluation**[8] **-** which is designed to deal with real problems in social policy and programmes, based on the scientific realist philosophy (i.e. goals of objectivity and detachment), in order to inform realistic developments in policy-making that benefit programme participants and the public. Realistic evaluation uses the formula:

  context + mechanism = outcome;

  context being a key factor in social science research.

Evaluation often focusses on assessing the inputs (resources put in – time, money, etc.), the outputs (activities or deliverables, e.g. reports or meetings) and the outcomes (results and impacts). As mentioned above, it has also become increasingly important to assess the context within which the project takes place, and the process used.

[7] CONNELL, JAMES P. AND KUBISH, ANNE C. (1996) Applying a Theory of Change Approach to the Evaluation of Comprehensive Community Initiatives. Progress, prospects and problems. Aspen Institute, New York.
[8] PAWSON, RAY AND TILLEY, NICK (1997) Realistic Evaluation. Sage Publications, London.

In evaluating social science research, the inputs are likely to be largely time and money (including staff), the outputs may be evaluated, for example, against a target of how many papers have been published, and the outcomes may relate to how that publication has been received by peer group (using for example reviews and citations) or in policy and practice.

5.3 Audit and learning approaches to evaluation

Evaluations can be based on relatively mechanistic 'audit' approaches, focussing on quantitative assessment of achievement against formal targets (e.g. outputs) or goals. Alternatively, there are approaches that focus much more on 'learning' from the experience, focussing on qualitative description and interpretation of more 'subjective' data (e.g. from interviews, stories, observation etc) to explain why and how certain outcomes were achieved.

The audit approach can be summarised as asking questions such as:

- Have we done what we said we were going to do?
- Have we met our targets?

The learning approach is more likely to ask questions such as:

- Were the methods appropriate to the objectives, and were the objectives we set ourselves the right ones?
- What have the impacts been?
- What are the lessons for the future?

Both learning and audit approaches usually require both quantitative research methods (collecting numbers to allow for measurement and judgement) and qualitative research methods (collecting descriptive data to allow for interpretation)[9]. Cabinet Office guidance[10] defines qualitative research usefully as follows:

> *'Qualitative research aims to provide an in-depth understanding of people's experiences, perspectives and histories in the context of their personal circumstances or settings … it employs a variety of methods, including: exploratory interviews, focus groups, observation, conversation, discourse and narrative analysis, and documentary and video analysis.'*

One of the drivers for including social science in FCERM R&D projects, and for evaluating the benefits of social science, is the recognition of the importance in FCERM projects of interdisciplinary working and sharing learning across disciplines, professions and projects. Evaluation can contribute to such learning by analysing practice against agreed frameworks (e.g. against objectives or principles of good practice), and identifying lessons for the future. However, these lessons then need to be incorporated into learning processes, which are not inherently part of social science research or evaluation, and therefore needs to be considered as a separate activity.

[9] OAKLEY, P (1991). Projects with People. The practice of participation in rural development. International Labour Office (via Intermediate Technology Publishing, London).

[10] SPENCER, L. et al (2003) Quality in Qualitative Evaluation. A framework for assessing research evidence. National Centre for Social Research for Cabinet Office, London.

Learning from evaluations can be achieved effectively by designing evaluation processes that explicitly involve those wishing or needing to learn in the evaluation research, so findings are shared and embedded throughout the evaluation process. A focus on learning may affect choices about who should undertake the evaluation, as well as how it is carried out.

Evaluation can be done by an independent evaluator, or by a member of the team running the project. If the main purpose of the evaluation is internal learning, it may be appropriate for the whole process to be kept in-house. However, if the evaluation is intended to ensure the external legitimacy and accountability of a research process, it may be more important for the evaluation to be independent, and conducted by an external evaluator. Whoever does undertake the evaluation, it will always be important for responsibility for evaluation to be clearly designated.

The main reasons for doing evaluations tend to be the following[11]:

1. To clarify the objectives of the exercise by finding practical ways to measure / assess success.

2. To improve project and programme management by building in review and reflection as the work progresses; especially progress towards the objectives of the exercise.

3. To improve accountability and legitimacy by fully reporting what is done, the resulting conclusions, and what is achieved as a result of the process.

4. To improve future practice and policy by developing hard evidence and knowledge about 'what works' and 'what impacts' the work can have, including what different approaches / methods can achieve.

Evaluation research is likely to cover five key questions:

- **What was the context?** (e.g. a description of why the research was initiated; what the policy and other contextual factors were);

- **What happened?** a description of what took place (including coverage of all the main activities as well as an assessment of the 'feel' of research activities e.g. consensus, conflict, uncertainty);

- **Has it succeeded?** analysis of success (e.g. against targets and objectives, against agreed measures of good practice, and to note if there were unanticipated outcomes);

- **Has it worked?** analysis of what worked (e.g. what worked well and why, what worked less well and why, lessons for the immediate and longer term future);

- **What impact has it had / what difference did it make / what are the benefits?** (e.g. evidence of influence on policy, tangible and intangible impacts on those involved).

[11] Warburton, Diane with Rainbow, Elspeth and Wilson, Richard. *Making A Difference. Guide to evaluating public participation in central government*. Department of Constitutional Affairs / Involve, 2007.

5.4 Doing evaluation

Formative evaluations (carried out during the process being evaluated, from the start, and feeding into ongoing development of the project) can include methods such as observation, direct experience and discussions with participants while they are part of the process. Summative evaluations (done after the project has been completed and covering the whole process) can also be useful as those involved have had time to reflect on their experience, and different results may begin to appear over time.

Long-term evaluation research, that begins during the process being evaluated and continues after it has been completed, is likely to provide the most comprehensive and valuable results and lessons. Such an approach allows for the following crucial evaluation tasks to be undertaken:

- clarifying the objectives so that they are articulated from the start to allow measurement of progress and achievement to be undertaken at relevant points;

- scoping the evaluation in terms of what will be examined and for what purpose (e.g. lessons for future practice, accountability etc);

- ensuring that data can be collected at appropriate points as the project proceeds, through formal monitoring and through points of reflection (possibly by the research / project team and evaluator together or separately) as appropriate.

The main stages of evaluation research are usually the following:

Clarifying objectives and identifying criteria and indicators of success using a framework for identifying what is really intended by the objectives and thus how success / achievement of the objectives will be measured, and how the evidence / data for the measurement will be obtained (e.g. questionnaires to certain groups, focus groups, interviews etc).

Evaluation research, including:
- Review of existing documents, to help provide a 'baseline' for the evaluation, recording what the research was originally intended to achieve, the conditions it developed from, how the programme developed, what changes were made and how they were implemented;
- Observation of specific research activities, including informal interviews with those involved;
- Questionnaires / proformas at appropriate points and for specific activities;
- Interviews with those involved at various levels.

Analysing data, involving summarising and reporting on the quantitative data from questionnaires etc, as well as agreeing and implementing other frameworks for assessment (e.g. stated objectives, principles of good practice).

Reports and reporting. Evaluation findings need to be reported in ways that are relevant to the potential audiences. The final report will need to analyse and summarise all findings, using quotes and specific examples from the research to illustrate and illuminate the research findings, and distil the lessons that emerge.

Learning. Evaluation can identify lessons but does not create learning; that requires either a separate process where the target audiences for learning work through the

evaluation findings and lessons to consider what the lessons mean for them and their work, or an evaluation process that works with the potential target audiences for learning throughout.

5.5 Assessing the benefits of social science research

The research for this project has examined current approaches to social science research within the FCERM R&D programme[12]. This found that there is currently very little evaluation in any of the four themes. Where it does exist, evaluation currently seems to be limited to the completion of project evaluation forms by project officers, and these do not assess the quality or value of the research. There has also been some limited use of academic peer review of research findings. However, there has recently been growing interest in the programme in the development of a benefits tracking approach to evaluating research.

The 2005 Joint Programme Review (in FCERM)[13] highlighted that the uptake of the scientific outputs was a key focus for assessing the success of the programme. In 2007, a new benefits tracking approach was developed[14] that focusses on producing a roadmap showing projects, assumptions and outcomes based on a 'results chain methodology'. The mapping allows the demonstration of how projects in different parts of the organisation combine to give a series of outcomes that contribute to commonly defined goals and corporate objectives. Critical outcomes in the results chain can be identified, and those that can be readily measured can have baselines and targets for improvements set, and then benefits monitored.

The benefits tracking work (led by the Environment Agency) is designed to feed into the updating of Agency business strategies (e.g. the Flood Warning Investment Strategy), to help to:

- determine who is doing what to deliver the overall Flood Incident Management (FIM) business outcomes;
- consolidate and recast performance measures for FIM and to confirm that the right things are being measured;
- determine whether money is being spent in the right way, on the right things and the benefits that investment brings, feeding into future strategy;
- give greater understanding of the strategic direction of the business and to be clear on where the business is currently placed and how it is doing;
- identify where new initiatives are needed - gap analysis;
- be clear on what activities deliver most value to the Agency and its customers (to support priority planning).

This benefits tracking approach has to date been used specifically on Flood Incident Management, producing six roadmaps, on: Flood Incident Management Benefit

[12] Collingwood Environmental Planning et al (2007) Current approaches to social science research within the FCERM R&D programme. November 2007.
[13] Defra/EA Joint R&D Programme: 2005 Review
[14] Environment Agency Briefing Note. Flood Incident Management Benefits Roadmaps. From Chris Haggett in EA WM Integration and Planning.

Roadmap (strategic); multi-agency response planning; flood forecasting and warning service; FIM policy drivers; raising public awareness; and research and development.

The roadmap approach to tracking benefits has also been piloted within the Incident Management and Community Engagement (IMCE) and Strategy and Policy Development (SPD) themes of the FCERM R&D programme. A roadmap for IMCE projects has been produced, and one drafted for the SPD theme. Further development work is continuing.

