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The role of social learning in participatory planning & management of water resources

School of Applied Sciences

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ABSTRACT

Natural Resource Management processes are undergoing major transformations: technical and regulatory mechanisms are no longer considered sufficiently adaptive to address the complexity and uncertainty which characterise contemporary challenges in the sector, thus motivating wider use of integrated and collaborative approaches. Against this background, new models of participative management are encouraged which emphasise social learning among stakeholders. Yet, reported research which unambiguously demonstrates the role and impact of social learning remains sparse.

This thesis contributes to a better understanding of the conditions under which social learning occurs, and most importantly the dynamics and benefits of social learning by systematically collecting evidence of the processes and impacts attributed to social learning. The research which employs a sequential mixed methods research design is undertaken with stakeholders involved in various engagement activities forming part of the implementation of the WFD in the UK, Ireland, and Germany and expands the still limited empirical knowledge base on social leaning in stakeholder interaction.

Findings demonstrate that participatory platforms are shaped by processes of social learning although they are more noticeable as collaborative initiatives mature. Also, there is some degree of variation in the extent to which people learn or change, with stakeholders readily acquiring knowledge and improving relationships. However, the transformation of views and the development of a shared group identity seem to be limited. Findings clearly illustrate the multitude of factors that constrain the occurrence of learning processes and eventually limit the extent to which these can contribute to sustainable NRM. Foremost, this study reinforces the importance of the actual communicative learning process, the quality and intensity of which is largely influenced by the organisational arrangements and, more fundamentally, the ability of the stakeholders to shape the process.

Keywords: Participation, Social learning, WFD

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JOURNAL ARTICLES AND CONFERENCE PRESENTATIONS

Journal articles

Muro, M. & Jeffrey P. (2005). Participatory test and evaluation processes: Why, how and when? *TIAS Quarterly* 3(2): 1-3.

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ABBREVIATIONS

BSA	British Sociological Association
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EIA	Environmental Impact Assessment
ERBD AC	Eastern River Basin District Advisory Council
GWP	Global Water Partnership
HarmoniCOP	Harmonising Collaborative Planning
HMULV	Hessisches Ministerium für Umwelt, ländlichen Raum und Verbraucherschutz
IPA	International Association for Public Participation
IWRM	Integrated Water Resources Management
LAWA	Länderarbeitsgemeinschaft Wasser
NGOS	Non Governmental Organisations
NRM	Natural Resource Management
RAAKS	Rapid Appraisal of Agricultural Knowledge Systems
RBD	River Basin District
RBM	River Basin Management
SERBD AC	South-Eastern River Basin District Advisory Council
SLIM	Social Learning for the Integrated Management and Sustainable Use of Water at Catchment Scale.
SWRBD AC	South-Western River Basin District Advisory Council
UK	United Kingdom
WFD	Water Framework Directive

CHAPTER 1: THE WATER RESOURCES CHALLENGE – MANAGING OR LEARNING HOW TO MANAGE?

Social learning processes are increasingly considered to be central to the success of natural resource management. This thesis aims to contribute to a better understanding of the dynamics of social learning in participatory water resource management processes, its limitations and practical challenges.

Section 1.1 illustrates how a growing awareness of the complexity and uncertainty surrounding water resources management, coupled with failures of traditional management regimes motivates a move towards more integrated and interactive approaches which promote social learning. Against this background, Section 1.2 argues that the emphasis on participatory platforms as a means to foster social learning justifies a study of the processes of, and conditions for, social learning between stakeholders, followed by an outline of the aims, objectives and scope of this research. The chapter concludes by providing an overview of the structure of the thesis.

1.1 Do we need to 'learn' water resources management?

Many voices are claiming that the development, management and use of the world's water resources are undergoing major changes, a transition which is widely seen as overdue (Pahl-Wostl 2002; Gleick 2003). Traditionally, water resource management was perceived as a technical problem and shaped by an engineering approach. In the 1960s and throughout the 1970s the emphasis was on the development of water resources, typically focussing on the development of infrastructures for water supply, sanitation, irrigation and energy (Savenije & van der Zaag, in press). Although it needs to be acknowledged that engineering solutions have benefited billions of people, after all, many of us just need to turn the tap for clean drinking water[1], these solutions often came with unanticipated social, economic, and environmental costs (Gleick 2003). One

[1] At least in the northern hemisphere. Worldwide, over 1 billion individuals lack access to safe drinking water and 2.5 billion individuals lack access to basic sanitation (World Bank 2008).

only needs to think about the consequences of structural alteration of rivers, such as the Rhine. Since the first efforts to canalise the river in the 19th century, 60% of the natural flood plains have been lost and were turned into farmland and developed for housing. The reduction of these retention areas, combined with the effects of a deepened river bed due to erosion, has markedly increased the frequency of severe flood events (Disse & Engel 2001).

