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

Managing the social aspects of flooding: Synthesis Report

R&D Technical Report SC040033/SR6

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Environment Agency

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Department for Environment Food and Rural Affairs

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Steve Killeen

Head of Science

Executive Summary

Background
This report summarises the research carried out under the umbrella project 'Managing the Social Aspects of Floods'. This project consisted of distinct studies each with its own report (Science reports SC040033/SR1–SR5 and SC020061/SR1) as well as the present Synthesis report.

Aim
Decisions on managing flood risk must take account of real or potential impacts on society. In order to understand these social aspects of flooding, six studies were undertaken between December 2004 and July 2005. The aim of this package of research was to:

- review work on the social impacts of floods, including on vulnerable and on deprived communities, and the most effective ways of addressing these;
- review work on the most effective ways of working with stakeholders[1], and local communities, in flood risk management, and the most effective ways of improving these;
- review the role of social science within flood risk management research, and how this role might best be strengthened.

This synthesis report seeks to present the six projects as a group and to draw out synergies between them.

Results and conclusions
The studies summarised in this report represent a substantial body of work. Their findings make clear that it is no longer tenable to separate out the "social" from the "technical" aspects of flooding. Flood risk management requires multiple approaches and disciplines and this research provides a wealth of information and data from the social sciences, offering alternative ways of constructing and framing flood risk management.

Recommendations
Each of the studies includes a number of recommendations. Some common recommendations emerging from the research refer to:

- the need for flood risk management to be increasingly responsive to the social distribution and social impacts of flood risk;
- the challenge for the Environment Agency of working in partnership alongside other organisations, in addition to its more traditional role as the lead decision maker;
- the structural challenges within the Environment Agency which currently limit understanding and the use of knowledge derived from social science;

the wider context of sustainable development and the need to identify opportunities for tackling environmental and social issues together.

[1] "Stakeholder" is used here to refer to both representatives of organised groups as well as members of the public, that is, all people who feel they have a stake in the FRM process

Contents

1. Introduction

1.1. Background

Between December 2004 and July 2005 six studies were undertaken for the Environment Agency, each examining areas related to the social aspects of flooding. These studies were commissioned jointly by Flood Risk Management (FRM) and Social Policy and were carried out by a number of contactors bringing a range of expertise. The projects, which covered the three themes listed, are outlined below.

1.1.1. To review work on the social impacts of floods, including on vulnerable and on deprived communities, and the most effective ways of addressing these

The impacts of flooding on urban and rural communities (SC040033/SR1) – Dr Clare Twigger-Ross and Dr Gerda Speller (Collingwood Environmental Planning)

This study examined the relationships between urban/rural policies and FRM policy, exploring opportunities for 'win-win' solutions. The project also looked at how social impacts [2](e.g. economic, health, community) on urban and rural communities could be examined from an empirical perspective in order to address the question "What evidence is there for differential impacts on urban and rural communities from flooding?"

Addressing environmental inequalities: flood risk (SC020061/SR1) - Professor Gordon Walker (University of Staffordshire); *Dr Kate Burningham, Dr Jane Fielding, Graham Smith, Dr Diane Thrush and Helen Fay (University of Surrey)*

This study set out to understand the social impacts of flooding and the policy context for addressing these. It also examined how flood risk is distributed in relation to patterns of social deprivation in England and made recommendations to address these inequalities with regard to flooding.

1.1.2 To review work on the most effective ways of working with stakeholders[3], including local government and local communities, in flood risk management, and the most effective ways of improving these

Improving stakeholder engagement in flood risk management decision-making and delivery (SC040033/SR2) - Dr Sarah Cornell (University of Bristol)

This project explored the trends and experience to date in stakeholder engagement in FRM decision-making. It identified current practices of working with group representatives and official consultees (but not members of the public) which could

[3]"Stakeholder" is used here to refer to both representatives of organised groups as well as members of the public, that is, all people who feel they have a stake in the FRM process

improve FRM; The study also looked for ways to further develop inclusiveness in flood response.

Improving community and citizen engagement in flood risk management decision-making, delivery and flood response (SC040033/SR3) – Dr Gerda Speller and Dr Clare Twigger-Ross (Collingwood Environmental Planning)

This study aimed to understand the relationship between community and citizen engagement and effectiveness of flood risk management (FRM) decision-making, delivery and flood response. The focus of this work was 'citizen engagement' involving members of the public.

Managing flood risk through effective stakeholder engagement – A scoping study on the Aire and Calder (SC040033/SR4) – David Wilkinson and Diane Wade (Whole Systems Development).

The purpose of this scoping study was to establish the most appropriate and practical ways of engaging with stakeholders in the development of the strategic catchment flood management plan (CFMP) for the Aire and the Calder. The project explored this aspect within the wider context of flood risk management policy.

1.1.3 To review the role of social science within flood risk management research, and how this role might best be strengthened

Improving the contribution of social science to the FRM science programme. (SC040033/SR5) – Dr Clare Twigger-Ross and Dr Gerda Speller (Collingwood Environmental Planning)

The aim of this study was to explore the contribution of social science to FRM and to put this in the wider context of current multi and inter-disciplinary research.

The aim of this synthesis report is to present these projects as a group and to draw out synergies between them. The projects are not summarised within this report, rather the reader is directed to the Appendix where the executive summaries for all of the reports are reproduced.

2 Approach

2.1 Introduction

The research projects adopted a variety of approaches, each suited to the objectives being investigated and drawing on the expertise of different contractors. Taken together, these studies show how different social science approaches can be used to address a range of different questions pertinent to flood risk management.

For the two studies on social impacts, the following approaches were adopted:

1. An exploratory/scoping approach for the urban and rural impacts project. It was clear from the outset that little work had previously been carried out on the social impacts of flooding on urban and rural areas.
2. The second part of the work had a clear empirical question to be examined and so focussed on reviewing literature on social impacts and flooding with input from a range of key stakeholders, together with analysing quantitative data to examine the relationships between deprivation and flood risk.

For the three studies on stakeholder engagement, three complementary approaches were adopted. The community engagement study explored different perspectives on the role of community involvement in FRM using qualitative data collected from interviews. The stakeholder engagement study reviewed and collated current literature and expert analysis. The Aire and Calder study took an action research[4] approach suited to the ongoing development of the CFMP. Essentially, consultants not only observed and evaluated the process of the stakeholder involvement, but also worked alongside the participants.

The social science study adopted a similar approach to the community engagement one, examining different perspectives on the role of social science in FRM, again using qualitative data collected from interviews together with carrying out an analysis of current and past projects.

[4] Action research can be characterised by its focus on the research process as a change process. "Action research works, as Lewin originally proposed, through four basic activities: planning, acting, observing and reflecting (Hart and Bond 1995). However, these activities are not linear. They should instead be seen as "in a spiral of steps each of which is composed of a circle of planning action and fact-finding about the result of the action." (Lewin 1946, cited in Hart and Bond 1995). Constant evaluation of the action is central to decide what to do next, based on whether the action taken has led to an improvement" (Warburton *et al*. 2005, p. 141).

2.2 Methods used in the different projects

Project title	Method
The impacts of flooding on urban and rural communities (SC040033/SR1) Improving community and citizen engagement in flood risk management decision-making, delivery and flood response (SC040033/SR3) Improving the contribution of social science to the flood risk management science programme (SC040033/SR5)	The same method was used in the three studies, namely desk-based research and formal interviews with participants from the following groups: Environment Agency policy staff working in FRM (2); Environment Agency regional/operations FRM staff (6); Department for Environment, Food and Rural Affairs (Defra) FRM policy staff and other government staff (3); academics/researchers working in FRM and community participation (5); and other practitioners including a professional facilitator, chairperson of a local community group, National Flood Forum staff and Local Authority officers (3). Seven interviews were carried out face-to-face and twelve by telephone. Notes were taken during the interviews and these were afterwards transcribed and in most cases returned to the interviewees for amendments and additional comments. The amended transcripts were analysed and categorised into key themes. The interviews were designed to cover the three areas addressed by the projects and were tailored to suit the expertise of the interviewee. As a result, not all interviewees contributed to all parts of the project. Eleven responses were analysed for SC40033/SR1, fifteen for SC40033/SR3 and fourteen for SC40033/SR5.
Addressing environmental inequalities: flood risk (SC020061/SR1)	Three research methods were applied to this project each producing different types of evidence and data. **Review of academic and policy literature.** The review focussed on the social impacts of flooding and existing and potential policy measures to address environmental inequalities. Evidence from the literature was used for this report, while gaps were highlighted. **Stakeholder workshop.** A two-day interactive workshop was held in February 2005 with two sessions focussing on flooding issues. Participants consisted of members of the project team, project board and other academics and stakeholders from within and outside of the Environment Agency. These included representatives from Defra, Friends of the Earth, National Flood Forum, OFWAT, Collingwood Environmental Planning, Health Protection Agency and Middlesex University. The purpose of the workshop was to draw on a range of expertise to ensure the review was comprehensive and to explore ideas for future policy. The workshop was particularly important in discussing how the impact of flooding was experienced in different ways at individual, household and community levels. The main themes and outcomes of the sessions were noted during the workshop and checked against recordings of discussion. **Data analysis**. A Geographical Information Systems (GIS) based analysis was undertaken using the Environment Agency Flood Map 2005, and examined the deprivation characteristics of populations living within and outside of the delineated risk areas. The analysis was undertaken for England as a whole, differentiating between river and sea flooding, and then separately for each of the English standard government office regions. The analysis did not include sewer flooding, which is a serious potential problem in some areas and is not covered by the flood maps.