More specific to the development of a social science strategy for FCERM R&D, the following framework could also be used[15] to assess the benefits of research:

- **Content**. The scientific quality achievements of the research could be evaluated by considering the characteristics of benefits including research inputs (e.g. resources, existing knowledge, past experience and expertise), research outputs including information and knowledge extension, and capacity building (e.g. new skills, research training, career development, network formation, etc).

- **Process**. The impact of research on users could be evaluated by assessing benefits including the nature, level and effectiveness of dissemination and communication channels used in the projects, and the nature and extent of the application of research in policy and practice.

- **Context**. The added-value of research could be evaluated by assessing the characteristics of benefits to researchers (such as availability of resources), to the research programme and programme directors (such as visibility and critical mass as well as knowledge transfer) and to users and beneficiaries of research.

Overall, the evaluation of impacts, value and benefits from social science research are difficult to show unequivocally. There is rarely any clear line between cause and effect as the distribution of outputs does not equate to achievement of intended outcomes, and that the nature of benefits may derive from many more causes than just science research (e.g. influencing policy, efficiencies in process or operational improvements). In addition, timescales between the delivery of a scientific resource and the realisation of benefits may be many years after project closure[16].

In summary, issues of attribution and additionality are difficult to measure in social science research and the impact of research on policy is not limited to its linear and direct utilisation (the instrumental model), but includes long term, iterative, conceptual 'knowledge creep'[17] (enlightenment model)[18].

5.6 Assessing the quality of social science research

[15] Special thanks to Simin Davoudi of the research team for this framework.
[16] Both these preceding points taken from Joint Programme Advisory Group Paper 3, November 2007. Benefits Update.
[17] WIESS, C. B., 1980, Knowledge creep and decision accretion, Knowledge: Creation, Diffusion, Utilisation 1(3) 381-404
[18] DAVOUDI, S., 2006, Evidence-based Planning: Rhetoric and reality, DISP, 165(2): 14-25; DAVIES, H., NUTLEY, S AND SMITH P., What works? Evidence-based policy and practice in public services. Bristol: Policy Press

The main recommended source for assessing the quality of social science research is the Cabinet Office guidance on evaluation[19], which offers a useful model. A table lightly adapted from the Cabinet Office guidance on evaluation has been included in Appendix 3 of this report as it may provide a model for assessing the quality of social science research. This guidance stresses the need for professional judgement in these sorts of qualitative evaluations:

> *'The assessment of a qualitative inquiry, using this framework, will require careful judgements on the part of the assessor. These in turn will require some knowledge of qualitative research and some expertise in using qualitative methods. Judgement will also be needed in deciding the weight to attach to particular indicators in order to assess its 'fitness for purpose' - that is, how well it addresses the objectives for which it was undertaken.'*

It is indicative of social science principles that the need for such professional judgement is made explicit, and it is useful to be reminded that even such apparently clear questions and indicators cannot be applied mechanically, but require levels of reflection and expertise also to be applied.

5.7 Conclusions

This section has provided a brief rationale for evaluating the quality and value of social science research, identified some different frameworks, methods and approaches to evaluation, and some ways of thinking about assessing the benefits and quality of social science research.

It is understood that there are plans to include consideration of evaluation in the next FCERM R&D next programme review, although those plans are not at present expected to explicitly include evaluation of social science research. It is hoped that this paper can support that development of plans for the evaluation of all FCERM research in future.

[19] SPENCER, L. et al (2003) Quality in Qualitative Evaluation. A framework for assessing research evidence. National Centre for Social Research for Cabinet Office, London.

6. Conclusions and recommendations

This project has begun a process of embedding social sciences within FCERM R&D. The research has found that there is a diversity of views and knowledge with respect to social sciences and FCERM R&D. We feel that we have provided some building blocks which could be used to take forward this area of work. However, it is clear that decisions on the status and role of social sciences within FCERM need to be made, otherwise progress in the development of social sciences for FCERM will be piecemeal. In addition, the findings and recommendations from our project echo those of a wider review of the uptake and capacity of social research within Defra undertaken by the Defra Science Advisory Council Social Science Sub-Group (SAC-SOC)[20] and are applicable to other aspects of the business, e.g. Flood Risk Management.

The **overall recommendation is that the building blocks for embedding social sciences in FCERM research, that this project has produced, are taken forward by Defra and the Environment Agency**. More detailed recommendations are included below and relate to the main sections of this report:

- Direction
- Approach
- Evaluation

Our recommendations are aimed at embedding social sciences research within the FCERM R&D programme.

Direction: Vision

R1 Embedding the Vision
We recommend that the Vision Statement and Narratives for each of the themes (and suggestions for projects within each narrative) are considered for further development by Theme Managers and TAG members as appropriate.

R2 Embedding collaboration
We recommend that collaboration should be a central part of the research programme in order to enable more cross-theme working. Greater co-operation between themes should ensure that the benefits of research projects are shared by the whole programme and more opportunities for cross-disciplinary research are provided. This collaboration could extend to wider involvement on project boards / TAGs e.g. representatives from local authorities and possibly local communities where appropriate).

Collaboration between themes could include:

- MAR working with IMCE in incorporating social interests into risk models, and in focussing on flood probabilities to complement IMCE's focus on consequences;
- SAM working on joint projects with IMCE for example on collaborative working and partnerships and perception issues and with SPD on development control and planning;
- IMCE Theme working with other Themes in encouraging stakeholder and community engagement throughout the programme.

[20] Defra Science Advisory Council (SAC) Social Science Sub-Group (SAC-SOC) Social Research in Defra – Final Report (1/11/2007)

Approach: Strategy and capacity

R3 Capacity building through expertise
We recommend that Defra and the Environment Agency develop both in-house social sciences research expertise and further links with research organisations. Approaches to consider include:

- Having dedicated social scientists within Defra and the Environment Agency who would be drawn into the preparation stages of a new project to ask key questions and help write the specification. These people could also be sources of expertise and make links with wider social science working and events.
- Some FCERM project managers should actively seek social science experience and knowledge as part of their remit. This should be part of their CPD/training to gain a greater understanding and awareness of methods and approaches. Project managers should also seek to involve internal expertise more widely on project boards (see also Structure R4 below)
- Further links are developed with the Economic and Social Research Council to enable wider research to be drawn upon. Additionally, capacity can be enhanced through the use of ESRC placement fellowships where 'in house' expertise can work alongside FCERM staff in Defra and the Environment Agency.

R4 Capacity building through structures
We recommend that Defra and the Environment Agency establish a series of structures to facilitate access to social science knowledge and expertise, sharing of research results and collaboration with other organisations. These could include:

- The development of a social sciences network so that staff at all levels have the ability (through CPD) to access increased knowledge and expertise through a programme to share research knowledge through seminars, webpages and speakers from other social science projects. This would include sharing results and learning from evaluations of projects from both academic and other research projects.
- Theme Managers and champions work with key FCERM partner organisations (e.g. Communities and Local Government, emergency services, voluntary services, Local Government Association) to hold research sessions on social sciences e.g. at the EA/DEFRA conference each year. It would be worthwhile specific project managers or social scientists talking with other organisations that are predominantly technical who have are also embedding social research within their research programmes e.g. Food Standards Agency, Forest Research
- Defra/Environment Agency hold yearly research network meetings of contractors to share expertise and ideas as is done in other areas of research e.g. road safety (DfT).
- Defra/Environment Agency to develop a stronger presence on the Government Social Researchers web site (http://www.gsr.gov.uk/) .
- Carrying out a workshop in October 2008 similar to the one developed for this project in October 2007.

R5 Capacity building through support
We recommend that embedding the social sciences in FCERM is supported both upstream and downstream in Defra and the Environment Agency. **Upstream support** would involve key senior staff at the Environment Agency and Defra in FCERM policy engaged with discussions about how to embed social sciences together with perhaps with one or two key people specifically keeping a watching brief on social sciences in

FCERM. **Downstream involvement** would ensure that staff from the Environment Agency areas are involved in all aspects of the research process as they may be asked to implement results from a research project and will have practical ideas about social sciences research topics.

R6 Capacity building through resources
We recommend that where possible there is an enabling of CPD relating to social sciences, for example through intranet-based resource materials based on the CD ROM produced for this project. In terms of the wider issue of the proportion of research money spent on social sciences and interdisciplinary research projects we would encourage that a discussion is started on the possibility of increasing that proportion.

Evaluation: A learning system

R7 Evaluation through benefit tracking
We recommend that the framework for benefit tracking of all FCERM research is developed taking into account the evaluation framework developed for this project and should include arrangements for assessing the quality of social science and other research outputs. The evaluations of projects should also be discussed at TAG meetings (perhaps annually) so that members can develop a clear understanding of good examples of research.

R8 Developing a learning system as the basis for the 2011 programme review
We recommend that time is spent considering how lessons from evaluations can create learning. It will require either a separate process where the target audiences work through the evaluation findings and lessons to consider what these mean for them and their work, or an evaluation process that works with the potential target audiences for learning throughout. This project could be used as a case study by conducting a further evaluation in one year time to assess how/if the learning from this project has been successfully embedded in organisations.

Wider recommendations and further research

R9 Implications for the wider FCERM business
This research has provided an in-depth examination of how social sciences research is, and could be, part of FCERM R&D. Throughout our work we have in mind that the issues raised within this project are wider issues for the FCERM business. The issue of the role of the 'social' is raised and examined within another project we are involved with 'Improving Institutional and Social Responses to Flooding'. As with this project, that project took as the starting point the strategy shift from flood defence to flood risk management, from holding back the water to making space for water and acknowledgement that solutions need to be social as well as technical. We recommend that discussion of how R&D contributes to that strategy shift is continued and reviewed.