The failure of traditional approaches to anticipate and address these 'side effects' is partly attributed to those, or better the engineers and authorities, in charge, ignoring the complexity and uncertainty which characterise water resource challenges, and natural resource problems in general. The predominant control and command paradigm was underpinned by two basic assumptions: first, natural systems exist in a finite and clearly observable number of 'shapes' and specifications; by knowing these specifications, a set of control measures can be designed to change the characteristics of the system as desired. Second, both uncertainties and risk are quantifiable based on a calculation of their probabilities (Pahl-Wostl 2006). Recognising the limitations of this approach, water managers throughout the 1980s and 1990s slowly shifted away from water resource development to management, increasingly appreciating the social and ecological dimension of water resources management. Today, we are witnessing a growing uptake of Integrated Water Resources Management (IWRM[2]) principles (Biswas 2004; Savenije & van der Zaag, in press). IWRM, although ill-defined and widely debated, acknowledges the inherent ecological and societal complexity of environmental issues and proposes new management styles which emphasise integration, coordination and participation. Indeed, van Ast (1999), tracing the different stages of the development toward River Basin Management (RBM), describes the current paradigm as interactive water management, highlighting that water managers

[2] IWRM is still lacking an unambiguous definition. The most frequently quoted definition was drafted by the Global Water Partnership (GWP) (2000). They conclude that IWRM is most commonly understood as a "a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems".

interact on the one hand with the water system, thus responding to the dynamic nature of environmental systems, and on the other hand different actors of society.

One important issue arises from this historical review presented above. While it explains, although only rudimentarily, why resource managers have started to look for new ways to address water management issues, it prompts the question of why the interaction with individuals outside of the water professions has suddenly gained such relevance. In a nutshell, water resource challenges have several features which require a more interactive approach (Woodhill 2004; van den Hove 2006; Pahl-Wostl 2006; Ison *et al* 2007):

- Natural systems are dynamic, interconnected with other biophysical systems and shaped by human activities, which in turn are affected by the natural environment[3]. As a consequence, these systems are constantly evolving and interacting.

- The multiple factors influencing natural systems imply a degree of uncertainty. The complexity of such systems means that management decisions are always challenged by a lack of factual knowledge, which is exacerbated by rapidly changing physical and socio-economic boundary conditions, such as climate change.

- The presence of multiple perspectives, perceptions and assumptions implies that a multitude of different and often conflicting views on what the management challenges are, how they should be approached, and what a desired outcome would be, will always exist.

These themes will be further elaborated in Chapter 2, but for now it is sufficient to recognise an increasing consensus that water resources management, and natural resource management (NRM) in general require practices which allow multiple actors to collectively conceptualise resource challenges and to develop new, innovative solutions to water resource management problems. In other words, in order to respond

[3] Pahl-Wostl (2006) notes that the term 'environment technology human' system more accurately captures the characteristics and interdependencies of the natural environment.

to the complexity, uncertainty and controversy surrounding water resources management, we need to 'learn to manage' (Pahl-Wostl 2006). By understanding water resource management as the outcome of interaction between a multitude of highly diverse social actors (see also Woodhill 2004; Ison *et al* 2007), and indeed, recognising a need for interaction, puts participation and collaboration at the centre of water resources management.

1.2 Participation - an opportunity to learn our way out?

As shown in Section 1.1, traditional, engineering approaches to addressing NRM challenges can only insufficiently address the complexity, uncertainty and controversy which characterise NRM. NRM efforts are confronted with differences regarding the perceptions of the nature of the problem, the need for action, and the type of action that should be taken. Such differences arise, on the one hand, from uncertainties in the factual knowledge base, and on the other hand, from ambiguities in problem framing, and in the diverse ways in which the nature of the problems are perceived. Assuming that, against the background of 'social characteristics' of environmental issues (van den Hove 2006), competing perspectives are equally rational, value judgements are necessary at all stages of the decision-making process (Rowe & Frewer 2000). From this perspective, participatory approaches not only alleviate the factual knowledge gap but also open up opportunities to co-create knowledge for the identification of sufficient rather than optimal solutions to NRM challenges (Steyaert & Jiggins 2007).

The benefits attributed to participation, broadly defined as the involvement of non-state actors in public decision-making (the term will be clarified in Section 1.3 and further discussed in Chapter 2), are manifold. Depending on the underlying rationale, it is usually argued that participation enhances implementation, for instance by improving trust in public institutions or their decisions, or that public decisions are of a better quality, considering that the views and knowledge of the public were taken into account fostering trust in public institutions (Renn *et al* 1995; Fiorino 1990). Although the debate outlined above echoes some of the arguments by these, let us call them instrumental and substantive rationales – the latter for instance acknowledges that relevant wisdom is not limited to scientific specialists, necessitating the inclusion of

experiences, values and practices of local actors – it identifies social learning as the main benefit of participation.

Social learning, which will be defined in more detail Chapter 2, describes a process of communicative action where multiple actors collectively learn about and understand each others' interests, concerns and preferences through dialogue and deliberation (Röling & Marleveld 1999). Social learning in this sense facilitates the reflection of ones' own views and fosters acceptance towards other stakeholders, their interests and beliefs. These processes open up new opportunities to arrive at a shared understanding of a specific environmental situation and to develop new solutions as well as ways of acting together in pursuit of a shared ambition (Webler *et al* 1995; Pahl-Wostl 2002; Röling 2002). From this perspective, public engagement becomes a transformative tool for social change (Nelson & Wright 1995).