Improving stakeholder engagement in FRM decision-making and delivery (SC040033/SR2)	Desk-based research and expert analysis. This research is based primarily on the collation and critical review of relevant research on stakeholder engagement.
Managing flood risk through effective stakeholder engagement – A scoping study on the Aire and Calder (SC040033/SR4)	This project explored stakeholder views through a mix of face-to-face and telephone interviews. A questionnaire was designed in consultation with the core team, consisting of David Wilkes (Ridings Area Flood Defence Manager), Iain Andrews (Strategic Planning Team Leader), Sophie Vanicat (Flood Defence Strategic Planning Engineer), Lara Dalton (Regional Communications Manager) and Jayne Hoole (Regional Communications Officer). The questionnaire was used as an adjunct to either telephone or face-to-face interviews where possible. and were distributed by e-mail for the most part.

3 Discussion

3.1 Introduction

In this section some of the key themes connecting these different projects are discussed. The intention here is to draw out the themes that run through two or more of the projects. For ease of writing in this discussion the projects are referred to by a shortened title followed by the report number. The themes can be categorised under three headings.

The first incorporates issues related to the structure of the Environment Agency and the role of social issues and includes:

- social science and structural issues within the Environment Agency and FRM;
- staff training and development issues;
- framings, sharing of language and the importance of 'getting your story straight.

The second incorporates substantive issues referring to current research, knowledge and gaps, including:

- engagement processes and partnership working;
- differentiating between groups affected by flooding;
- development and monitoring of policy interventions.

The remainder of themes can be grouped under sustainable development approaches.

Relevant recommendations from each of the reports are presented at the end of each theme.

3.2 The structure of the Environment Agency and the role of social issues

3.2.1 Social science and flood risk management

This theme centres on the way in which social science is used, understood and carried out with respect to flood risk management. It was apparent from the social science (SC040033/SR5) and urban/rural (SC040033/SR1) studies that there was a lack of knowledge and understanding of social science research and social behaviour on the part of some Environment Agency policy and operations staff. In some cases, this could lead to a reliance on anecdote and intuition in understanding how people behave in floods and how they are affected.

The dominance of a technocratic approach and narrative to FRM may well prevent a focus on understandings, perspectives and voices, leaving some Environment Agency staff with poorer sensitivity and awareness of the more social issues. That is, the majority of FRM staff have an engineering background and a perspective on flood risk management which has traditionally been dominated by the development of technological approaches to flood risk management in the form of better structural flood defences. Having that expertise and focus might mean that 'softer' solutions to FRM may be less well understood and applied. This is echoed by Bailey (2005) who says: "Engineering is all about solving technical solutions. And flood management discourse – the specialised language and set of practices used by the flood management network – is characterised by technical formulations of flooding issues" (p7).

There is a rapidly growing emphasis on commissioning social science research for FRM, possibly stemming from the joint Defra/Environment Agency FRM research and development programme and its associated structures, such as the theme advisory groups. However, participants in the social science study (SC040033/SR5) felt that many projects were not clearly linked to the business of FRM, either at the stage of commissioning or at the stage of dissemination. Staff involved with the practicalities of FRM did not feel that there was a means by which their concerns could be examined using social science research.

Recommendation

R1: Develop an approach to embedding social research within the organisation perhaps using FRM as an 'early adopter' function. That is, being one of the first parts of the organisation to develop such an approach. This might include:

- having a dedicated FRM social science person who has a watching brief and understanding across all the projects internally and externally and who links back to the Social Policy Team. This person should also be clearly linked into the Defra/Environment Agency programme;
- ensuring that there is adequate social science representation when planning the FRM R&D programme;
- developing a network of champions both 'up stream' and 'down stream' That is, both at the area level as well as at the level of directors;
- investing time and effort in staff development with training in social research, etc.;
- developing mechanisms for linking operations with research such that research can be closely tied to business issues where appropriate;
- understanding the range of ways in which research can influence the 'business' of FRM and using those different models to facilitate the influence of social science research in changing the FRM culture from a 'technoeconomic' one to a 'sociotechnical' one. (R2 from Social Science SC040033/SR5)

3.2.2 Structural issues within the Environment Agency and FRM

The way the Environment Agency is organised and the way knowledge and innovation are transmitted, emerged as key issues in the Aire and Calder (SC040033/SR4) and community engagement (SC040033/SR3) studies. Specifically, the Environment Agency is a top-down, hierarchically structured organisation, which means that for

actions to be taken on the ground - at the end of a chain of command - there needs to be endorsement at different levels of the organisation. Having that endorsement might mean that staff feel empowered and supported. However, as the Aire and Calder study suggests “the top-down appears more in the form of screeds of written guidance rather than visible support to clarify key policy issues and remove obstacles” (SC040033/SR4, p7).

This same sense of hierarchy was expressed in the community engagement study (SC40033/SR2). There is clearly a desire amongst Environment Agency staff to carry out community work, and indeed, community involvement has successfully been incorporated into some flood risk management activities. However, there is continued uncertainty as to whether staff are allowed to engage in these activities, with an absence of clear policy from the top. The structure of the organisation may be a further barrier to developing practice on the ground, mainly because ideas and practice seem to flow only in one direction, leaving little room for staff to feed back experiences and practice. The ability of staff to feed into the social science research is also limited by the rigid organisational structure, equally identified in the social science study (SC040033/SR5).

A further issue highlighted by the social science (SC040033/SR5) and community engagement (SC40033/SR2) studies is making both these issues part of the fabric of FRM, such that staff are comfortable with them and regard them as part of everyday practice. The inequalities and flood risk study (SC020061/SR1) offers two examples:

“Vulnerability, however and wherever it arises, should be factored into flood management planning, priority setting, option analysis and work before, during and after flood events” (SC020061/SR1, p70).

“Flood policy and management at national and regional levels should consider the implications of sea flood risk zones containing larger numbers of people from deprived areas than would be expected if there was an equality of exposure to flood risk” (SC02006/SR1, p71).

Recommendations

R2: Develop a clear vision of the role of social science research for the Environment Agency within the Social Policy Team. This might include:

- consideration of what constitutes social science research evidence;
- clarity on the relationship between social policy development and social science research;
- outlining the benefits of social science research for the Environment Agency;
- demonstrating how social science research can provide solutions to specific issues;
- considering what kinds of organisational structures and resources might exist that could support the vision, and what gaps there are;
- understanding the context of the Environment Agency and realistically assessing where the opportunities for input might be;
- understanding how social science information is currently disseminated/diffused through the organisation and developing mechanisms for that dissemination/diffusion;

- developing a network of champions for social science (R1 from social science SC040033/SR5).

R3: Establish senior management support for community engagement processes in FRM. (R4 from community engagement work SC040033/SR3).

3.2.3 Framings, sharing of language and the importance of 'getting your story straight' (coherent narratives)

This theme reflects observations from all the projects on the way flood-related issues are discussed and characterised through the written and spoken word. Within sociology, social psychology and human geography there has been a considerable amount of research that has examined the way in which issues are talked about (see Gillbert, 2003; Coyle, 2002 for introductions to the subject). This interest stems from a theoretical perspective which suggests that the way the world is perceived is constructed in interactions between people and then formalised through the written word. These ways of talking about issues, sometimes referred to as "framings" (for example, Wynne, 1996; Bailey, 2005), have implications for action.