R10 Further research
We recommend that FCERM, and Defra more widely, should initiate joint research to learn from other agencies/departments using social science in a largely natural science context (e.g. Natural England, Forestry Commission, Food Standards Agency, Department of Health). As part of building the network and providing resources to support social sciences identifying and developing further illustrative examples from other agencies could be illuminating and could help build greater capacity across the

Defra ‘family’ and indeed the devolved administrations in Scotland, Wales and Northern Ireland.

We recommend that Defra should commission long-term evaluation studies of key policy/practice changes over a 2-3 year period. This is the only way to get at the real lessons, including both formative and summative evaluation.

We recommend that this project is evaluated in a year’s time in order to assess the progress made towards the embedding of social sciences in FCERM.

We recommend that one project within the science programme is focussed specifically on enabling collaborative/cross disciplinary working and from the outset involves social scientists in discussions and development. This project would be actively evaluated using the principles of evaluation elaborated on in this project.

7. Abbreviations

FCERM	Flood and Coastal Erosion Risk Management
TC	Theme Champions
TM	Theme Managers
FRM	Flood Risk Management
TAG	Theme Advisory Group
EA	Environment Agency
SAM	Sustainable Asset Management
MAR	Modelling and Risk
IMCE	Incident Management and Community Engagement
SPD	Strategy and Policy Development
CPD	Continuing Professional Development
DfT	Department for Traffic
ESRC	Economic and Social Research Council
FIM	Flood Incident Management
SAC	(Defra) Science Advisory Council
SAC-SOC	Science Advisory Council - Social Science Sub-Group (SAC-SOC)
RBMP	River Basin Management Plan
R&D	Research & Development
MDSF	Modelling and Decision Support Framework
MCA	Multi-Criteria Analysis

Appendix 1

FD 2604 Supporting the development of a social science strategy for FCERM R&D

Social Science Champions Seminar 23 October 2007 Report

January 2008

Prepared for Defra

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CONTENTS

APPENDICES

TABLES

1. INTRODUCTION

1.1 This brief paper presents a record of the seminar and workshop held on 23 October 2007. The aim of the half day seminar and workshop was to exchange experience and to discuss how social science research techniques might be useful to FCERM research.

1.2 The objectives can be summarised as:

1. Bring together a small network of champions in the field of social science and flood risk management research;

2. Exchange experience of practical examples of where social science and/or interdisciplinary perspectives could add value to FCERM research projects;

3. Draw lessons for helping to apply social science perspectives and techniques where appropriate to future research projects;

4. Help develop resources to support staff in developing and applying social science research skills.

1.3 The seminar was attended by Defra and Environment Agency staff. The list and email address of participants has been included in Appendix 1. The participants had a range of social science and/ or flood risk management expertise.

1.4 The first part of the seminar consisted of four presentations of case-examples each chosen because they were assessed as being good examples of social sciences research. Summaries for the four case studies presented at the seminar have been included in Appendix 2. The slides from the presentations will be sent out as a separate appendix. The presentations were followed by questions and discussion. The four case studies covered:

1. A longitudinal study of health impacts of flooding

2. Segmentation of car and non-car using day visitors to National Trust Properties

3. The provision of flood damage data and related flood and coastal management benefit assessment techniques

4. Environment Agency research on the benefits for regeneration of environmental improvements

1.5 The second part of event consisted of a workshop session with two exercises described in the next section.

2. WORKSHOP SESSION

First group exercise

2.1 Participants were grouped according to their main area of expertise, i.e. flood risk management (FRM) or social science research into three groups: two flood groups and one social science group. The groups had to answer the following questions:

FLOOD GROUPS- What questions could usefully be addressed by Social Science?
SOCIAL SCIENCE GROUP- What could social science offer to flood risk management research?

2.2 The answers to the questions were recorded onto flip charts and are presented in Table 1.

Table 1: First workshop session exercise

FLOOD GROUPS- What questions could usefully be addressed by Social Science?
FLOOD 1: 1. Society segmentation based on values and attitudes to flood risk and how to model it • To understand how people perceive risk • What prompts them to take action • Directly • Intergenerationally - i.e. for future generations • What helps them to recover quickly • How to communicate to them effectively 2. Impacts of different sample selection • How to choose method of sampling • Relevance of sample size 3. Definition of social benefit and how to evaluate it as part of FRM assessment 4. What are the key factors that affect how well/ quickly a community recovers from a flood? i.e. linked to resilience, both tangible and intangible.
FLOOD 2: 1. Understanding why people respond and prepare; how they do (respond and prepare?); making our activities more useful/ effective 2. Understanding what makes a resilient community- can we influence? Understanding difference between short and long term impacts.
SOCIAL SCIENCE GROUP- What could social science offer to flood risk management research?
SOCIAL SCIENCE: 1. (re) Focus on people- individual and community/ cultural 2. Drawing together results from different analytical disciplines to broaden the evidence base (e.g. multi criteria analysis, etc.) 3. A means of understanding and interpretation of research (behavioural motivations, barriers, etc)

Second group exercise

2.3 Participants were then spilt into two mixed groups, i.e. flooding experts and social scientists. The aim was to answer the following question:

How could social science be more usefully integrated into flood risk management?
What would be the effect of doing so?
What would you hope to achieve?

2.4 Each participant was asked to write three post its. Post-its were then pooled in the two groups and 3-5 ways to achieve integration were agreed by the group. The ways to achieve integration agreed by the two groups are shown in Table 2. In Table 3 all the points written in post-its by participants have been recorded under the categories agreed by participants.

Table 2: Second workshop session exercise- agreed points

How could social science be more usefully integrated into flood risk management?- Agreed points
GROUP 1: 1. Social science embedded at the onset of the research 2. Put people in the picture 3. Provide examples of how to embed social science- quality evidence 4. Raise awareness of role of social science 5. Assess outcomes of integration
GROUP 2: 1. At R&D and policy scoping stage involve social science 2. Social science a priority in multidisciplinary approach including MCA 3. Communicate and share good practice 4. Practical: • Integrate with national environmental attitudes survey • Produce a layman guide to social science

Table 3: Second workshop exercise – all points

How could social science be more usefully integrated into flood risk management? Post-its
GROUP 1:
1. Social science embedded at the onset of the research • Social scientists need to be 'at the table' when evidence needs are being identified • Projects that address social science properly (and that may not have considered it at all before) • Social science peer review at proposal stage for all projects • Re-frame the questions at the outset of policy: who is the policy aimed at? • Social science expertise into FCERM research scoping phase • Sample selection related to research consultation and social research

How could social science be more usefully integrated into flood risk management? Post-its
2. Put people in the picture • Provide behavioural evidence to help flood management strategies_ in what ways do people respond to floods (different people in different ways) _ how do they expect to lead regeneration after floods (local communities _ central government) • Putting 'people' angle on 'hard' evidence _ providing a picture for engineers to make projects benefit people not just manage floods • Needs to be greater awareness in FRM community to understand impacts on people not just buildings/ economic impacts and how this can be done using social science research • Risk science communication- to be able to communicate, understand how and to whom
3. Provide examples of how to embed social science- quality evidence • Need to have clearer links between social science and other FRM science projects. Cross-over in terms of project boards etc; social scientists working more closely with other consultants • Interdisciplinarity of scientific/ statistical evidence • Guidance on good social science • A social science 'strategy' to underpin the FCERM science programme • Social science expertise to evaluate completed work (review cycle) • Have a social science presence within the policy group- 2- way dissemination of information
4. Raise awareness of role of social science • Knowledge base of past studies and collected data • Commission some internal/ external analysis of what difference a wider evidence base would have made to recent policy decisions to learn from this how things could be improved in the future
5. Assess outcomes of integration • Projects address social science properly (and may not have considered it at all in the past) • Recognise need to include social assessment in other forms of assessment and how- already being done e.g. SEA and CFMPs • Better policies – investment targeted more successfully
GROUP 2:
1. At R&D and policy scoping stage involve social science • Through early involvement of social scientists in policy development process • Horizon scanning of social science issues (to inform policy development, etc.) • Greater challenge regarding social aims in formulating research questions

How could social science be more usefully integrated into flood risk management? Post-its
2. Social science a priority in multidisciplinary approach including MCA • Prioritise an interdisciplinary sustainable development approach to science and research • Feed social sciences research results into MCA • Unpick causes of WTP and WTA • Have a better design of evidence research e.g. environmental valuation through CV questionnaires, etc • Building up a social science evidence base e.g. to feed into MCA • Employ social scientists! • Integration of social sciences in evaluation of policies
3. Communicate and share good practice • Sharing good social science research/ practice • Promote good practice examples of how social science has brought (multi) benefit to FRM work (studies/ schemes/ approaches to consultation, etc) • Communicate social science research issues better- more high profile (examples) e.g. Better Places, stories, films, etc.
4. Practical: • Integrate with national attitudes survey- better integration with wider environmental attitude survey work • Produce a layman guide to social science- what it is, what it does, how it affects FRM

3. SUMMARY OF SESSIONS AND DISCUSSION

3.1 In terms of what social science can bring to FRM research, the responses of the participants with flood experience focussed mostly on understanding people's attitudes, perceptions, etc in terms of understanding flood risk, preparing for and responding to flooding. Linked to this were understanding community resilience and the factors that may affect it. This is consistent with the social scientists participants' view that social science can help put the focus on people both at the individual and the community level.

3.2 Community resilience, community losses after a flood and community recovery are particularly perceived as a gap in the knowledge and thought to be an area where social sciences can be very helpful. There is some research on community resilience and hurricanes in the US.

3.3 Following one of the presentations there was some discussion on the use of marketing segmentation approaches in social research. For instance, Defra's Sustainable Consumption and Production researchers have used this approach.