The major claims formulated in the literature for the social learning model are easy to grasp and are certainly alluring when reminding ourselves of the challenges posed by NRM. Yet, one point should be noted: social learning is thought to be a naturally occurring social process which is intensified when stakeholders with different perceptions come together and engage with each other (Mostert *et al* 2007). However, previous experiences show that the benefits associated with participatory processes are not always realised. For instance, Beierle & Konisksy's (1999), report of findings from a survey of 30 individual participation cases clearly shows that whilst some initiatives successfully reduce conflict and increase trust among the involved parties, others had the opposite effect, sometimes even deteriorating relationships and increasing the potential for future conflict. So what have we been doing wrong? Does this mean we have to completely rethink our approaches to participation and change the mechanisms and techniques employed to operationalise the involvement of the public?

A review of the conceptualisation of social learning in the NRM literature (Chapter 2) identifies a number of conceptual weaknesses of the social learning model. First, one of the central claimed benefits of social learning is the development of a shared understanding of environmental issues. Yet, at the same time proponents of participatory approaches acknowledge the co-existence of pluralistic views, assumptions and preferences. It is not unreasonable to suggest that in some situations,

and bearing in mind the complex and often contested nature of natural resource problems, even interaction and communication might not bring competing views together. Second, previous research has shown that learning does not necessarily affect an individual's behaviour and vice versa, people might change their actions for many reasons but not necessarily because they have acquired new knowledge or transformed their views. Third, the social learning model presumes a balance of power as a prerequisite. For instance, open and equitable information sharing is thought to be key to achieving the perceptual changes associated with social learning (Tippet *et al* 2005). However, as Wildemeersch *et al* (1998) note, participatory processes are implicit or explicit processes of negotiation.

It is necessary to address these assumptions underlying the social learning model, especially as research on social learning in the context of NRM in general, and water resources management in particular, is still sparse. Furthermore, the practical consequences of advocating a learning approach to participatory NRM remain somewhat of a mystery. At the moment, there is little empirical research to guide responsible institutions towards specific participation techniques. Moreover, although our experiences with participation now span several decades, our knowledge of the strengths, weaknesses and comparative benefits of different process designs is limited. This is partly due to the fact that the evaluation of participatory processes is one of the least developed areas of the research and practice of public engagement. One of the main problems, though, is that outcomes of public involvement are not only dependent on the engagement process itself but also on the environmental and social context, thereby being influenced by a multitude of interacting variables (Fritsch & Newig 2006). If a better knowledge of the interrelationship between the boundaries of a collaborative process and its outcomes exist, then it may also assist responsible authorities to plan and manage appropriate processes.

To conclude, a review of the scholarship on social learning as an element of participatory NRM available to date exposes a number of weaknesses in the social learning model. These potential limitations and challenges to the extent to which social learning processes can contribute to successful NRM are so far only non-satisfyingly addressed in the still limited and fragmentary empirical research. For instance, power

relationships are largely neglected in contemporary studies of social learning. This thesis explores social leaning in participatory water resources management initiatives to demonstrate the role and impact of social learning in public and stakeholder involvement. Thus, research findings aim to further a critical debate on the role of social learning in participatory processes and provide insight into how the beneficial outcomes of social learning can be realised by planning and managing appropriate processes.

1.3 Aims, objectives and scope of this research

The overall ambition of this study is to analyse the role of social learning in participatory water resources management. More specifically, this thesis aims to develop a better understanding of the conditions under which social learning occurs, and most importantly the dynamics and benefits of social learning by systematically collecting evidence of the processes and impacts attributed to social learning. In support of the research aim, the following objectives were defined:

1. To assess the extent to which operational participatory processes are characterised by processes of social learning, or power relationships.

2. To evaluate the extent to which social learning or power relationships influence agreement and decision-making.

3. To identify how participative techniques influence the learning opportunities in participatory processes.

The thesis evolves around two central themes, namely participation and social learning, and embeds them in the context or water resources management. To clarify the aims, objective and consequently contributions of this thesis, it is necessary to specify the scope of this research.

Section 1.1 briefly illustrated how natural resources management has changed over the last 40 years. For example, water management can be mono- or multi-sectoral, concern

individual rivers or complete river basins. Current thinking and practice is strongly influenced by the principles of IWRM, adaptive water resources management[4] or more generally, sustainable development. Much of the debate on participation, and its capacity to encourage social learning, has been led within these contexts and therefore, although participation and social learning is not exclusive or more important to any of the associated management practices, this research is a direct result and contributor to these approaches to water resources management. Consequently, whilst not advocating any specific management paradigm, such as IWRM, this thesis' understanding of water resources management clearly refers to the more integrated and interactive approaches, as opposed to the traditional understanding which was outlined in the previous section.