For instance, in the social science study:

"FRM is a good example of an area where at present the dominant framing is that of the technical engineering flood defence but increasingly the rhetoric is changing, as noted in *Making Space for Water* and reflected in the change of name from 'Flood Defence' to 'Flood Risk Management'. The very title of *Making Space for Water* suggests that, rather than trying to hold back floods and defend people from them, a more co-operative approach should be taken whereby people 'learn to live with floods' and communities become 'flood resilient'." (SC040033/SR5, p13)

The Aire and Calder (SC040033/SR4), social science (SC040033/SR5) and urban and rural (SC040033/SR1) studies all commented on the current dominance of the technocratic framing within FRM and its implications for research that is considered useful (physical and natural engineering science rather than social science) and the core of FRM (technical solutions rather than social solutions). It is worth repeating here:

"Defra targets prioritise "no loss of life" together with placing a strong emphasis on economic value of property damage. This, together with short-term political pressures (main river floods are usually more high profile), a large increase in the funding for flood defence and pressures from the insurance industry serve to put a strong emphasis on hard defences on main rivers" (SC040033/SR4, p7).

As the social science report continues:

"Understanding that different ways of conceptualising a problem will lead to different ways of solving the problem (such as building flood defence walls or considering managed realignment) and can be the source of disagreement between different stakeholders will be vital if progress is to be made towards a new approach to FRM" (SC040033/SR5, p13).

The Aire and Calder study (SC040033/SR4) found that the CFMP process appeared to be caught between the technocratic approach and the socio-cultural approach. This in turn affected the progress of the CFMP and its perceived function to stakeholders.

The sharing of language was a further issue which emerged in the urban and rural (SC40033/SR1) and social science (SC040033/SR5) studies. If framings are to be understood and subsequently changed, it is important for different parties to share the same language. The first study showed that dialogue between people working on FRM and urban/rural policy is needed to develop synergies between, for example, urban regeneration and urban flood risk management. Similarly, conversations amongst the different disciplines (natural, physical, engineering and social sciences) involved in FRM research and development would be useful to ensure truly multidisciplinary approaches.

The social science study (SC040033/SR5) found that it is in forums where the different disciplines sit alongside each other, such as the Royal Commission for Environmental Pollution, that different knowledge can be integrated. Not only do different areas of knowledge come with their own languages, but so do occupations. For example, operational staff, policy staff, academics and consultants each have their own focus and language. Flood risk management requires communication between each of these ‘occupational communities‘, such that each can begin to understand the different perspectives of others.

Developing ‘single agreed narrative[s]’ (SC040033/SR4) is a further issue which emerged from the community engagement (SC040033/SR3), Aire and Calder (SC040033/SR4), and social science (SC040033/SR5) studies. This can be bluntly termed ‘getting your story straight’ and is especially important for stakeholder engagement, because if the staff involved are not clear about the objectives of the task in hand (such as CFMPs), then it will be difficult for them to discuss it with stakeholders. It was clear from the community engagement work (SC040033/SR3) that plenty of guidance exists;.what is lacking is clear policy framework, a clear narrative. Similarly, within the Social Science study (SC040033/SR5) there is a need for clarity on the relationship between social policy and social science research, together with clear positioning of the role of social science specifically with FRM.

Recommendations

R4: Engage systematically with academics, policy makers and practitioners of FRM by setting up a forum for discussion and debate about the key issues for FRM, making this an interdisciplinary forum so that a new language for FRM can be developed, but run it using good practice facilitation and dialogue (R3 from social science report SC040033/SR5).

R5: It has become clear that in the area of urban and rural issues the Environment Agency has to work in partnership with others. Often for partnerships to be successful new languages need to be developed, or existing information needs to be packaged in such a way that is understandable to other groups. It is suggested that the Environment Agency facilitate dialogue both internally (between Social Policy, Environmental Impact Assessment and FRM) and between the Environment Agency and ODPM (for urban

policy) and Defra (for rural policy) on the embedding of FRM in urban and rural policy. (R1 from urban and rural report SC040033/SR1)

R6: Consider investing time, resources and training in developing a clear policy framework for engagement with communities at different stages of the flood life cycle, drawing on current research and practice. This should be done as a collaborative project involving operations, process and policy staff with input from communities or community representatives where appropriate. This work should consider, among other things:

- the extent of the Environment Agency's involvement (what is appropriate in each case);
- the Environment Agency's role (being clear about why the Environment Agency wants/needs to be involved, what position it wants to take and how the work should be carried out (after Warburton 2004);
- proper evaluation of community engagement projects (in order to know whether they achieve the desired outcome). This should build on the work of the Building Trust with Communities (BTwC) project. (R2 of community engagement report SC040033/SR3).

R7: There needs to be a single agreed narrative about what CFMPs are for and who they are aimed at. This needs to embrace clearly the philosophy and approach expressed in Defra policy in *Making Space for Water*. It should explain links to the Water Framework Directive River Basin planning process and other land use plans. The River Teign model plan offers a starting point for this.(R1 from Aire and Calder SC040033/SR4)

R8: This narrative needs to be brief and written in plain English (R2 from Aire and Calder SC040033/SR4)

3.2.4 Staff training and development issues

From both the social science (SC040033/SR5) and citizen engagement (SC040033/SR4) studies, there is a clear need for training on social science methods and use, and citizen engagement. As Bailey (2005, p7) notes, "engineers are not trained in the areas of environmental and social policy….This is not to say that some engineers will not develop skills and understanding in these areas. But it is not a core skill in engineering." The aim would be to have resources/information for Environment Agency staff to draw on rather than to make them social science researchers or citizen engagement experts. The Social Research Unit at Forest Research has developed a training course and booklet called *Proving It! – Evidence Gathering for Forest Managers* (Martin and O'Brien, 2005). The aim of this course is to train forest managers to have some understanding of social research: "Our aim is not to make you an expert in social research but rather to encourage you to use such research and to understand how to obtain advice or to commission professional researchers" (Martin and O'Brien, 2005, p1).

The Aire and Calder study suggests that learning networks might be useful. "Learning networks, learning organisations and communities of practice are all innovative approaches to sharing learning within a context of change. They are based on social theories of learning, that is, that we learn not just as individuals, but also by doing things with other people" (Warburton et al, 2005, p89).

Learning networks value experience as much as expertise and are non-hierarchical. Sharing good practices amongst staff who are working in the same area, such as FRM, is a frequent request from both policy and operational staff, yet there is limited success with networks that have been set up to do this. It may be that the structure of a learning network is currently too counter-culture to the Environment Agency for it to have wide success. It will be important to understand under what institutional conditions (and parts of the Environment Agency may already have those conditions) learning networks could flourish.

R9: Build on the energy, enthusiasm and skill of staff who are currently carrying out engagement processes by supporting them through an acknowledgement that engagement is part of their work. The following approaches are suggested:

- enable staff by providing training in engagement processes that is based on their experiences and empower them actively to plan for community engagement;
- invest time and resources in developing a network for sharing practice. The focus has been on sharing 'good practice', but it is suggested that safe forums need to be developed where staff can share examples of approaches that did not work;
- build on the BTwC project and work of the national Community Relations Team. (R3 from community engagement study SC040033/SR3).

R10: This scoping study [Aire and Calder] should be followed by a demonstration project to develop the dialogue approach discussed above. The proposals outlined in the report include two linked streams for future work: the development of participatory stakeholder events and the establishment of learning frameworks both laterally and hierarchically inside and outside the Environment Agency. The purpose of the demonstration project would be to spread learning and good practice as rapidly as possible through the Environment Agency (R5 from Aire and Calder SC040033/SR4)

See also **R1** above.

3.3 Current research, knowledge and gaps

3.3.1 Engagement processes and partnership working

From the community engagement (SC40033/SR3) and Aire and Calder (SC40033/SR4) studies, it was clear that the Environment Agency has enough research and guidance on how to carry out engagement processes in general terms (see Warburton *et al* (2005) for a good summary), but less so specifically for flood risk management. However, two projects currently underway will provide more targeted information: *Building Trust with Communities (BTwC) pilot* and *Community engagement with its flood history – understanding risk*. The former seeks to engage one community which has low flood risk awareness, and the latter aims to increase community engagement and participation in establishing, analysing, debating, disseminating and 'owning' their local flood history and risk information within a longer-term environmental change context.

A key finding from both the Aire and Calder (SC040033/SR4) and community engagement (SC040033/SR3) studies was “that extensive liaisons are needed and that the time and resources to form these liaisons before, during and after a flood event must be allocated; and that the Environment Agency should accept that this is a legitimate and necessary part of its work” (SC040033/SR3, p38).