3.4 Participants also raised several issues related to social research methodologies this included sampling issues such as size and method and ethical issues. There was some discussion about what would be the appropriate research methods (e.g. focus groups, interviews) for different projects/ situations.

3.5 This was also raised during the discussion on what needs to happen in order for social science to be successfully integrated in FRM research. It was discussed that the starting point should be what questions need to be answered/ what evidence is sought and that should determine the research methods. Therefore social science should be included in the planning of a research project. Some people felt that having social science guidance would be useful and also having social scientists 'at the table' when planning research.

3.6 Sharing good practice and having good examples of social science research was also a key issue raised. A recommendation was to use pictures and 'tell a story' when presenting the case studies.

3.7 There was general agreement that in order to integrate social science successfully, it should be done from the start of a project, i.e. from the planning phase. Evaluation of the outcomes of the research and of integrating social sciences.

3.8 The seminar focussed on particular areas of the social science but, there are other important relevant areas, e.g. research on policy and how policy changes are brought about, institutional design: how to design an institution to provide flood risk management.

4. NEXT STEPS

4.1 A Social Science resources CD will be available in December 2007. The CD will include other useful case studies and other resources for those who want to know more about social sciences and their application. Participants are encouraged to suggest examples and other resources that they feel would be useful for the CD.

4.2 The project aims to create a network of social science champions but who will take ownership of this network when the project ends and how it will be maintained requires further discussion and decision to be led by the project advisory group.

4.3 Participants are encouraged to keep in contact to maintain the network and share experience and expertise and where appropriate extend it to other colleagues.

4.4 Organising ‘lunch-time’ social science seminars have been suggested by Janet Gawn (Defra). This could be one of the ways to maintain the network and contacts.

APPENDIX A1: LIST OF PARTICIPANTS

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APPENDIX A2: CASE STUDIES

1. A study of the long-term health impacts of flooding

Description

This research was carried out by the Flood Hazard Research Centre (FHRC) at Middlesex University between 1998 and 2002. The research, which was a small focussed study, examined the health impacts of flooding in the Cherwell catchment in Banbury and Kidlington, Oxfordshire following the Easter 1998 flooding. In these floods there was no flood warning and significant damage to houses and their contents. Initially, research funding was only available for a one-off study in 1998, but subsequently the Environment Agency found funds for two further studies in 1999 and 2002 allowing the research to study how the health effects of flooding may change over time. What is special about this research project is that the researchers were able to return twice after an initial study to collect information which illuminates the degree to which ill-health effects of flooding may persist after a flood. If the FHRC researchers had known that they would be able to undertake follow-up studies, this would have affected the design of the initial research project in 1998 (for example, by using self-report health questionnaires in the earlier surveys), but even so it proved possible to qualitatively trace changes in health effects over a four year period.

Research objectives

The research was aimed primarily at improving understanding of the health effects of flooding. The objective of the initial research was to investigate the extent and types of health impacts of flooding resulting from the floods, and to determine, where possible, changes in people's health. In the first follow-up study the objective was to determine, where possible, the amount of time needed for the health effects noted in the 1998 survey to decay to a point where they are no longer considered to significantly people's well-being. Finally, in the 2002 study the health-related objectives were to determine the current (i.e. 2002) state of health and well-being of the 1998 flood victims; whether people perceived their health to have changed since the 1999 survey; and to identify factors perceived to be responsible for changes in health status. Those chosen for focus groups were drawn from groups in the community considered to be potentially the most vulnerable to flooding, e.g. the elderly, and ethnic minority women.

Research methods

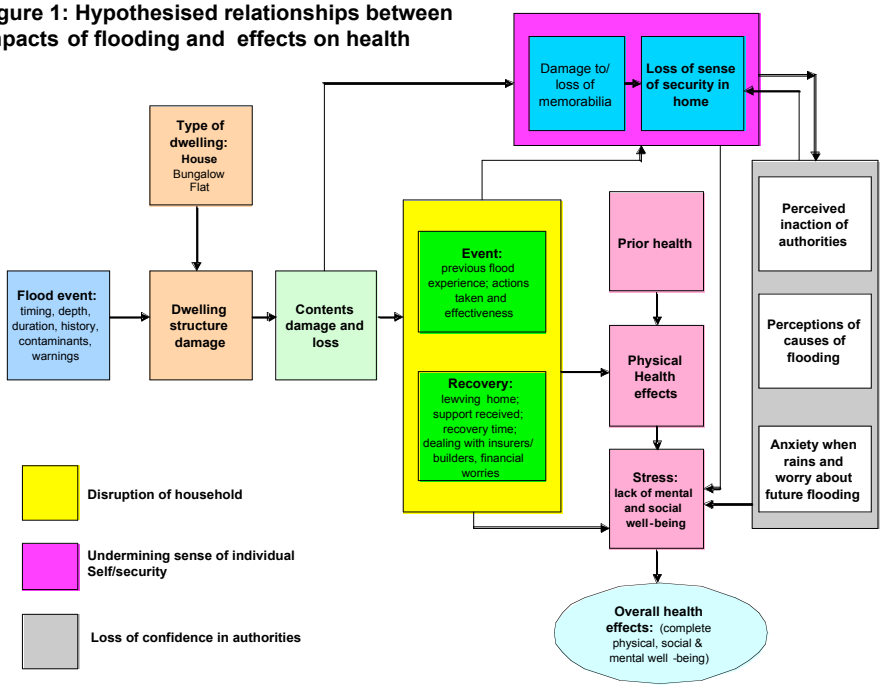
The research design was guided by a conceptual model of the anticipated factors influencing the health effects of flooding (Figure 1) and was designed primarily as a qualitative piece of research using the following methods:

a) Focus group interviews (six groups) in the 1998 study, and again in the 1999 and 2002 studies. 31 of the 41 1998 respondents participated in the 1999 focus group meetings, and those unable to attend where interviewed by telephone. In 2002 32 of the original 41 respondents participated in focus group meetings, and one of the remaining 9 was interviewed by telephone.
b) Self-report health questionnaires: a Health Checklist Questionnaire designed by the FHRC, and the General Health Questionnaire (GHQ-12). The GHQ is a commonly used survey instrument and is used in the UK Health Survey for England. These

questionnaires were only used in the 2002 survey and provided some statistical data on people's health.

The focus group interviews were tape-recorded and fully transcribed. Textual analyses were undertaken and a coding framework was developed around key issues emerging from the discussions. The results from the self-report health check lists and GHQ12 questionnaires were able to be analysed manually due to the small population sample.

Figure 1: Hypothesised relationships between impacts of flooding and effects on health



There are two important qualifications about the research results which the researchers make in their research reports. First, the people selected for the focus group interviews were not intended to be a representative sample of the population of flood victims in this flood. Secondly, the study is of reported perceived health effects and no firm conclusion is drawn from the research results about the causal relationship between floods and health impacts.

The research methodology which was employed is suitable for improving our understanding of the health impacts of flooding before proceeding with epidemiological or clinical research. It should be distinguished from epidemiological research which uses a control sample of population (a sample of people with similar characteristics to those flooded, but who have not been flooded), and clinical research in which the health of people is determined before and after flooding using medical evaluation techniques.

Research findings

The 1998 study identified pre-existing health problems experienced by the respondents, and the additional perceived health effects resulting from flooding. Flood victims reported effects such as headaches, colds, sore throats, chest infections, asthma attacks, skin irritations, swelling of legs and hands, stiffening of joints, raised

blood pressure, worsened diabetes, allergies to mould, digestive ailments, panic attacks, agoraphobia, depression, stress and anxiety. In addition, several deaths were believed to have been hastened by the flooding, and respondents reported other issues which increased stress such as problems with employment through having to cope with recovery. The research also highlighted on the disruption households experience following flooding which creates stress and anxiety which appears to underlie additional health problems.

Significant anxiety was reported owing to a reported loss of confidence in authorities, and an underlying loss of self-identity and security in the home. Women were found to shoulder extra responsibilities for their family's health care, for dealing with insurers and builders and were generally found to be impacted heavily by the flooding aftermath. Members of the Asian community in Banbury appeared to be particularly vulnerable to flood disruption because of a combination of factors related to low incomes, less insurance, cultural restrictions on women, and feelings of isolation.

The 1999 study results revealed that most of the perceived physical health effects of flooding had disappeared for all but a few people. However, stress and anxiety attributed to the flood continued for most people. The health problems still persisting included skin irritations and cold sores, swollen legs and high blood pressure (the latter being present in all but one flood victim who did not report high blood pressure as a pre-existing health problem in 1998). One year on respondents reported no change in their feelings of lack of confidence in the authorities, even though they were aware that the Environment Agency was taking various positive actions. Most of the problems reported by members of the Asian community persisted into 1999.

With the exception of a small minority whose physical health is perceived by them to have deteriorated since the 1998 floods, the final 2002 study (using the health check-list) revealed that for most respondents the perceived physical effects of flooding were no longer significant. However, skin irritations, redness of legs, high blood pressure and asthma attacks still persisted in a small minority in 2002, and all reporting these problems stated that they had first appeared after the floods. Results from the use of the GHQ-12 re-affirmed the psychological health effects reported in the 1998 and 1999 surveys, with all but four respondents reporting psychological after-effects of flooding (increased anxiety, stress and sleeping problems were the most commonly reported). The GHQ-12 results allowed the results to be broken down by location, gender and ethnicity. Psychological effects were more prevalent in Banbury than Kidlington, and the Asian community in Banbury experienced more psychological effects than others. The factors perceived to be partly responsible for changed health status include anxiety during heavy or prolonged rainfall, the fear of future flooding (particularly in Banbury which remained unprotected by flood defences), anxiety associated with increased frequency of flood warnings since 1998, concerns over recent surface water flooding, and concerns of flood insurance and the saleability of properties.