Participation, the involvement of non-state actors in public planning and decision making, refers to a multitude of different approaches, methods and levels of involvement. Here, it is used "to denote a process by which individuals and groups come together in some way to communicate, interact, exchange information, provide input around a particular set of issues, problems, or decisions, and share in decision-making to one degree or another" (Ashford & Rest 1999, III-3). This consideration excludes processes which are aimed at providing information to or obtaining information from the public as these one-way flows of communication are assumed not to provide the necessary setting for social learning among the involved actors. This rationale will emerge more prominently in Chapter 2. Traditionally, these more interactive types of participation were limited in the water sector. Due to the implementation of the European Water Framework Directive (Directive 2000/60/EC, WFD), today, the single most important piece of water legislation in Europe, stakeholders are increasingly involved in RBM planning. It should be noted that, although the guidance document on public participation (in relation to the WFD) recognises the multiple benefits of stakeholder engagement, the importance of adopting

[4] Adaptive management is based on the premise that the human ability to fully capture the properties and dynamics of ecosystems is limited. Adaptive management proposes to formulate management policies and practices as experiments. Thus, it views management not only as a way to achieve objectives, but also as a process for probing to learn more about the resource or system being managed (Lee 1999).

'a learning approach' to RBM, where resource managers and stakeholders learn about and debate each others views, concerns and goals, is considered key to a successful implementation of the WFD (Working group 2.9 2002). The provisions of the WFD request the information, consultation and 'active involvement' of stakeholders and the public in the RBM planning process. Whilst information and consultation procedures are (to some extent) defined by the text of the directive, the term 'active involvement' lacks further specification. However, this provision is widely interpreted to require continuous and interactive fora for stakeholder engagement and, indeed, has resulted in the establishment of stakeholder panels of different designs across Europe. This thesis will focus on these participatory platforms. The terms participation, involvement and engagement will be used interchangeably throughout this thesis.

The term 'stakeholder' requires further clarification. The literature frequently distinguishes between *public* and *stakeholder* engagement. Although these terms are not used consistently, the public usually denotes a collection of unorganised individuals and groups (different publics) (Ashford & Rest 1999). S*takeholders* refers to the representatives of organised interests, who are affected by a planning process or might have an influence on the decisions guiding such processes or the implementation of their outcomes (Huitema & van de Kerkhof 2006). In this thesis, the theoretical engagement with the participation literature refers to public involvement in general. However, the empirical research clearly focuses on what would generally be considered stakeholder engagement, if a distinction has to be made. Reasons for this lie in the interpretation and practical implementation of the WFD, where 'active involvement' addresses 'interested parties' which are understood to be organised interests as opposed to members of the public (ibid.; see also the brief review of participation practices in Germany, the UK and Ireland in Chapter 4 and 5 respectively).

Social learning will be described in more detail in Chapter 2. Yet, to clearly define the scope of this research it is necessary to understand that social learning – within the context of natural resource management – is understood to occur through interaction and communication. Learning eventually leads to a number of outcomes, or better changes in the social, cognitive or emotional competencies of actors. These changes in turn influence the more substantive outcomes of the participatory process, namely in

decisions which are characterised by a high level of agreement. Further to these immediate impacts, learning processes are thought to have wider implications for management practices or institutional change. This research will analyse the presence or absence of social learning in stakeholder interactions as well as their influence on a stakeholder group's ability to develop a shared understanding of environmental issues and possible actions. Their wider influences such as long-term behavioural or institutional changes, will not be addressed.

Finally, the investigation of social learning will focus on learning between stakeholders rather than between experts, agencies and stakeholders. The reason for this lies in the organisation of current participation practices and the integration of stakeholder processes in public decision-making (particularly in the context of the WFD). As suggested in Section 1.1, the debate on learning in natural resource management identifies a need to organise natural resource management as a collective learning process. Yet, current practice shows that although participation is becoming more interactive, it is still very much about stakeholders meeting and communicating as a means to inform NRM rather than guiding the planning effort. Agencies and experts usually remain outside of the participatory process, 'feeding' the stakeholders with input and relying in return on their feedback, recommendations and decisions as a group representing a stakeholder perspective. Against this background, this thesis will primarily focus on stakeholder learning, their interactions, and decisions.

1.4 Research approach

This study employs a sequential mixed methods research design which comprises three main research phases (see Table 1-1): In the first phase, a multiple case study strategy was carried out to analyse and explore social learning in two participatory RBM initiatives, the Regional Water Council Emsbach-Mittlere Lahn in Germany and the Anglian River Basin District (RBD) Liaison Panel in the United Kingdom. The aim of this activity was to collect evidence which would substantiate, contradict and eventually expand the social learning model outlined in the literature. Data was collected using partially identical pre-test and post-test questionnaires. These were administered to stakeholders participating in these initiatives which allowed for the collection of both quantitative and qualitative data. Insights gained through the preliminary analysis of

case study data highlighted the intricate relationships between process format and learning outcomes, prompting a second research activity.