Partnership working also emerged as a key issue for the Environment Agency from all three of the engagement projects, reinforcing findings from other recent studies such as PURE (2005). It is also clear that care needs to be taken when using the term “partnership working”. The stakeholder engagement (SC040033/SR2) study provides a useful definition:

“Partnership working can cover a wide range of activities where two or more organisations have a common interest and work towards common goals, ranging from cooperative work-sharing agreements through to joint funding of activities. In this report, [SC040033/SR2] ‘partnership’ will be used to refer to cooperative relationships that operate with a formalised agreement for mutual engagement – whether these are cost-sharing (optimising public investment, joint funding, supplementary funding, private finance initiatives) or power-sharing (collaborative agreements, innovative decision-making forums, where actions provide indirect or less financially tangible benefit to each other) will be specified” (SC040033/SR2, p7).

Working in these sort of partnerships will challenge current structures within the Environment Agency, in that the organisation will have to learn to work alongside others to develop common solutions, rather than being the lead decision-maker. In the urban and rural work (SC040033/SR1), reference is made to work by Joanne Tippett (Tippett, 2005) to develop a participatory approach to spatial planning around water issues - a similar approach could be used for CFMPs.

Recommendations

R11: The Environment Agency should build partnerships with stakeholders as early as possible in the CFMP. This should start with dialogue between all stakeholders on the purpose and role of CFMPs and the relationships needed for their development, implementation and renewal. The dialogue should identify the types of relationship required at different times and for different purposes – clarifying where, for example, partnership, consultation and information giving are needed. (R3 from Aire and Calder SC040033/SR4)

R12: Through this inclusive dialogue approach the Environment Agency would not only clarify its relationships with other stakeholders in the overall CFMP process, but also encourage stakeholders to develop partnership relationships with each other. (R4 from Aire and Calder SC040033/SR4)

R13. The scoping study findings suggest that building partnerships with stakeholders at the early stages of the CFMP development process would improve and speed-up the process, increase feedback, and increase stakeholders’ ownership of the CFMP. Early partnership building would also lay the foundation for improving the implementation of holistic, catchment-wide water management and flood risk management of all types. (R6 from Aire and Calder SC040033/SR4)

R14. The lessons learned from this scoping study and the proposed demonstration study on the Aire and Calder should then be applied from the start of the CFMP development process for the Don and the Hull in 2006. The aim would be to improve, streamline and speed up the CFMP process and its future implementation (R7 from Aire and Calder SC040033/SR4)

R15: Some formal partnerships in existence now have not been productive in these terms. The link between the Agency and local government, at least in the FRM context, is more about defining the boundaries of each 'partner's' role, with reactive mode information giving, rather than collaborative working. This could be set to change, with planning guidance revision, the implementation of the WFD and SEA directives, catchment and shoreline planning, and more integrated FRM planning outlined in the Government Response to the *Making Space for Water* consultation. Many of these activities have stakeholder and citizen engagement obligations. Engaging in a fragmented way will not be effective. Discussions should begin now about how to streamline engagement. (R1 from Stakeholder Engagement SC040033/SR2)

R16: Smaller scale participatory processes and scheme-specific partnerships tend to work better, as might be expected, because information flows are more direct. The problem here is how these local scale engagements can be aggregated and integrated into national and regional planning and FRM delivery. Some coastal groups and estuary management partnerships have legal standing and dialogue-based processes for shared decision-making, with ongoing forums nested within them for community engagement. These could form the basis of a local-to-regional network that would inform national policy. (R2 from Stakeholder Engagement SC040033/SR2)

See also **R10** above

3.3.2 Differentiating between groups affected by flooding and adapting policy interventions

The urban and rural work (SC040033/SR1) and the inequalities and flood risk work (SC020061/SR1) showed that more research is needed to distinguish between the different groups affected by flooding.

"In a number of respects, not enough is known about how different types of neighbourhoods are affected by flooding," SC020061/SR1 (p70) The key finding from the Inequalities and Flood Risk (SC020061/SR1) work was:

"When analysis is undertaken for all types of flooding combined and separately just for sea flooding, more deprived populations are more likely than less deprived populations to be living within flood risk zones. Thus there are clear inequalities in living at risk of flooding. When analysis is undertaken just for river flooding there is no such relationship evident, with approximately equal proportions of more deprived and less deprived populations living within flood risk zones." (SC020061/SR1, p. 61)

The scoping work carried out in the urban and rural project (SC040033/SR1) showed how flood risk and characteristics of urban and rural environments could be investigated

using the current Defra definition of urban and rural[5]. A similar mapping exercise could be carried out using this definition with the flood risk maps.

The inequalities and flood risk work (SC020061/SR1) highlighted the importance of developing policy interventions and monitoring their effectiveness. Policy development and evaluation was also highlighted in two other studies, (SC040033/SR3) and (SC040033/SR4), both of which identified gaps in policy leading to ambiguity over operational work.

Recommendations

R17: Carry out more detailed analysis of the relationship between the variables of density and sparsity and flood risk. Map the urban/rural communities onto the flood risk communities. Link to the deprivation mapping that has been carried out for Part 2 of this project. Analyse existing data sets using the urban/rural division (e.g. the health impacts work carried out by the Flood Hazard Research Centre) to see if there are differences in health impacts relating to rural and urban characteristics that require different responses from FRM. (R4 from Urban and Rural SC040033/SR1)

R18: Carry out some detailed work examining the social impacts of flooding on an urban community and a rural community. This could be preceded by an analysis of existing data from other projects, which could be categorised according to urban/rural. (R5 from Urban and Rural SC040033/SR1)

R19: Further investigate the issues concerning low probability/high consequence flood risk areas (which are predominantly in urban areas), specifically in understanding the values and perceptions of people in those communities towards flood risk. This was a key recommendation from work carried out on this area (Defra 2005b) for the Flood Forecasting and Warning theme. (R6 from Urban and Rural SC040033/SR1)

R20: Undertake more research to help understand the relationship between the sources of flooding in rural and urban areas and their impacts on communities (e.g. the social impacts of sewer flooding, which is predominantly an urban phenomenon) (R7 from Urban and Rural SC040033/SR1)

R21: The impact and significance of the various policy measures recently adopted to take account of social impacts and vulnerability should be monitored by DEFRA and the Agency and assessed in terms of their effectiveness and responsiveness to social differentiation. As a priority, monitoring of the impact of changes made to the appraisal methodology for flood protection investment should be put in place, in order to evaluate equity implications and the sufficiency of the changes that have been made. (R4 from Inequalities and flood risk SC020061/SR1)

[5] In terms of differentiating between rural and urban, the UK government has recently reviewed the definition of ‘rural’ and developed a new one consisting of two parts: ”the settlement morphology comprising all places under 10,000 population comprising small (‘rural’) towns, villages and scattered dwellings together with the wider geographic context in which individual settlements are located, that is, whether the wider area is defined as being ‘sparsely’ populated or not.”(Defra 2004, p52, Annex A).

R22: As refinements to the Flood Map are implemented, further data analysis taking account of areas protected by flood defences should be carried out. This should both consider the impact that flood defences have on the social distribution of flood risk and also the extent to which past flood investment decisions have afforded a greater degree of protection to the 'better off' due to the primacy of economic losses in investment appraisal. This could most appropriately be a further development of Agency or DEFRA funded research. (R6 from Inequalities and flood risk SC020061/SR1)

R23: Decisions about how to target information and advice to vulnerable groups should be developed in collaboration with national and local agencies and organisations that have specialist knowledge of the particular groups and relevant local knowledge. Flood communications and strategies also need to be informed by local issues. This should incorporate knowledge of specific local vulnerabilities and requires effective communication with local agencies, organisations and publics. (R7 from Inequalities and flood risk SC020061/SR1)

R24: Further research to be taken forward by the Agency and other potential research funding bodies is needed into:

- how neighbourhoods are affected by flooding. This could include work on the role of social capital in building resilience to flooding and enabling community recovery; the conditions under which social capital is increased – rather than dented – by a flood event; how business are affected and how populations change. This is likely to involve longitudinal studies of specific places to trace changes over time, covering both urban and rural contexts.

- the experience of Flood Action Groups in different kinds of neighbourhoods, to explore issues such as the conditions under which successful groups are formed, what constitutes success, who participates, barriers to participation, and the personal and wider social costs and benefits of participation.