Contribution to knowledge and value

This study is particularly useful in enhancing understanding of the health effects of floods and in highlighting the perceived mental and physical health effects of flooding – impacts that have been largely unrecognised in any detail and under-estimated in the past. Further research would be required to confirm or reject the conceptual model of the causal relationships between flooding and its health effects. The research contributed to the design of a larger quantitative study funded by Defra on the appraisal of the intangible impacts of flooding. The study is unique (at least in the UK) in assessing the extent to which health impacts of floods may persist. The research

results help draw out the full costs of flooding which can be entered into decisions about investment in flood risk management projects.

References

Tapsell S M, Tunstall S M, Penning-Rowsell E C, Handmer J W 1999. **The Health Effects of the 1998 Easter Flooding in Banbury and Kidlington**, Report to the Environment Agency, Thames Region, Flood Hazard Research Centre, Middlesex University, Enfield

Tapsell S M 2000. **Follow-up Study of the Health Effects of the 1998 Easter Flooding in Banbury and Kidlington**, Report to the Environment Agency, Thames Region, Flood Hazard Research Centre, Middlesex University, Enfield

Tapsell S M, Tunstall S M, Wilson T. 2003. **Banbury and Kidlington Four Years After the Flood: An Examination of the Long-Term Health Effects of Flooding**, Report to the Environment Agency, Thames Region, Flood Hazard Research Centre, Middlesex University, Enfield

Tunstall S, Tapsell S, Green C, Floyd P, George C 2006. The health effects of flooding: social research results from England and Wales, **Journal of Water and Health**, Vol. 4, (3), 365-380

2. Case Study on segmentation of car and non-car using day visitors to National Trust Properties[21]

Description

The aim of the study was to identify the characteristics of groups of National Trust visitors with varying propensity to use alternatives to the car so as to identify the most effective ways to encourage a shift to alternative modes of transport. The study combined both empirically and theoretically derived psychological variables and statistical market segmentation techniques to identify groups of car users and their motivations and preferences with regards to travel choices.

National Trust properties attract around 12 million visitors a year and have in the past attempts by the National Trust have been made to reduce the numbers of visitors arriving by car. However, these attempts have been generally unsuccessful due to a lack of understanding of car dependent attitudes and also of the motivations, constraints and attitudes of its visitors with respect to travel modes.

Research objectives

[21] Anable, J. 2005. **'Complacent Car Addicts' or 'Aspiring Environmentalists'? Identifying travel behaviour segments using attitude theory**, *Transport Policy*, 12, 65-78; and Anable, J. (2002) *Mobility Management in the Leisure Sector: The Application of Psychological Theory and Behavioural Segmentation*, PhD thesis, The Centre for Environmental Technology, Imperial College London.

The research sought to examine how National Trust visitors can be meaningfully grouped according to their attitudes and how these groups compare to observations of actual travel behaviour recorded at properties.

Research Design

The study consisted of a 'mail back' questionnaire survey administered at the property following a 'warm-up' face to face questionnaire, to ensure that actual mode of transport was recorded. |The sampling strategy was designed to ensure appropriate coverage of modal use. A total of 666 visitors to two National Trust properties in the Northwest of the UK filled in the main questionnaire. An 'incentive' prize draw was offered on completion of the questionnaire of a high specification bicycle (donated by a cycle company).

The questionnaire design was informed by focus groups conducted with National Trust visitors and an extensive review of relevant literature. It contained multiple overlapping attitude statements (105) hypothesized as pertaining to each of the components in a conceptual model known as the theory of planned behaviour (TPB) (Ajzen, 1991). A further 25 statements measured 'life values and nine measuring attitudes to Trust transport policy options. The statistical analysis included factor analysis in order to create a series of factors or new variables which were then entered into a cluster analysis procedure. The cluster analysis led to the identification of different segments or groups which were profiled with respect to their attitudes and values and then compared for significant differences in socio-demographic characteristics and current travel preferences and future intentions.

Research findings

The study identified six groups in the sample of visitors: four car owning and two non-car owning. Each of these groups or segments was given a name representing their characteristics: the car owning were divided into 'malcontented motorists', 'complacent car addicts', 'die hard drivers' and 'aspiring environmentalists'. The two non-car owning groups were labeled 'car-less crusaders' and 'reluctant riders'. The four car-using segments displayed significant differences in their psychological attachment to the car, of feeling responsible for the environmental impact of their car use and perceived behavioural control over using alternatives to the car:

- The *malcontented motorists*, the largest segment in the sample, perceived a high number of constraints to the use of public transport despite feeling increasingly frustrated and unhappy with car travel and believing that they have a moral responsibility to change behaviour.
- The *complacent car addicts,* admit that the use of alternative modes is possible, but do not feel any moral imperative or other incentive to alter their car use.
- The *aspiring environmentalists* have already substantially reduced their car use largely for environmental and health reasons but appreciate the practical advantages of car travel and are thus reluctant to give up ownership entirely.
- The *die hard drivers* are fond of cars and car travel, believe in the right to drive cheaply and freely and have negative feelings towards all other travel modes.

The two non-car-owning segments were also differentiated by the same variables although other factors such as age and income had a role in the profile of these groups:

- The *car-less crusaders* have sacrificed car ownership for environmental reasons and have positive evaluations of all other modes of transport.

- The *reluctant riders*, on the other hand, are involuntary users of public transport due to health or financial reasons. They would prefer to travel by car and either aspire to owning a car in the future or accept lifts by car when possible.

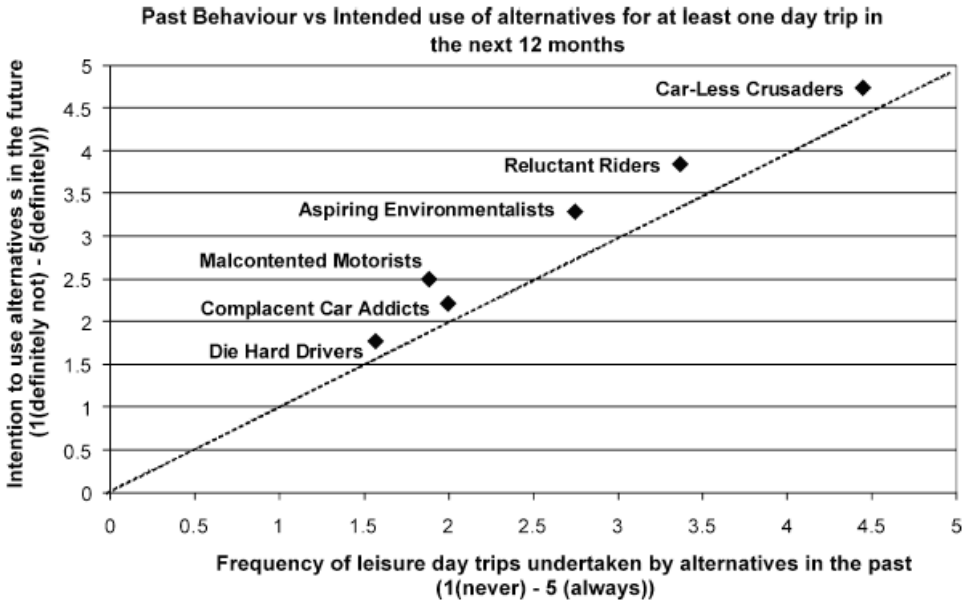
The study found that even though some of the groups exhibited similar behaviours, their attitudes and motivations were very different. Conversely some groups shared similar beliefs and attitudes but their behaviours in respect of car use were markedly different. The study also found that 'habit' was an important factor in determining behaviour.

For instance, *malcontented motorists* show negative feelings towards car travel and thus it would appear that their behaviour is contrary to their attitudes. However, in this case it is their belief that there are too many obstacles to using other modes which moderates their behaviour vis a vis their attitudes. On the other hand, the *complacent car addicts* are more affected by a lack of moral responsibility and awareness of any need to change their behaviour than by a belief that switching mode would be especially difficult. The current travel choices made by these two groups are thus very similar but their attitudes, motivations and future intentions are significantly different.

The *aspiring environmentalists* and the *car-less crusaders*, on the other hand, share many of the same norms and attitudes regarding alternative modes, but their behaviour is completely different. This indicates that favourable evaluations of alternative modes and positive attitudes to the environment do not in themselves bring about favourable intentions/behaviour. Each of the segments was considered to have different 'mode switching' potential and the author concluded that efforts to change car using behaviour could be more effective if a) directed to those groups with the highest switching potential, in this case the '*malcontented motorists*' than those who would not change their car use no matter what (e.g. *car addicts* or *die hard drivers*) or b) encourage those who use alternative methods a little to use those methods more.

Figure 1 shows each segment average score for the self report past use of non-car modes against their average intention to use non-car modes for leisure day trips in the following 12 months. The segments area placed in a line progressing from least likely to change their car use behaviour for day trip travels, *die hard drivers,* to most likely, *car-less crusaders*.

Figure 1: Past behaviour versus intended use of alternatives for at least one day trip in the next 12 months



Contribution to knowledge and value

The study showed that attitudes do not necessarily determine behaviours: behaviours can happen for different reasons and similar attitudes and beliefs can lead to very different behaviours. The author also found that behaviours are shaped by a combination of instrumental, situational and psychological factors. The study also showed that demographic variables are not key factors in determining differences in travel behaviour. The use of segmentation could allow different strategies to be developed to target different groups. In addition, targeting those groups with more propensity for behavioural change could potentially derive higher benefits. Simply providing new bus services or combined rail and entry tickets to Trust properties, for example, will not guarantee a modal shift by visitors. More specific targeting of e.g. *Aspiring Environmentalists* and *Malcontented Motorists* is much more likely to bring dividends than a blanket approach.