Table 1-1: Overview of the adopted research approach and cases investigated in this study

Research phase 1				
Research strategy	**Case(s)**	**Scale**	**Actors involved**	**Research methods**
Case studies	Regional Water Council Emsbach-Mittlere Lahn (Germany)	Small sub-basins	20 members: agriculture, environment & nature conservation, business & industry, water supply, wastewater treatment, hydropower, angling, tourism, local authorities.	Data collection: Interviewer-administered (pre- & post-test) questionnaires Data analysis: Descriptive numeric & content analysis
	Anglian RBD Stakeholder Liaison Panel (UK)	RBD	15 members: Environment Agency, Regional Assemblies, Regional Development Agencies, Local Authorities, Natural England, the Internal Drainage Boards, National Parks, water companies, environmental NGOs, farming, business & industry, ports, extraction & minerals, consumers, angling.	
Research phase 2				
Research strategy	**Case(s)**	**Scale**	**Actors involved**	**Research methods**
Postal survey	Working Groups Schleswig-Holstein (34) (Germany)	Small sub-basins	8 to 10 members: local authorities, water user associations, agriculture, fisheries, local and regional environmental NGOs, regional water authorities.	Data collection: Postal self-administered questionnaire Data analysis: Statistical & content analysis
	RBD Advisory Councils (3) (Ireland)	RBD	Varies between 24 to 48 members: local authorities, farming, environmental NGOs, business and industry, academia, recreational users/fishing, consumers.	
Research phase 3				
Integration & interpretation				

During the second research phase, stakeholders participating in two different types of participatory initiatives, one consultative and one interactive process, were surveyed on their learning experiences. Selected engagement initiatives included the Working Groups established to support WFD implementation in the German state of Schleswig-Holstein and the RBD Advisory Councils which were set up for the same purpose in Ireland. The main assumption underpinning this research was that if systematic differences exist in the extent to which these types of participation facilitate social learning, it should be possible to detect such differences through empirical analysis.

Given the complexity of the phenomenon under investigation and the limited evidence-based knowledge found in the current literature, this approach proved useful in confirming findings from phase one with the results of phase two, thus providing a more comprehensive analysis of the role and impact of social learning in participatory NRM. Following the completion of both field work activities, findings from the case studies and survey were synthesised and discussed within the context of the research questions and existing knowledge (Phase 3).

1.5 Significance of the study

This thesis contributes to the theoretical debate about social learning in participatory water resources management and NRM in general, as well as the practical design of the same by investigating social learning both at a theoretical and empirical level. At present, theoretical approaches draw from a multitude of theories and concepts when describing social learning for NRM. An unambiguous, agreed upon definition is still missing. By engaging with the relevant literature, origins, underlying assumptions and key features of social learning in participatory NRM are traced and identified. Thus, this work contributes towards the development of a more coherent conceptualisation of social learning for participatory NRM.

The research is undertaken with stakeholders involved in various engagement activities forming part of the implementation of the WFD in the UK, Ireland, and Germany and expands the still limited empirical knowledge base on social leaning in stakeholder interaction. By systematically evaluating various forms of stakeholder involvement, links between specific process designs and learning outcomes can be established. This helps to specify those situations and collaborative approaches which are more likely than others to foster learning. By the same token, the results provide much needed insight into the limitations and challenges of learning-oriented stakeholder engagement by providing an indication of the resources and efforts needed to facilitate learning. Understanding the potentially high costs and long time-scales necessary to realise the expected learning benefits of NRM, is crucial for any authority planning engagement strategies. Thus, the thesis results contribute towards developing a better understanding of when collaborative learning processes are appropriate or a mix of complementary approaches should be used.

Finally, on a more general level, the thesis furthers a more critical debate of the role of social learning. Whilst participation is certainly a means to encourage learning between public institutions and citizens and key to identifying adequate responses to water resources challenges, results highlight that other approaches and practices still have a role to play, if the goal is to affect behavioural and social change.

1.6 Structure and overview

This thesis is organised in seven chapters. This Chapter has highlighted the importance of, and reasons for, investigating social learning processes in participatory water resources management. Based on this problem description, the aims, objectives and scope of the study were outlined.

The thesis is concerned with two key themes, participation and social learning within the context of NRM, and water resources management in particular. Chapter 2 reviews how these themes were theoretically and empirically approached and identifies gaps in current thinking and practice. These knowledge gaps inform the specification of a set of research questions which guide the empirical research process.

Chapter 3 outlines the mixed methods strategy of inquiry which was adopted in order to conduct a comprehensive analysis and to better understand the multi-faceted nature of social learning stakeholder involvement. Individual field research activities as well as methods for data collection and analysis are outlined.

Chapter 4 and 5 present the results of the empirical research activities. Chapter 4 presents the case studies which were carried out to explore social learning in two participatory river basin management processes, one in Germany and one in the UK. Findings of a survey of stakeholder involvement activities in Germany and Ireland are reported in Chapter 5.

Chapter 6 discusses the key results generated by the thesis, followed by Chapter 7, which presents the main insights gained from this thesis as well as their implications for research and practice.