- the age and ethnicity dimensions of vulnerability. For example, understandings and responses of minority ethnic groups at risk of flooding deserve further investigation. How do cultural (and language) differences and expectations affect the experience of flooding? There are also gaps in our understanding of the needs and experiences of children, particularly regarding the impacts of evacuation and temporary accommodation. Further data analysis could also consider patterns of exposure to risk amongst different age groups and ethnicities.

- the historical development of areas at risk from sea flooding to identify possible factors and processes that have led to deprived populations occupying areas at risk of sea flooding to a greater degree than others

- differences in profiles of vulnerability between urban and rural areas and the ways in which policy measures should be developed to take account of these

- case studies comparing different policy interventions to manage flood risk and the equity implications of these (R8 from Inequalities and flood risk SC020061/SR1)

See also **R5** and **R6** above.

3.4 Sustainable development approaches

Consideration of what might be termed a “sustainable development” approach to FRM was a final theme that united a number of the projects. In the context of these projects the six projects, sustainable development was taken to mean ‘taking a holistic approach to flood risk management’.

Within the urban and rural study (SC040033/SR1), FRM solutions were seen to be part of a wider strategy to create environmentally, socially and economically sustainable places. In the Urban and Rural report are listed a number of flood alleviation schemes carried out by the Environment Agency. The report concluded that “the examples presented in this report show how the Environment Agency is putting sustainable development into practice, by creating environments that not only alleviate flooding but also provide urban green spaces, with all their benefits in terms of health and well-being, and wildlife habitats that have conservation and biodiversity benefits” (SC040033/SR1, p37).

In this context, consideration of flood risk management echoes the vision laid down in *Making Space for Water,* where: “flood and coastal erosion risk management will be clearly embedded across a range of government policies, including planning, urban and rural development, agriculture, transport, and nature conservation and conservation of the historic environment” (Defra, 2005, p14).

Tools are being developed to consider flood planning within a wider spatial planning context (Tippet, 2005). The community engagement study (SC040033/SR3) also commented that it is important to “plan ways of engaging communities in an extensive study of broader ecosystems to encourage consideration of issues wider than flooding” (SC040033/SR3, p40).

This is further highlighted in a recent report, *Sustainable flood and coastal erosion risk management* (Defra, 2005), which provides guidance on a range of flood and coastal risk management issues. Its focus is on integrating sustainability into all aspects of flood and coastal risk management.[6] As part of the work, nine principles have been developed; of specific relevance is one on ’integration’ which states: “develop solutions that integrate flood and erosion risk management as part of integrated catchment management and coastal zone management” (Defra, 2005, p28).

The study also suggests indicators for each principle, the following of which are suggested for ‘integration’:

- “No. of schemes implemented with multiple objectives and funding streams

[6] Sustainable flood and coastal erosion risk management is defined as the following:“Sustainable flood and coastal erosion risk management provides the maximum possible social and economic resilience against flooding and coastal erosion, by protecting communities, natural resources and enhancing the environment, in a way which is fair and affordable both now and in the future.” (Defra, 2005, p13)

- The contribution of flood and coastal erosion risk management to national biodiversity targets
- No. of catchment places (The smaller number of plans indicating greater integration)
- No of strategies (CFMPs, Shoreline Management Plans and coastal defence strategy plans) in which local and regional development plans, and social, environmental and economic policies are incorporated.(Defra, 2005, p28).

Recommendations

R25: Opportunities should be identified for tackling environmental and social issues together - building local capacity and tackling flood risk problems and social exclusion simultaneously. As Few (2003) comments 'Action to counter vulnerability to flood hazards needs to work hand in hand with action to reduce poverty and promote sustainability. Indeed, sustainable development in the context of a flood prone area arguably implies supporting people's capacity to 'live with' floods rather than attempting to engineer away the problem' (p54). This recommendation is particularly relevant to local authorities and agencies involved in local flood hazard management and Catchment Flood Management Planning. (R5 from Inequalities and Flood Risk SC020061/SR1)

R26: Produce a publication/web page showing flood alleviation schemes that have provided benefits either to urban design or to rural landscapes. Use the language of urban and rural policy to present the flood alleviation schemes in the wider context. Use this as a tool to promote the place of FRM in urban and rural policy. (R2 from Urban and Rural SC040033/SR1)

R27: Understand how Catchment Flood Management Planning (CFMP) can be linked into spatial planning through local development frameworks (LDFs*).* Work at the University of Manchester (Tippett 2005) has developed an excellent participatory approach to spatial planning around water issues. The same approach could be used for CFMPs and also for LDFs and spatial planning. A way in for the Environment Agency is via sustainability appraisal and Strategic Environmental Assessment (SEA). Local authorities now have a duty to carry out sustainability appraisal of their LDFs and the Environment Agency is a statutory consultee at the scoping stage, which means that there is an opportunity for influence at an early stage of the LDF. (R2 from Urban and Rural SC040033/SR1)

R28: Investigate the relationship between knowledge of and familiarity with rivers or the sea and the understanding of flood risk and its impacts. With increased migration out to rural areas together with migration within urban areas, knowledge of flooding may be disappearing from some communities and not being developed in others. Understanding what knowledge is needed and how to pass that on to newcomers to flood risk areas would be useful. (R8 from Urban and Rural SC040033/SR1)

R29: Plan ways of engaging communities in an extensive study of broader ecosystems to encourage consideration of issues wider than flooding. This type of work could be done well in partnership with other organisations or as action research projects. (R1 from Community Engagement SC040033/SR3)

4 Conclusion

This report summarises six research studies and draws on other work (Defra, 2005; Bailey, 2005) commissioned to consider a different framing of flood risk management. This represents a substantial body of work. Although the umbrella title for these studies is "*Managing the social aspects of floods*", it has become clear that it is inappropriate to separate out the social aspects of floods from the technical aspects of flooding. Flood risk management requires multiple approaches and disciplines and these studies provide a wealth of information and data from the social sciences, offering alternative ways of constructing and framing flood risk management.

Appendix 1: Executive summaries for the projects

This Appendix presents the executive summaries for each of the six projects which can be found in each of the reports.

The impacts of flooding on urban and rural communities (SC040033/SR1)

Background
The research reported here forms Part 1 of a larger project *"Managing the Social Aspects of Floods*" (Science reports SC040033/SR1 – SR6 and SC020061/SR1 inclusive).

Aim
The aim of the research was to explore the impacts of flooding on rural and urban communities. Two areas were investigated:

- Understanding the relationships between urban/rural policies and FRM policy such that opportunities for “win-win” solutions could be explored.

- Understanding the social impacts (e.g. economic, health, community) on urban and rural communities from an empirical perspective, i.e. what evidence is there for differential impacts on urban and rural communities in terms of flooding

Recent urban and rural policy documents were examined, together with FRM strategy documents in order to draw out synergies and areas of overlap. In addition, examples of flood alleviation schemes that have impact on urban or rural development were examined to show how some of these synergies might work in practice. As well as desk based research, formal interviews were carried out with participants from the following groups: Environment Agency policy staff working in FRM, Environment Agency regional/operations FRM staff, DEFRA FRM policy staff and other Government staff, Academics/researchers working in FRM and community participation, Other practitioners including a professional facilitator, Chairperson of a local community group, NFF staff, and LA officers. Contact with these groups took the form of formally arranged interviews (n = 11).

Results and conclusions
It is clear that there are some key synergies to be built upon between urban and rural policy, and FRM policy such that FRM development becomes embedded within the urban and rural agendas. It follows that as the shift is towards living with floods so too should the urban and rural policy agendas be considering FRM as part of their design and landscape approaches. Both agendas would benefit from developing dialogues around planning for communities, thus contextualising FRM.

FRM is already engaging with those agendas through some of the flood alleviation schemes. The examples presented in this report show how the Environment Agency is putting sustainable development into practice, creating environments that alleviate flooding, as well as urban greenspace, and wildlife habitats.

With respect to the impacts of flooding on rural and urban communities, firstly, rural and urban as terms are used in a number of different contexts with more or less precision. From the brief review and the work carried out for Part 2 (SC020061/SR1) of the project it is clear there is still work to be done to unpack the relationships between impacts of flooding and specific communities, in this example rural and urban.