The use of theory of the planned behaviour (TPB) (Ajzen, 1991) was found to be particularly useful because without introducing this many of the groups would appear to behave inconsistently with respect to their attitudes. The inconsistency between attitudes and behaviour is a typical conclusion of many attitude studies in travel behaviour research.

3. The provision of flood damage data and related flood and coastal management benefit assessment techniques

Description

This is a case study of development over a thirty year period of flood damage data and related flood and coastal management benefit assessment techniques by the Flood Hazard Research Centre (FHRC) at Middlesex University. During this period these data and techniques, developed by geographers, an environmental economist and other social scientists at the FHRC, became adopted as the 'industry standard' methods for assessing the benefits of flood alleviation and coast protection in the UK, and remain so today because of continued methodological innovation and updating. The underlying methodology is economic efficiency analysis, using benefit-cost analysis, as required by the UK Treasury in appraising public investment decisions.

Until the late-1970s benefit-cost appraisals of flood alleviation schemes were largely unfeasible because of the lack of systematic and reliable data on the property damages caused by floods. However, the Natural Environmental Research Council funded research at what became FHRC into flood damages leading to the publication in 1977 of a manual of flood damage data and related benefit assessment techniques (called 'The Blue Manual'). The Blue Manual focussed primarily upon estimating direct flood damages for different types of land use (e.g. houses, shops, factories) according to flood depth – the depth-damage curve being a key innovation at that time. From the late 1970s onwards Blue Manual data and techniques were used in an accumulating number of urban flood alleviation benefit assessments, greatly improving the quality of these assessments and allowing the benefits of flood alleviation to be properly quantified for the first time in the UK.

Subsequently, during the 1980s the then Ministry of Agriculture, Fisheries and Food (MAFF) funded research to update the Blue Manual and to provide more data on indirect flood losses which received scant attention in the Blue Manual. The outcome was the publication of the 'Red Manual' in 1987. This allowed important refinements to

be made to flood alleviation benefit assessments, including a more complete accounting of flood damages. Then in the early 1990s, MAFF funded the extension of the research to include coastal protection and sea defence benefit analysis. In the 'Yellow Manual', new benefit assessment methods were developed, including methods and data for estimating the monetary losses caused by coastal erosion, the impacts of coast protection and sea defence projects on coastal recreation and upon potential environmental gains and losses.

The latest research output was funded and endorsed by DEFRA, resulting in the Multi-Coloured Manual (2005) - a manual of the latest flood damage data and related flood and coastal management benefit assessment techniques produced by the FHRC. It is the latest in the line of manuals (The Blue, Red and Yellow manuals) produced by the FHRC in 1977, 1987 and 1992). Between the early 1980s and the present day, approximately 650 flood and coastal engineers and planners have participated in the Centre's intensive courses designed to provide training in the Centre's methods detailed in these manuals.

Research objectives

The objectives of the research can be articulated as follows:

a) to research the damaging effects of floods and coastal erosion, and to develop a reliable data bank containing comprehensive sets of damage data related to property type, flooding type, depth and duration, and to a range of socio-economic factors.

b) to provide practical methods and techniques, including computational techniques, for integrating geomorphic hydrologic, hydraulic, altitudinal, land use and other social, economic and environmental data, to allow benefit-costs appraisals (and related types of appraisals) to be undertaken.

c) to provide a series of desk-top manuals which can be used by flood and coastal engineers and planners to undertake project appraisals and to support this with a training programme in the Centre's methods, techniques and data.

Research methods

The research combines data from numerous sources and a range of methodologies to achieve its outcomes. Among the principal methods used are the following:

a) surveys of land use to determine property type and ground floor threshold heights;
b) questionnaire surveys following floods to record flood damages;
c) quantity and structural surveys of properties;
d) questionnaire surveys to estimate potential flood damage, including one-to-one interviews with business representatives;
e) construction of synthetic flood damage data using diverse sources of data, including data derived from a)-e) above;
f) integration of flood height, property height, property type and depth damage values using computational methods and techniques;
g) road traffic modelling;
h) benefit-cost methodologies;
i) contingent valuation methodology;
j) travel-cost assessment methods; and
k) discounting techniques

Among the data integrated into the research are the following:

a) national level data on the ownership of goods and commodities;
b) national level data of numbers of properties within the 1:100 floodplain
c) data derived from multiple sources on product prices;
d) census data on the social composition of areas;

These data are combined in the construction of standardised flood damage data which describe the likely damages from different depths and duration of flooding, and different flood scenarios, to different property types (e.g. Figure 1 for High Street shops).

Research findings

The research findings are in the form of extensive depth-damage data sets for many property types commonly found in the UK; publication of a series of detailed and some experimental project appraisal methodologies set out in a practical guide format; and related extensive guidance on undertaking flood alleviation and coast protection benefit assessments.

Contribution to knowledge and value

For three decades, the FHRC's manuals, methods and data have provided the flood risk and coastal management community and industry with standard methodologies for assessing the benefits of flood defence and coastal erosion protection in the UK. These methods and data have become central to project appraisal in the field. They are endorsed by the Flood Management Division of DEFRA and reflect the policies set out by HM Treasury and in DEFRA Flood and Coastal Management Project Appraisal Guidance. The latest manual contains some new experimental methodologies for assessing environmental resources and is aligned with the emerging policy agenda in this area.

Fundamentally, the manuals, methods and data have facilitated the largely quantitative demonstration of the benefits of investing public money in flood risk and coastal management which is required by the UK Treasury. The research has therefore underpinned the economic justification of much of the UK's investment in this field over the past thirty years.

The research is innovative in combining data from a wide variety of sources, and in integrating economic, social and environmental data with hydrologic, hydraulic and topographic data. It uses both quantitative and qualitative research methods, and it systematised the process of benefit-cost appraisal of flood alleviation projects.

References

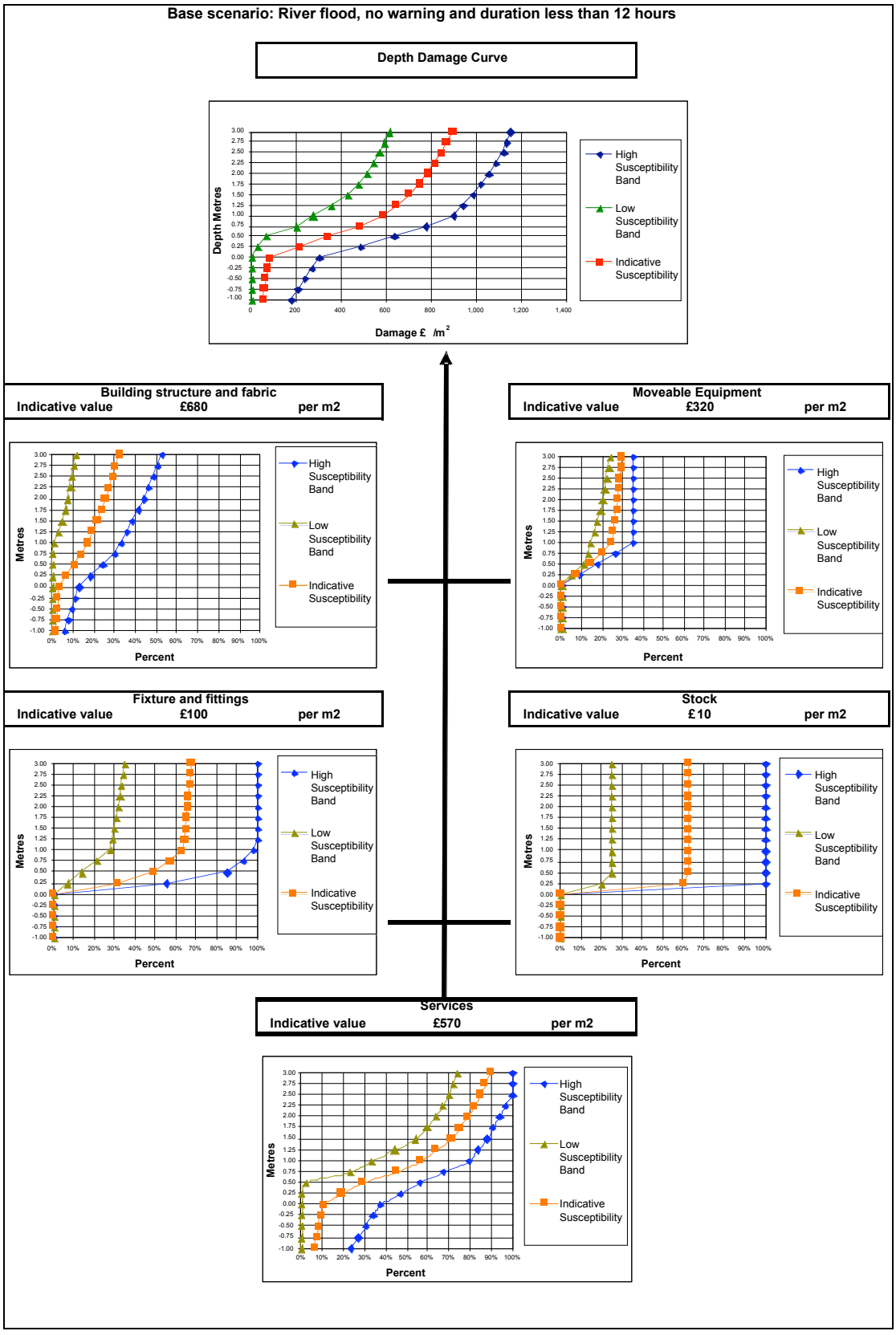
Penning-Rowsell E, Chatterton J 1977. **The Benefits of Flood Alleviation: A Manual of Assessment Techniques**, Gower Technical Press, Aldershot (The Blue Manual)

Parker D J, Green C H, Thompson P M 1987. **Urban Flood Protection Benefits: A Project Appraisal Guide**, Gower Technical Press, Aldershot (The Red Manual)

Penning-Rowsell E, Green C, Thompson P, Coker A, Tunstall S, Richards C, Parker D J 1992. **The Economics of Coastal Management: A Manual of Benefit Assessment Techniques**, Belhaven Press, London (The Yellow Manual)

Penning-Rowsell E, Johnson C, Tunstall S, Tapsell S, Morris J, Chatterton J, Green C. 2005. **The Benefits of Flood and Coastal Risk Management: A Manual of Assessment Techniques**, Middlesex University Press, London (The Multi-Coloured Manual)

Figure 1: Depth-damage curves example



4. Environment Agency research on the benefits for regeneration of environmental improvements[22]

Description
The aim of the research was to show how the Environment Agency contributes to regeneration through its environmental improvement and partnership projects. The research also supported the argument that the Environment Agency can be a valuable partner in regeneration at both a local and regional level.