CHAPTER 2: LITERATURE REVIEW

Chapter 1 outlined the main theme of this research: social learning is increasingly cited as an essential element of and motivation for participatory NRM. However, even though learning is implicit in many participatory processes and methodologies there are few practical examples that specifically refer to social learning and only limited evidence is available that would validate the assumptions underlying the concept of social learning. Yet, understanding the dynamics and limitations of and conditions under which social learning occurs is crucial if we hope to meet contemporary and future NRM challenges by establishing participatory learning platforms.

Section 2.1 will expand the main argument presented in Chapter 1, namely that an increased awareness of the complexity and uncertainty characterising water resources management challenges, and NRM in general, results in an emphasis on participatory approaches to water resources management, a trend which be illustrated using the WFD as an example. It will be argued that this shift in management practices is motivated by a need to strengthen processes of social learning between citizens, experts and authorities in an attempt to formulate adequate responses to constantly evolving water resource problems, enable collective action and ultimately affect social change.

Section 2.2 will introduce the central theme of this review, learning and social learning in particular. The following key questions will be addressed: What is social learning, what processes does it entail and what is actually learned? How is social learning conceptualised in the context of NRM? Why is social learning considered to be particularly relevant or useful to participative NRM or better, how useful is participative NRM in fostering social learning? Based on an assessment of the claims and existing evidence provided for social learning in participation and NRM, strengths and weaknesses of current thinking and practice are identified. Against this background, the final section of this Chapter formulates a set of research questions guiding the inquiry.

2.1 Water resources management and participation

In the past two decades we have witnessed an increasing trend towards integrated and interactive water management, best illustrated by the European Water Framework

Directive. The WFD promotes a multi-sectoral approach, in which the environmental, economic and social functions of water are considered in a coherent way. RBM plans and programmes of measures are the central strategic instruments to achieve the overarching objective of securing 'good water status' for all European waters by 2015. Although 'nowhere near the ideal of interactive water management or self management' (Huitema & van den Kerkhof, 2006, p. 270), the WFD places participation at the heart of the planning process and considers it key to the success of the directive (WFD, Preamble 14). Whilst information and consultation procedures are clearly defined by the WFD's provisions, and are in fact an established feature of many, not just water related planning procedures across Europe, the term 'active involvement' promotes a form of participation which is novel to many countries' water management regimes. A plethora of conceptualisations, rationales, methods and mechanisms populate the theoretical debate about and practical approaches to engaging citizens in public decision-making. This section briefly discusses the multifaceted nature of participation, its proclaimed benefits, and the many ways in which participation is operationalised to provide a clear distinction between approaches and their underlying rationales. Against this background, the remainder of the section addresses the question of why the WFD establishes participation at the core of its RBM planning process, which, as has been stated earlier, is representative of a worldwide trend towards interactive water resources management.

Public participation is a multi-layered concept, the definition and scope of which is open to debate. Broadly defined, participatory approaches are institutional arrangements where stakeholders of different types are brought together to be involved, in a number of different ways, or at a number of levels, in some stage or the whole planning and decision-making processes (Rowe & Frewer 2004). Or simply put, participation refers to the involvement of groups or individuals in the decision-making process who are external to the formal administrative or government body (van den Hove 2006). The arguments, expectations and hopes associated with increased involvement of the public vary as do the mechanisms and methods to achieve such involvement. Apart from a normative commitment to pursuing democratic ideals of legitimacy, transparency and accountability, the debate on public participation is dominated by two rationales: the first advocates the view that engaging the public can enhance the public's acceptance of

potentially unpopular decisions, improve trust in public authorities and help to implement decisions, whilst an alternative argument posits that participation produces better decisions by enriching the decision-making process with relevant viewpoints, interests and information about the issue that could not have been generated otherwise (Renn *et al* 1995; Fiorino 1990).

Regardless of the underlying rationales, participation is often conceptualised along a decision-making continuum, a view which goes back to Arnstein's (1969) ladder of participation, where each rung presented a different degree of public involvement. Arnstein considered true participation only to start at the higher rungs of the ladder, when the public is empowered to influence decisions. Yet today many authors and practitioners adopt a more pragmatic view and link different participation levels, such as information, consultation, participation, collaboration or partnerships to specific goals and methods (Borrini-Feyerabend 1997; Creighton 1999; Buchy & Hoverman 2006). The important point to note is that there is no agreed 'best' level of participation meaning that participation mechanisms should be tailored to the specific needs and objectives of each context (Kessler 2004). Rowe & Frewer (2000) suggest that knowledge based decisions will require lower levels of involvement, whereas value-based decision will require deliberation and discussion.