Secondly, from the interview material it was clear that some stereotypes around the nature of urban and rural areas exist, which could broadly be summarised as “friendly nature-loving countryside and anonymous city”, which could be unhelpful with respect to understanding the social impacts of FRM. Understanding of general social trends e.g. migration both out of cities to the country and within cities, did not seem to inform most of the interviewees’ comments. In addition, there were participants who felt that a focus on urban and rural communities was not useful, that in fact there were other issues, which cut across the urban/rural continuum that were more important in terms of social impacts e.g. the nature of the flooding.

Recommendations

R1: Environment Agency to facilitate dialogue and partnerships both internally (between Social Policy, Environmental Impact Assessment, and FRM) and between the Environment Agency and ODPM (for Urban Policy) and DEFRA (for Rural Policy) around the embedding of FRM in Urban and Rural policy.

R2: Produce a publication/web page that shows flood alleviation schemes that have provided benefits either to urban design or to rural landscapes. Use the language of urban and rural policy to present the flood alleviation schemes in the wider context. Use this as a tool to promote the place of FRM in urban and rural policy.

R3: Understand how CFMP planning can be linked into spatial planning through local development frameworks (LDFs).

R4: Carry out more detailed analysis of the relationship between the variables of density and sparsity and flood risk. Map the urban/rural communities onto the flood risk communities. Link to the deprivation mapping that has been carried out for Part 2 (SC020061/SR1) of this project. Analyse existing data sets using the urban/rural division e.g. the health impacts work carried out by Flood Hazard Research Centre, to see if there are differences in health impacts relating to rural and urban characteristics that require different responses from FRM.

R5: Carry out some detailed work examining the social impacts of flooding on an urban community and a rural community. This could be preceded by an analysis of existing data from other projects, which could be categorised according to urban/rural.

R6: Further investigate the issues around low probability/high consequence flood risk areas, which are predominantly in urban areas, specifically in understanding the values and perceptions of people in those communities towards flood risk.

R7: More research understanding the relationship between the sources of flooding in rural and urban areas and their impacts on communities e.g. social impacts of sewer flooding, predominantly an urban phenomenon,
R8: Investigate the relationship between knowledge of and familiarity with rivers or the sea and the understanding of flood risk and its impacts. With increased migration understanding what knowledge and how to pass that on to newcomers to flood risk areas would be useful.

Addressing Environmental Inequalities: Flood Risk (SC020061/SR1)

Addressing environmental inequalities is one of the Environment Agency's three social policy principles. Understanding more about the inequalities which arise in exposure to flood risk and in the experience of flood events, and developing ways of addressing these inequalities, is particularly relevant to the Agency and to the work of a wide range of organisations involved in flood risk management.

Aims of the Project

- To help the Agency to understand the social impacts of flooding and the policy context for addressing these;
- To examine the how flood risk is distributed in relation to patterns of social deprivation in England;
- To make recommendations for the most effective ways of addressing inequalities in relation to flooding

Methodology

The project methodology consisted of a review of the literature on the social impacts of flooding and policy measures relevant to flood risk and environmental inequalities; a two day interactive workshop held with stakeholders from within and outside of the Agency; a GIS based data analysis using the Agency Flood Map 2005 and examining the deprivation characteristics of populations living within and outside of the delineated risk areas in England and the English regions.

Social Impacts of Flooding and their Social Differentiation

The term 'social impact' was cast in the broadest terms in this project. Impacts vary with the nature and magnitude of the flood event and may be difficult to delineate as they are interconnected, cumulative and often not quantifiable.

There is not as yet a body of research that considers the impacts of flooding on deprived communities in the UK. Existing research focuses on whether particular kinds of individuals and households are especially vulnerable. Whilst not all vulnerable individuals and households are deprived, deprived neighbourhoods do contain concentrations of vulnerable individuals.

Levels of awareness of flood risk are low amongst those in the lower socio-economic groups. Residents in deprived neighbourhoods are therefore likely to be less well prepared to cope in the event of a flood and in its aftermath.

An insufficiency or lack of insurance, which will be more prevalent in deprived areas, heightens the impacts of flooding. Those on low incomes are likely to find it hard to cover the costs of evacuation and temporary accommodation. People in unstable, low income jobs are most likely to lose their jobs if businesses close.

Health impacts of flooding will be more extensive in neighbourhoods already characterised by poor health. Those who suffer the greatest losses, often those on lower incomes and without insurance, may be most susceptible to psychological health effects and by extension physical health effects.

There is UK research which indicates that more deprived communities tend to have lower levels of social capital, and international research that concludes that places with low levels of social capital cope less well in the aftermath of flooding.

Overall, deprived neighbourhoods are likely to be particularly hard hit by the impacts of flooding. However, such neighbourhoods are not all the same and factors such as local social relations; ethnic and cultural make up; type of housing; and age profile will influence the degree of impact experienced. Some deprived neighbourhoods have developed local strategies to prepare for and cope with the aftermath of flooding.

Flood risk and deprivation: data analysis

The results of the data analysis display broadly similar patterns to previous studies. For all types of flooding combined and separately just for sea flooding, more deprived populations are more likely than less deprived populations to be living within flood risk zones. There are clear inequalities in living at risk of flooding. However, for river flooding alone there is no such relationship.

Regional analysis provides information on which regions have the most deprived populations at risk and the degree of inequality in relation to deprivation found within each region. For river flooding there are concentrations of the most deprived at risk populations in some regions and concentrations of the least deprived in others (reflecting the underlying highly uneven geography of deprivation). The proportional patterns within each region are also highly variable – for some the most deprived are disproportionately found within flood zones, whilst in others it is the least deprived.

For sea flooding, the national picture of a disproportionate concentration of deprived populations in flood risk zones is maintained fairly consistently across the regions. This suggests that a common factor (or set of factors) may have been influencing the development of areas near to the coast and along estuaries, which has over time led to them being occupied predominantly by deprived populations.

Whilst the results of the analysis are strengthened by their broad accordance with other research, it is important to take into account the various methodological limitations of this form of analysis and of the data sets used.

Policy implications and Recommendations

There are real and substantial challenges for future flood risk management in respect of the social profile of those most vulnerable to flooding and the likely consequences of climate change. The deprived are not a small or insignificant proportion of the total numbers currently at risk from flooding – and for sea flooding they constitute the majority of those at risk in England. This alone indicates that flood policy will need to be increasingly responsive to the social distribution of flood risk.

We have found evidence of inequality in the proportions of people in different deprivation categories that are living within flood risk zones, but this does not necessarily imply an unjust or unfair situation. If the judgement was made that there was a distributional injustice that needed to be addressed, this would add additional drivers for policy intervention, potentially of a more radical nature, on top of those related to population vulnerabilities.

There are a number of ways in which flood policy and management is already seeking to take account of social issues. These include differentiated approaches to communication, changes to risk assessment methodologies and flood defence appraisal criteria and aspects of flood resilience measures and land use planning. Most of these are relatively recently developed and it is difficult therefore to evaluate their significance.

A number of recommendations are made, which in summary form are:

Flood policy and management at all levels should continue to develop in ways which recognise that the impacts of flooding are socially differentiated in sometimes complex ways. The implications of sea flood risk zones containing larger numbers of people from deprived areas than would be expected are particularly significant.

Interactions between processes of environmental, social and economic change and how these may increase vulnerabilities for particular parts of society in the future should be identified and policy implications considered

The impact and significance of the various policy measures recently adopted to take account of social impacts and vulnerability should be monitored

Opportunities should be identified for tackling environmental and social issues together - building local capacity and tackling flood risk problems and social exclusion simultaneously.

As further refinements to the Flood Map are implemented, further analysis taking account of areas protected by flood defences should take place.

Decisions about how to target information and advice to vulnerable groups should be developed in collaboration with national and local agencies and organisations that have specialist knowledge of the particular groups and relevant local knowledge.

Further research priorities include how neighbourhoods are affected by flooding; the experience of Flood Action Groups in different kinds of neighbourhoods; the age and ethnicity dimensions of vulnerability; differences in profiles of vulnerability between urban

and rural areas; and case studies comparing different policy interventions to manage flood risk and their equity implications

Improving Stakeholder Engagement in FRM Decision Making and Delivery (SC040033/SR2)

The Agency's stakeholder engagement process is evolving in response to the Government 'push' for greater efficiency and coherence in publicly-funded environmental decision-making, alongside regulatory requirements to engage with stakeholders and citizens, and also to a 'pull' from the broader constituency involved in FRM governance, as solutions increasingly draw on a much wider portfolio than before.