The research investigated the social and/or economic benefits of three Environment Agency environmental improvement projects in fisheries (Merthyr Tydfil and Denbigshire, Wales), flood risk management (Freiston Shore, Lincolnshire and Old Moor, Dearne Valley, Yorkshire) and river restoration (Chinbrook Meadows, Lewisham, London), in order to demonstrate their positive contribution to local regeneration.

The case studies were chosen in three very different settings across the UK, including an urban setting in London, rural settings (Wales) and a more semi-urban setting (South Yorkshire). All three locations were affected by socio-economic issues: rural isolation (Denbighshire), post-industrial decline (South Yorkshire and the Welsh valleys) or urban stress (Lewisham). They are therefore all examples of areas where regeneration will be of importance. Table 1 shows the case studies locations, partners involved, the function of the project within the Environment Agency and the kinds of benefits investigated.

Research Objectives
The research sought to investigate the social and/or economic benefits of three Environment Agency environmental improvement projects in fisheries, flood risk management and river restoration, in order to demonstrate their positive contribution to local regeneration.

The research focussed on four types of benefits of regeneration that may be stimulated by environmental improvements. These potential benefits were identified in a literature review:

- education and environmental awareness through work with schools and visitor awareness;
- health improvements through increased recreation in green spaces;
- enhancing social capital and community safety in local communities;
- local economic impacts through tourist spending and increasing property prices.

Research Methods
A case study approach using a mixture of qualitative and quantitative research methods including surveys of project users, interviews with stakeholders and telephone surveys was taken.

The study identified methods to measure the different potential benefits:

[22] Carmichael, L, Purdue, D, Johnstone, C and O'Doherty, R. 2006. **Delivering regeneration through environmental improvement**. Environment Agency Science Report: SC040051/SR Available: http://publications.environment-agency.gov.uk/pdf/SCHO0506BKWG-e-e.pdf (Accessed: 2/10/07)

- Economic benefits: impacts on local property prices and the volume of trade and new jobs attributable to the project.
- Social capital and community safety: attitude surveys of project users and stakeholder interviews.
- Health benefits: based on amount of exercise undertaken by the project users
- Educational benefits: several potential methods were identified including, improvement in pupils performance in key stage exams, teachers' perception of children's eagerness to use key literacy and numeracy skills, acquiring knowledge of direct relevant to the science and geography curricula, etc.

Research findings
Different socio-economic benefits were identified for the different environmental projects. For instance, the two flood risk management case studies provided the following benefits:

1. Old Moor, Dearne Valley, near Bramsley, South Yorkshire

This is a wetland nature reserve with flood storage capacity and is currently managed by RSPB. By managing the site for wildlife it met Biodiversity Action Plan as well as opening up more land for the public. The site attracts a large number of mostly local visitors. Key benefits highlighted by a survey of visitors are that 9 out of ten visitors felt that visiting the reserve increases their feelings of well-being; almost half saw their visits as an opportunity to take exercise and 90% felt 'de-stressed' after their visit.

The fencing and management of the site has also increased the numbers of people who feel safer visiting the reserve by 60%. The survey also found that the site added to the pride visitors felt in the area and many visitors had become involved in organisations that have links to the reserve, therefore the reserve also contributes to local social capital.

In terms of benefits to the local economy, RSPB figures show that spending of visitors benefit the social economy and that the reserve employs 17 full time workers most of whom are local. The reserve also attracts a high number of volunteers and provides a useful resource for learning new skills and increasing people's employability.

2. Spring Gardens, County Durham

This is a new wetland habitat and flood defence scheme which attracts a large number of visitors. The project has also provided new habitats and is rich in native trees. The area provides an open space for the local community that attracts regular dog walkers, ramblers, families, cyclists and joggers. Nine out of ten people surveyed said they enjoyed the 'physical health and relaxation' benefits of going there. Two thirds of those surveyed thought the area 'is really bringing local communities together'.

Contribution to knowledge and value
The research showed that improving the environment had significant and measurable benefits on people's wellbeing and quality of life. The research highlighted the importance of partnership working for delivering successful regeneration projects.
The case study approach allowed the researchers to observe more closely three different types of environmental projects developed by the Environment Agency: fisheries, flood risk management and river restoration. This allowed them to identify the range of benefits generated by each specific type of project. The research also highlights the importance of systematically evaluating practical projects.

Appendix 2: Evaluation: Achievement of the objectives for the project

Five objectives were identified at the start of the project. The table below shows the extent to which these objectives have been met by the project activities.

Objectives:	Indicators of success	How each objective has been met
Objective 1: Develop a Vision and facilitate development of a draft strategy for social science research within the FCERM R&D programme for the next five years in a way that builds on the understanding of social science research practices and the institutional capacity to apply these from the outset.	• Vision developed	• The Vision was drafted by the research team, and various drafts were then tested with the project board and in workshops with EA and Defra staff resulting in broad agreement to the vision. The Vision was therefore completed at the end of the project, based on the research, and is described fully in this report.
	• Development of draft strategy facilitated	• The project focussed on the facilitation of thinking towards a draft strategy through work by the project team, workshops and advisory group discussions. The findings of these discussions, and the review of current practice, provide the 'building blocks' for the further development of a strategy as the future of flood risk science becomes clearer over the coming months.
	• Draft strategy builds on understanding of current social science practices in FCERM R&D programme	• The research included an extensive review of current social science practices in the four themes of the FCERM R&D programme (from interviews, one-to-one and workshops discussions). This provided detailed information that fed into the development of the strategy 'building blocks'.
	• Draft strategy builds on understanding of the institutional capacity needed to apply social science practice	• The workshops involved assessments of current capacity, knowledge and understanding of Defra and EA staff on social science. This information was fed into the development of the strategy 'building blocks'.
Objective 2:		

To develop practical understanding and application of social science research practices within the context of the four R&D themes	• Understanding developed within the project team and advisory group of social science research practices within the context of the four R&D themes and shared with the TAG members for each theme. • Applications of social science within the four R&D themes	• The work of the project to complete an extensive review of current practice enabled the research team and advisory group to fully understand the current use of social science research practices within the FCERM R&D themes, and to see their relevance in that context. • The experience from the project has provided the research team with greater understanding of the problems and opportunities of presenting social science to non-social science audiences. • The advisory group confirmed that they had learnt a lot from the project. There was some disappointment that there were not more staff members from the EA and Defra involved in that group that could take learning forward in the longer term. • Although it was felt that the research did not tell the advisory group anything very surprising, they felt that having the evidence fully researched and documented was very useful and powerful. • It had been hoped to engage more EA and Defra staff more fully. There was a sense that the project remained slightly ahead of current staff interest, knowledge and understanding of social science. • Feedback from participants at workshops and within the TAGs provided evidence that building understanding takes a long time. The conclusion was that the project had been successful in raising awareness, and had achieved 'better' understanding, rather than developing deep understanding of social science research practices among those currently working on the FCERM R&D programmes. • It had been hoped to run some

		practical projects applying social science research practices directly within the four themes, but it had not been possible to develop these ideas due to lack of EA / Defra staff time.
Objective 3: To build institutional capacity for social science research practices by developing and working with a network of 'social science champions'	• Network of social science champions developed	• An 'emerging' network is developing, based on contacts made through the various workshops held during the project. • The bringing together of Defra and EA staff through the various project events was particularly highly valued by participants. • It had been a struggle to achieve a good attendance at the various events, given other pressures on EA and Defra staff time. However, some participants have stayed in touch with each other and have been involved throughout. It is hoped that these individuals will keep a watching brief and provide continuing support. It will be important that the two new social science staff in EA and Defra maintain the momentum of the network after the end of this project.
	• Activities by project team to build institutional capacity with the network	• Capacity building in this context was seen to be the development of confidence and skills to use social science practices within the FCERM R&D programme. • The workshops wee a key focus for capacity building, with an emphasis on staff learning from each others' experience as well as from the findings from the project and the expertise of the project team. • The CD ROM, trialled at the February 2008 workshop and completed for distribution with this final report, contains extensive material on social science practices, and case studies, for research

		commissioners and users to access. It is expected that the CD will be a useful tool in supporting the network. • This final project report will also be an important resource for the network, and will need to be widely disseminated to spread awareness.
Objective 4: To make recommendations to embody the emerging understandings of social science research practice and proposals within relevant strategy, policy and guidance documents	• Recommendations for embodying understanding of social science research practice and proposals in current key documents • Identification of the relevant strategy, policy and guidance documents	• Recommendations have been drafted by the project team over the final stages of the project, based on the research findings. • The key issues have been raised with the TAGs, and it has been proposed that the recommendations (and Vision) are included in the RO statements. • Draft ideas for recommendations were tested with participants in workshops as well as with the advisory group. The final recommendations are therefore seen to have wide support among this audience. This was seen to be a better mechanism for ensuring that the recommendations are embedded in future strategy and policy than focussing attention on specific existing documents.
Objective 5: To evaluate the whole project and establish a process to ensure post-project sustainability	• Evaluation of whole project designed and delivered • Define post-project sustainability, and how it will be ensured • Design and deliver process to ensure post-project sustainability	• The evaluation of the project was designed in collaboration with the advisory group, and has been delivered as reported here. • The first stage in post-project sustainability has been identified as wide dissemination of these final project reports. • It was proposed that a review of the extent to which social science research has become part of FCERM R&D should be undertaken 12 months after the completion of the project to help ensure better knowledge of post-project sustainability. It was

		also suggested that a review of this project could be included in the benefits tracking approach currently being developed by the EA to assess the impacts of research. • It was also proposed that this project could be a case study within the Defra response to the SAC report.