Against this background, the distinctions between the types of participation promoted by the WFD are more easily understood. To recap, the regulations of the WFD require the competent authorities to inform the public about the RBM process, for example through the means of websites, brochures, press releases etc, whilst consultation procedures, including public hearings, survey or web-base consultations, aim to ensure that the public's knowledge and information is made available to the authorities. Active involvement, although open to interpretation by the competent authorities, is located toward the interactive end of the decision-making continuum and therefore advocates mechanisms, such as stakeholder panels, consensus conferences or citizen's juries, which facilitate deliberation between authorities and the public. And this shift towards higher degrees of involvement is not exclusive to the WFD as the growing literature on participatory watershed management illustrates (Johnson *et al* 2001; Sabatier *et al* 2005).

After having established that recent approaches to participation in water resources management promote interactive forms of involvement, the question of why public participation plays such central role in a policy field with strong traditions in the technical and engineering sciences arises. One could argue that it is a reflection of a growing consensus between policy makers, regulators, experts and public interest groups of the importance of involving the public in decisions that affect them (Abelson *et al* 2003). Or to cite Bulkeley & Mol (2003): "increasingly, non-participatory forms of policy-making are defined illegitimate, ineffective and undemocratic, both by politicians and stakeholders themselves" (p. 144). Indeed, since the inclusion of participation as one of the key principles of the Rio Declaration in 1992 (United Nations 1992), public engagement has become a prominent feature of many NRM initiatives. With the expanding influence of the IRWM concept on current thinking and management practice since the 1990s (Biswas 2004), participation has been recognised as integral to water resources management.

Using the example of the WFD again, we see that many of the arguments for including the public in water management (as they are stated both in the text of the WFD as well as the supporting guidance documents, specifically the guidance document on public participation) echo the instrumental and substantial rationales which still dominate the participation debate (see above). The document specifically states that "public participation is not an end in itself but a tool to achieve the environmental objectives of the Water Framework Directive" (Working group 2.9 2002, p. 6). Participation is thought to both enhance the quality of decisions, e.g. by contributing local knowledge, as well as their implementation by increasing environmental awareness, acceptance and conflict resolution as part of the planning and decision-making process (Newig 2007).

Yet, the guidance document (Working group 2.9 2002) also reflects arguments found in the current debate on water resources management which point beyond these well-known rationales for engaging the public by re-conceptualising participation as a tool for collaborative learning and social change. Indeed, the document stresses that it is the responsibility of the competent authorities to ensure *"that public participation becomes a way of learning about each others perspectives, views and knowledge, thereby*

providing the basis for negotiation between stakeholders about how to best implement the directive" (p. 50 f.).

It has already been noted in Chapter 1 that there is a growing consensus that water resources management, like sustainable management more generally, is a complex and 'messy' problem, i.e. temporal and spatial scales are large and uncertain, views on goals and priorities vary among actors, and the impacts of resource use are open to debate (Lachapelle *et al* 2003), which demands interaction and opportunities to learn. The reasoning resulting in this stated need evolves around the following interrelated arguments. Firstly, the ambition of many new approaches to water resources management to follow the principles of IWRM or, on a more general level, sustainable development, are confronted with the difficulty of filling an often ill-defined framework with substance. Even the WFD, despite its seemingly exhaustive provisions, clearly emphasises procedural elements and management principles, leaving plenty of room for interpretation and concretisation, starting with the definition of objectives. Yet, multiple and often conflicting conceptualisations of environmental problems and the desired state of a natural resource means that the views on what should be achieved, what is appropriate or sustainable vary (Ison *et al* 2007).

Second, and following on from the point just made, problems are always open to interpretation. The growing awareness of the complexities and uncertainties involved in NRM (see Chapter 1) prompts many authors to abandon the positivist paradigm which posited that the world could be described in universal, context-free laws. Today, knowledge and understanding are believed to be socially constructed, meaning that what each of us knows directly results from our own unique contexts, assumptions and experiences. Therefore, no single 'correct' or 'legitimate' view of the world exists (Pretty 1995). Thus, water resources management requires individuals to learn about different perspectives and views, and construct a shared understanding of environmental situations in the search for appropriate solutions (Woodhill 2004).

Third, it is now widely acknowledged that our ability to fully capture or predict the complex relationships within and between natural and human systems and its rapidly evolving boundary conditions, such as climate change and the globalisation of markets, to name just two, are limited. Thus, uncertainties and the need to constantly re-interpret

what we know, or think we know, are at the core of responding to NRM challenges. Against this background, institutional arrangements which enhance our capacities to collectively learn about these changes, our experiences, and transform existing practices is key to NRM (Pahl-Wostl 2006). It should be noted that this is a central argument in the literature promoting the concept of adaptive management.

Finally, by emphasising the relationships between water systems as part of the broader natural and socio-economic environment, we are acknowledging that a multitude of actors interact with, affect and are affected by the system or any changes to it. Managing these complex systems requires change, not only in how we approach this challenge but also in the day-to-day practices of resource users. The implementation of policies or measures, and specifically of the RBM plans as outlined by the WFD, will require action by actors across different spatial scales. Such 'concerted action' and behavioural change relies on the capacities of participatory initiatives to facilitate the necessary learning processes (Woodhill 2004).