Stakeholders have to be engaged at different spatial levels and stages in FRM planning and delivery, but at present, opportunities are being lost because the different levels are too disconnected. The top tier consists of the 'original' FRM decision-makers. Formalised, statutory or contractual partnerships exist between the Agency, local development planners, statutory consultees, and the funders and implementers of FRM. A second tier of engagement, informing and advising the decision-makers, includes a wide range of institutional stakeholders. Some of these have more power than others, and many are also likely to be involved in other strategic processes of engagement relevant to FRM. Below them, with no clear understanding of how their views will be heard and used, is the citizen. Downward information flows in this hierarchy are well-established, but for more sustainable and effective FRM, and for the potential to exploit new partnership opportunities in FRM delivery, information needs to be channelled better up and across the tiers.

Broadly speaking, the right stakeholders are now involved, and the portfolio of engagement methods means that decision-making and delivery can be adaptive. The rise of community engagement demands a rethink of how their views and effort can be included more effectively. Where the public is now engaged at a late stage to facilitate (small-scale) scheme implementation, in future they will need to interface better with the stakeholder processes of planning and delivery, because they will need to adapt their priorities and behaviour on a much larger scale to prevent and manage flood risk.

Issues that need to be tackled are the process of engagement and the shift to systems functions at the catchment/coastal cell scale. This physical system scale crosses administrative boundaries, adding tension to today's locally negotiated partnership protocols. Regional democracy does not currently mesh with regional land and water resource use planning. Sources and causes of flood risk are dispersed across the catchment, so trying to tackle them all individually spreads available resources very thinly. Many participatory stakeholder groupings exist for various aspects of coast/catchment/estuary planning relevant to FRM, and several of these include formal partnership efforts. (Partnership is characterised by formalised membership agreements, and shared commitment to resourcing and outcomes Partnerships can cover cost sharing and 'effort-sharing'.) Often these fora have nested community engagement processes, but there is still an incomplete patchwork across the country: just major estuaries, some vulnerable stretches of coastline, and some site-specific areas where planning controls exist for environmental protection. These provide useful models for how to extend integrated strategic planning, but they could also provide a starting network for integrating engagement efforts.

There are high expectations for SMPs and CFMPs to improve FRM, but experience shows that cross-plan integration is not simple, and stakeholder buy-in for one plan may not extend to the derivative plans after integration. The SEA, WFD and ICZM processes all require the scoping of plans and regulatory constraints, so with this framework process, the Agency can work towards cost-effective harmonization of its participatory engagement processes, and from that to explore and exploit partnership opportunities with well-informed stakeholders for the implementation of FRM solutions

Improving Community and Citizen Engagement in Flood Risk Management Decision making, Delivery and Flood Response (SC040033/SR3)

Introduction. The overall objective of this report is to understand the relationship between community and citizen engagement and effectiveness and efficiency in Flood Risk Management (FRM) decision making, delivery and flood response.

For this report 'local community and citizen engagement' includes a wide range of contacts with members of a local community who are affected by decisions in their geographical area and is treated as distinct from 'stakeholder involvement' which was explored in report no SC040033/SR2. In the context of FRM, local community and citizen engagement can either be initiated and led by the Environment Agency; or the Environment Agency can be a partner in a joint process; or the Environment Agency can provide expert input to someone else's process.

Research approach. The work consisted of collating and reviewing relevant research and practice both in terms of general work on community participation and in terms of specific research on community participation and flood risk management. Based on this background knowledge the interview schedules were designed to explore attitudes, perceptions and beliefs of five distinct groups of decision-makers, i.e. Environment Agency policy staff working in FRM; Environment Agency regional/operations FRM staff; DEFRA FRM policy staff and other Government staff; Academics/researchers working in FRM and community participation; and Other Practitioners including a professional facilitator, Chairperson of a local community group, National Flood Forum (NFF) staff, and Local Authority officers.

Contact with these five groups took the form of formally arranged interviews. Notes were taken during the interviews and these were transcribed and in most cases returned to the interviewees for amendments and additional comments. The amended transcripts were analysed and categorised into seven key themes which are summarised below:

Summary of the seven key themes which emerged from analysis of the interview data:

1) Interviewees across the five groups of decision makers expressed an acceptance that technology alone cannot cope with increasing flood events and that much

work needs to be done by the Environment Agency to bring about this perceptual change and to help communities accept a certain level of flood risk; to accept that they need to share some of the responsibility; and to accept that by designing spaces to flood safely ecological benefits will also be increased.

2) The role of the Environment Agency. The majority of people interviewed felt that the Environment Agency needs to play a proactive role in terms of community and citizen engagement. It is in a unique position to promote social capital and has already moved towards this goal.
3) Engaging with communities. Almost every member of the Environment Agency/FRM operations staff expressed the need for them to work with impacted communities before, during and after a flood event at a meaningful level and asked for these issues to be debated at the highest level within the Environment Agency. A good beginning has been made with the dissemination of the BTwC toolkit. There was strong support for viewing public meetings as an aid to building social capital and to harness the initial anger of those impacted by a flood to contribute to positive change.
4) Positive engagement strategies. Environment Agency staff who have been involved with engaging local communities felt very positive about the possibilities, the process and outcomes. The examples also demonstrate the ease with which the Environment Agency can initiate and facilitate such projects, be partner to a joint project, or simply benefit from someone else's initiative.
5) Negative perceptions of community engagement. These centred on organisational issues within the Environment Agency (e.g. lack of staff continuity); staff anxieties about being inadequately trained for certain public participation work; the perceived neglect of flood victims' psycho-social needs; and the possibility of flood awareness campaigns which increase communities' anxieties and the likely economic blighting of an area. It is, however, encouraging that a community that has been involved in a genuine participatory exercise (either through facilitated historic and/or scientific projects as discussed in section 3.2.4) or a community that has been involved in management decision making (as discussed in section 3.2.3) will have already begun to 'own' its flood risk environment and will have developed a sense of trust towards the facilitators. Thus many of the negative perceptions discussed will not arise or will be easier to deal with.
6) Community risk perceptions. There is an urgent need for people to recognise the seriousness of the greater likelihood of flood risk yet much care needs to taken when communicating risk as it can heighten anxieties and feelings of helplessness which in turn will increase the need to blame someone else (mostly the Environment Agency). There is also evidence that some 'at risk' communities are in a 'state of denial' and choosing to ignore the warnings. Current work points to the complexity of behaviour change, suggesting that there are a number of progressive stages from awareness of flood risk to behaviour action. Nevertheless, a report by Barnett, et al. (in press) on generating and developing Environmental Citizenship points to evidence both of the recent trends toward greater personal responsibility and the effectiveness of this in stimulating changed patterns of behaviour.
7) Future research. Based on the recognition that policy should be grounded in research, most participants in this study expressed a need for further work. It was suggested that although there have been a number of good practice case studies they are mostly anecdotal and need to be properly analysed to extract the

principles of their success. It has also been argued that it is equally important to examine adverse cases. The analysis, however, should not focus on individual action but should include the role of underlying systems and why they did not facilitate a more satisfactory outcome.

There are four key recommendations which should be taken forward:

R1 Plan ways of engaging communities in an extensive study of broader ecosystems to encourage consideration of issues beyond flooding. This type of work could be done well in partnership with other organisations or as action research projects.

R2 As has been concluded, there is much agreement that engagement with communities is a necessary and important part of FRM but currently there are no clear guidelines on how that should be carried out.

Consider investing time, resources and training in developing a clear framework for engagement with communities at different stages of the flood life cycle, drawing on current research and practice. This should be done as a collaborative project involving operations, process and policy staff with input from communities or community representatives where appropriate.

This work should consider, inter alia:

- the extent of the Environment Agency's involvement (what is appropriate in each case)
- the Environment Agency's role (being clear about why the Environment Agency wants/needs to be involved, what position it wants to take and how the work should be carried out, (after Warburton, 2004); and
- proper evaluation of community engagement projects (in order to know if they achieve the desired outcome). This should build on the work of the Building Trust project.

R3 Build on the energy, enthusiasm and skill of staff who are currently carrying out engagement processes by supporting them through an acknowledgement that engagement is part of their work. The following approaches are suggested:

- enable staff by providing training in engagement processes which are based on their experiences and empower them to plan for community engagement proactively.
- Invest time and resources in developing a network for sharing practice. The focus has been on sharing 'good practice' but it is suggested that safe forums need to be developed where staff can share examples of approaches that did not work.
- Build on the BTwC project and work of the national Community Relations Team.

R4 Establish senior management support for community engagement processes in FRM.