Appendix 3: Assessing the quality of social science research

The following table is lightly adapted from the Cabinet Office guidance on evaluation[23], and may provide a model for assessing the quality of social science research.

Appraisal questions	Quality indicators (possible features for consideration)
FINDINGS: 1. How credible are the findings?	Findings / conclusions are supported by data / study evidence *(i.e. the reader can see how the researcher arrived at his / her conclusions; the 'building blocks' of analysis and interpretation are evident)* Findings / conclusions 'make sense' / have a coherent logic Findings / conclusions are resonant with other knowledge and experience *(this might include peer or member review)* Use of corroborating evidence to support or refine findings (*i.e. other data sources have been used to examine phenomena; other research evidence has been evaluated: see also Q14*)
FINDINGS: 2. How has knowledge / understanding been extended by the research?	Literature review (where appropriate) summarising knowledge to date / key issues raised by previous research Aims and design of study set in the context of existing knowledge / understanding; identifies new areas for investigation *(for example, in relation to policy / practice / substantive theory)* Credible / clear discussion of how findings have contributed to knowledge and understanding *(e.g. of the policy, programme or theory being reviewed);* might be applied to new policy developments, practice or theory Findings presented or conceptualised in a way that offers new insights / alternative ways of thinking Discussion of limitations of evidence and what remains unknown / unclear or what further information / research is needed
FINDINGS: 3. How well does the research address its original aims and purpose?	Clear statement of study aims and objectives; reasons for any changes in objectives Findings clearly linked to the purposes of the study – and to the initiative or policy being studied Summary or conclusions directed towards aims of study Discussion of limitations of study in meeting aims *(e.g. are there limitations because of restricted access to study settings or participants, gaps in the sample coverage, missed or unresolved areas of questioning; incomplete analysis; time constraints?)*
FINDINGS: 4. Scope for drawing wider inference – how well is this explained?	Discussion of what can be generalised to wider population from which sample is drawn / case selection has been made Detailed description of the contexts in which the study was conducted to allow applicability to other settings / contextual generalities to be assessed Discussion of how hypotheses / propositions / findings may relate to wider theory; consideration of rival explanations Evidence supplied to support claims for wider inference *(either from study or from corroborating sources)* Discussion of limitations on drawing wider inference *(e.g. re-examination of sample and any missing constituencies: analysis of*

[23] Spencer, L. et al (2003) *Quality in Qualitative Evaluation. A framework for assessing research evidence*. National Centre for Social Research for Cabinet Office, London.

	restrictions of study settings for drawing wider inference)
FINDINGS: 5. How clear is the basis of research conclusions?	Discussion of how assessments of effectiveness / evaluative judgements have been reached *(i.e. whose judgements are they and on what basis have they been reached?)* Description of any formalised appraisal criteria used, when generated and how and by whom they have been applied Discussion of the nature and source of any divergence in findings Discussion of any unintended consequences of intervention, their impact and why they arose
DESIGN: 6. How defensible is the research design?	Discussion of how overall research strategy was designed to meet aims of study Discussion of rationale for study design Convincing argument for different features of research design *(e.g. reasons given for different components or stages of research; purpose of particular methods or data sources, multiple methods, time frames etc.)* Use of different features of design / data sources evident in findings presented Discussion of limitations of research design and their implications for the study evidence
SAMPLE: 7. How well defended is the sample design / target selection of cases / documents?	Description of study locations / areas and how and why chosen Description of population of interest and how sample selection relates to it *(e.g. typical, extreme case, diverse constituencies etc.)* Rationale for basis of selection of target sample / settings / documents *(e.g. characteristics / features of target sample / settings / documents, basis for inclusions and exclusions, discussion of sample size / number of cases / setting selected etc.)* Discussion of how sample / selections allowed required comparisons to be made
SAMPLE: 8. Sample composition / case inclusion – how well is the eventual coverage described?	Detailed profile of achieved sample / case coverage Maximising inclusion *(e.g. language matching or translation; specialised recruitment; organised transport for group attendance)* Discussion of any missing coverage in achieved samples / cases and implications for study evidence *(e.g. through comparison of target and achieved samples, comparison with population etc.)* Documentation of reasons for non-participation among sample approached / non-inclusion of selected cases / documents Discussion of access and methods of approach and how these might have affected participation / coverage
DATA COLLECTION: 9. How well was the data collection carried out?	Discussion of: • who conducted data collection • procedures / documents used for collection / recording • checks on origin / status / authorship of documents Audio or video recording of interviews / discussions / conversations *(if not recorded, were justifiable reasons given?)* Description of conventions for taking field notes *(e.g. to identify what form of observations were required / to distinguish description from researcher commentary / analysis)* Discussion of how fieldwork methods or settings may have influenced data collected Demonstration, through portrayal and use of data, that depth, detail and richness were achieved in collection
ANALYSIS: 10. How well has the approach to, and	Description of form of original data *(e.g. use of verbatim transcripts, observation or interview notes, documents, etc.)* Clear rationale for choice of data management method / tool / package

formulation of, the analysis been conveyed?	Evidence of how descriptive analytic categories, classes, labels etc. have been generated and used *(i.e. either through explicit discussion or portrayal in the commentary)* Discussion, with examples, of how any constructed analytic concepts / typologies etc. have been devised and applied
ANALYSIS: 11. Contexts of data sources – how well are they retained and portrayed?	Description of background or historical developments and social/organisational characteristics of study sites or settings Participants' perspectives / observations placed in personal context *(e.g. use of case studies / vignettes / individual profiles, textual extracts annotated with details of contributors)* Explanation of origins / history of written documents Use of data management methods that preserve context *(i.e. facilitate within case description and analysis)*
ANALYSIS: 12. How well has diversity of perspective and content been explored?	Discussion of contribution of sample design / case selection in generating diversity Description and illumination of diversity / multiple perspectives / alternative positions in the evidence displayed Evidence of attention to negative cases, outliers or exceptions Typologies / models of variation derived and discussed Examination of origins / influences on opposing or differing positions Identification of patterns of association / linkages with divergent positions / groups
ANALYSIS: 13. How well has detail, depth and complexity (i.e. richness) of the data been conveyed?	Use and exploration of contributors' terms, concepts and meanings Unpacking and portrayal of nuance / subtlety / intricacy within data Discussion of explicit and implicit explanations Detection of underlying factors / influences Identification and discussion of patterns of association / conceptual linkages within data Presentation of illuminating textual extracts / observations
REPORTING: 14. How clear are the links between data, interpretation and conclusions – i.e. how well can the route to any conclusions be seen?	Clear conceptual links between analytic commentary and presentations of original data *(i.e. commentary and cited data relate; there is an analytic context to cited data, not simply repeated description)* Discussion of how / why particular interpretation / significance is assigned to specific aspects of data – with illustrative extracts of original data Discussion of how explanations / theories / conclusions were derived – and how they relate to interpretations and content of original data *(i.e. how warranted)*; whether alternative explanations explored Display of negative cases and how they lie outside main proposition / theory / hypothesis etc.; or how proposition etc. revised to include them
REPORTING: 15. How clear and coherent is the reporting?	Demonstrates link to aims of study / research questions Provides a narrative / story or clearly constructed thematic account Has structure and signposting that usefully guide reader through the commentary Provides accessible information for intended target audience(s) Key messages highlighted or summarised
REFLEXIVITY AND NEUTRALITY:	Discussion / evidence of the main assumptions / hypotheses / theoretical ideas on which the research was based and how these

16. How clear are the assumptions / theoretical perspectives / values that have shaped the form and output of the research?	affected the form, coverage or output of the research *(the assumption here is that no research is undertaken without some underlying assumptions or theoretical ideas)* Discussion / evidence of the ideological perspectives / values / philosophies of research team and their impact on the methodological or substantive content of the research *(again, may not be explicitly stated)* Evidence of openness to new / alternative ways of viewing subject / theories / assumptions *(e.g. discussion of learning / concepts / constructions that have emerged from the data; refinement / restatement of hypotheses / theories in light of emergent findings; evidence that alternative claims have been examined)* Discussion of how error or bias may have arisen in design /data collection / analysis and how addressed, if at all Reflections on the impact of the researcher on the research process
ETHICS: 17. What evidence is there of attention to ethical issues?	Evidence of thoughtfulness / sensitivity about research contexts and participants Documentation of how research was presented in study settings / to participants *(including, where relevant, any possible consequences of taking part)* Documentation of consent procedures and information provided to participants Discussion of confidentiality of data and procedures for protecting Discussion of how anonymity of participants / sources was protected Discussion of any measures to offer information / advice / services etc. at end of study *(i.e. where participation exposed the need for these)* Discussion of potential harm or difficulty through participation, and how avoided
AUDITABILITY: 18. How adequately has the research process been documented?	Discussion of strengths and weaknesses of data sources and methods Documentation of changes made to design and reasons; implications for study coverage Documentation and reasons for changes in sample coverage / data collection / analytic approach; implications Reproduction of main study documents *(e.g. letters of approach, topic guides, observation templates, data management frameworks etc.)*