Managing Flood Risk Through Effective Stakeholder Engagement – A Scoping Study on the Aire and Calder (SC040033/SR4)

During spring 2005, researchers from the consultancy Whole Systems Development undertook a scoping study to establish appropriate and realistic ways for the Environment Agency to engage with stakeholders in the development of strategic Catchment Flood Management Plans (CFMPs) for the rivers Aire and Calder.

The study found that many significant stakeholders in the Aire and Calder catchments were not clear about the purpose of CFMPs and how they could contribute to them. Many expressed hope that CFMPs would be the basis for partnership working on integrated, holistic, long-term catchment plans for water management and flooding of all types. This hope is consistent with the approaches expressed in Defra's *Making Space for Water*. But stakeholders feared that in practice, CFMPs were narrowly focused on improving hard defences on main river courses and that consultation with stakeholders was little more than a box-ticking exercise that the Environment Agency had to do. In short, they felt that CFMPs might be little more than old wine in new bottles.

To a degree, the study also found a similar confusion about the overall direction of the CFMP philosophy, approach and process among Environment Agency staff. Despite these uncertainties, personal relationships at the area level between Environment Agency staff and stakeholders were good.

The report makes the following recommendations:

1. There needs to be a single agreed narrative about what CFMPs are for and who they are aimed at. This needs to embrace clearly the philosophy and approach expressed in Defra policy in *Making Space for Water*. It should explain links to the Water Framework Directive River Basin planning process and other land use plans. The River Teign model plan offers a starting point for this.

2. This narrative needs to be brief and written in plain english.

3. The Environment Agency should build partnerships with stakeholders as early as possible in the CFMP. This should start with dialogue between all stakeholders on the purpose and role of CFMPs and the relationships needed for their development, implementation and renewal. The dialogue should identify the types of relationship required at different times and for different purposes – clarifying where, for example, partnership, consultation and information giving are needed.

4. Through this inclusive dialogue approach the Environment Agency would not only clarify its relationships with other stakeholders in the overall CFMP process, but also encourage stakeholders to develop partnership relationships with each other.

5. This scoping study should be followed by a demonstration project to develop the dialogue approach discussed above. The proposals outlined in the report include two linked streams for future work: the development of participatory stakeholder events and the establishment of learning frameworks both laterally and hierarchically inside and

outside the Environment Agency. The purpose of the demonstration project would be to spread learning and good practice as rapidly as possible through the Environment Agency.

6. The scoping study findings suggest that building partnerships with stakeholders at the early stages of the CFMP development process would improve and speed-up the process, increase feedback, and increase stakeholders' ownership of the CFMP. Early partnership building would also lay the foundation for improving the implementation of holistic, catchment-wide water management and flood risk management of all types.

7. The lessons learned from this scoping study and the proposed demonstration study on the Aire and Calder should then be applied from the start of the CFMP development process for the Don and the Hull in 2006. The aim would be to improve, streamline and speed up the CFMP process and its future implementation.

Improving the Contribution of Social Science to the FRM Science Programme. (SC040033/SR5)

The research reported here forms Part 5 of a larger project *"Managing the Social Aspects of Flooding"* (Science reports SC040033/SR1 – SR6 and SC02061/SR1).

The main objective of this research was to review options for improving the contribution of social science to the Environment Agency's Flood Risk Management (FRM) science programme

The research has collated and reviewed relevant research and practice both in terms of the role of social science and also in terms of recording FRM social science research and other relevant Environment Agency social science research that has been carried out between1999 – 2005. The latter have been examined in terms of social science approach and methods. In addition, relevant social science projects and programmes both from within the Environment Agency and externally were collated. Further, formal interviews were carried out with people from the following groups: Environment Agency and DEFRA policy staff, Environment Agency regional/operations, Environment Agency and DEFRA social scientists, other government department social scientists, Academics/researchers working in FRM Academics/researchers working on the role of science in policy making and other practitioners in FRM Contact with these groups took the form of formally arranged interviews (n = 14) Notes were taken during the interviews and these were transcribed and in most cases returned to the interviewees for amendments and additional comments.

Perspectives on social science in environmental-decision making

From the government interviews a number of themes emerged:
- the type of social research
- the role and status of social research with respect to policy and practice
- impact of social research with respect to policy and practice
- uptake and dissemination of research

From the academic interviews a number of themes emerged:

- The current role of social science in environmental policy making
- The relationship between research and policy

A review of the current contribution of social science to the FRM science programme showed that out of a total of eighty eight projects in the Joint Schedule of Projects (April 2004), ten were social science projects and they were two of the themes: Policy Development and Flood Forecasting and Warning. The research projects can be split into two categories:

- those which take a "traditional" research approach i.e. starting with a research question, collecting evidence, analysing results, presenting conclusions which might be broadly within the "positive" category (Gilbert, 1993)
- those which take a more collaborative, action research approach

All the projects except two, fit into the first category. From the Environment Agency social science research theme eight other projects of relevance were reviewed. In terms of research approach five of the projects took a more traditional approach and three took a more collaborative, action research approach.

Perceptions of the current contribution of social science to the FRM programme - from those interviewed a number of themes emerged:

- The perceived value of social science research in relation to natural/physical and engineering sciences
- The perceived extent of knowledge and understanding of social science, and types of "problems" it could address
- The organisation of FRM social science

Conclusions:

Firstly, that there is quite a range of social science projects being carried out both within the DEFRA/Environment Agency FRM research programme and outside of that programme. However, from a brief analysis of those projects it is not clear that there is an overall strategy for why those projects have been commissioned, either within the DEFRA/Environment Agency programme or within the Environment Agency social science programme. There do not appear to be statements for any of these themes as to the general approach to what research is commissioned and why. An exception is that of the FFW Theme. The scoping report carried out in 2000 (Environment Agency, 2000) provided a clear research programme and the projects that were prioritised then have been carried through.

Secondly, whilst some of the projects are closely linked to the business and indeed have a clear impact on the business a fair few do not have clear links to a business objective be that an operational objective or a policy objective. This means that immediate use of the research can often be perceived as limited. As discussed within the report, the notion of "good use" is one that is debated, but from the interviews we would suggest that there is an underlying perception amongst many FRM staff that "good use" should follow a fairly linear model from research through to application and if it does not then the research might be regarded as not useful. Certainly clarity on the objectives of research is to be welcomed, but in doing that it might be useful to consider what constitutes "good use" and how that might best be achieved given the complexity of the Environment Agency.

Thirdly, whilst there is a sense that social science is useful for FRM especially as technological solutions are seen to be failing, it is clear that many staff have low levels of knowledge of social science research, methods and practice. In this sense then it becomes something that is said but rarely unpacked, which means that it can, and we suggest does, mean many different things to different people. This is a key issue in terms of capacity building within the Environment Agency.

Fourthly, there is no clear process by which potential users of the research e.g. operational staff can engage with that research either as it is being carried out or once it has been finished. Dissemination internally is a fairly static process of sending out documents to a list of interested members of staff.

Recommendations:

R1: Develop a clear vision of the role of social science research for the Environment Agency within the social policy team which might include:

- consideration of what constitutes social science research evidence
- clarity on the relationship between social policy development and social science research
- outlining the benefits of social science research for the Environment Agency
- demonstrating how social science research can provide solutions to specific issues
- considering what kinds of organisational structures and resources might be existing that could support the vision, and what gaps there are.
- understanding the context of the Environment Agency and realistically assessing where the opportunities for input might be.
- understanding how social science information is currently disseminated/diffused through the organisation and developing mechanisms for that dissemination/diffusion.
- developing a network of champions for social science.

R2 Develop an approach to embedding social research within the organisation perhaps using FRM as an “early adopter” function which might include:

- having a dedicated FRM social science person who has a watching brief and understanding across all the projects internally and externally and who links back to the social policy team. Ensure they are clearly linked into the DEFRA/Environment Agency programme.
- ensuring that there is adequate social science representation when planning the R&D programme.
- developing a network of champions both “up stream” and “down stream”
- investing time and effort in staff development with training in social research, etc.
- develop mechanisms for linking operations with research such that research can be closely tied to business issues where appropriate
- understanding the range of ways in which research can influence the “business” of FRM and using those different models to facilitate the influence of social science research in changing the FRM culture from a “technoeconomic” one to a “sociotechnical” one.

R3 Engage systematically with academics, policy makers and practitioners of FRM by setting up a forum for discussion and debate around the key issues for FRM, making this an interdisciplinary forum so that a new language for FRM can be developed, but run it using good practice facilitation and dialogue

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