Hence, increasing calls for the participative management of water resources suggests that many of the established assumptions of traditional management approaches, namely that water resource problems can be accurately defined and resolved through appropriate technologies or regulations, are being dismissed. Understanding water resources management as a social and political process rather than a technical problem demands collaborative initiatives which allow for processes of social learning among policy makers, scientists and the public. Having established that the motivation for the participative management of water resources has shifted from ensuring democratic representation to providing opportunities for social learning, Section 2.2 will now explore the different perspectives on social learning and associated claims and benefits in the context of participatory water resources management.

2.2 Social learning in participatory water resources management

Learning is, regardless of the underlying theories and assumptions, essentially about change, more specifically the "act or process by which behavioural change, knowledge, skills, and attitudes are acquired" (Knowles *et al* 2005). Views on how we learn, why, and how change manifests itself, vary considerably. This section presents a review of

social learning theories in order to better understand how social learning, constituting processes and learning outcomes are conceptualised in the context of NRM. This is followed by an analysis of the evidence substantiating the social learning model and its potential role in NRM.

2.2.1 From learning to social learning

What learning is and how humans learn are difficult questions to answer. Not only is there a number of theories describing a variety of learning processes, there is also no unified view of the changes which these processes stimulate. Especially in the 1960s and 1970s learning was defined as a change in behaviour. Behaviour was seen as the observable, measurable indicator for learning, encompassing all the responses, reactions or movements by an organism, person or animal in any situation (Hergenhahn & Olson 2001). However, the view that learning results in a change of behaviour can be challenged in two ways: (1) not all changes in behaviour result from learning based experience. For instance, conditioning may result in a change in behaviour but may not involve drawing from experience to generate new knowledge; (2) a change in beliefs, attitudes, and intentions resulting from new experiences involving learning does not necessarily lead to a change in behaviour. For a long time it had been assumed that there exists a close link between attitude and behaviour. However, when researchers tested this assumption, they concluded that attitudes alone cannot be used to predict behaviour (Ajzen & Fishbein 1980). Furthermore, learning encompasses a number of possible change processes, including (1) acquiring information and increasing knowledge, (2) memorising, (3) acquiring facts, skills, and methods, (4) making sense or abstracting meaning, and (5) interpreting and understanding reality in a different way by reinterpreting knowledge (Saljö 1979).

The complexity of the challenges posed by the desire to understand the learning process is reflected in the existence of numerous models and theories of learning. They all reflect different underlying assumptions about the nature of learning and knowledge and are overtly selective in their choice of a specific focus on learning. Therefore, learning theories should not be regarded as right or wrong; they are more complementary than competitive. What distinguishes them are the learning contexts and motivations for learning. Whilst many social-psychological models adopt an individual based

perspective on human behavioural development (e.g. Rational Choice Theory, Homans 1961; Self-Perception Theory, Bem 1972; Reinforcement theory, Skinner 1973; Expectancy-Value Theory, Ajzen & Fishbein 1980), social learning theory adopts a more dynamic view that emphasises the interaction between individuals and their environment. van der Veen's (2002) categorisation of learning theories into three 'orientations of learning', namely reproductive, communicative and transformative, is very helpful in understanding the differences between these views.

Reproductive learning theories, best illustrated by behaviourism, essentially conceive learning as the process of acquiring a skill or knowledge. Behaviourism, with its main proponents Watson (1913) and Skinner (1973) assumes that learning starts with a particular need, for example the need for food. This need is seen as a stimulus for learning, and the learning individual responds by trying to fulfil this need. Responses which lead to the fulfilment of the need reinforce a particular response, and the reinforcement eventually leads to the repetition of successful behaviour. As will be shown below, early theories of social learning (for example Miller & Dollard 1941) similarly view learning as means to develop new skills and behaviours. Theories of communicative learning emphasise the process by which we learn, namely through interaction with others. van der Veen (2002) emphasises that communicative learning is thought to be dominant in complex situations, where one cannot rely on existing knowledge or skills to adequately respond to the problem at hand. Group learning thus allows to construct 'an inter-subjective understanding of the subject' and to generate insights and solutions that no individual had previously thought of. Embedded in communicative learning, are processes of transformative learning where individuals gradually change their views of their surroundings and themselves. Like communicative learning, these perspective transformations are thought to occur in situations where individuals are presented with 'dilemmas' or 'anomalies' which prompt critical reflections of their knowledge and experiences, in turn resulting in changes to their perceptions and consciousness (van der Veen 2002; Armitage *et al* 2008). Transformative learning involves a shift in cognitions or cognitive structures which are

best described as a large and intricately linked series of associations among words or concepts. When presented with new information, cognitive theorists, such as Piaget (1969)[5] posit that cognitive structures change through processes of adaptation: assimilation involves the interpretation of events in terms of existing cognitive structure whereas accommodation refers to changing the cognitive structure to make sense of the environment. These individual changes are mediated through our interactions with the outer world. However, it is important to understand that whilst communicative learning can facilitate perspective transformations, they do not automatically follow a communicative learning process (van der Veen 2002). These distinctions in how different theories conceptualise the learning process, both in terms of how and what is learned, provides a useful foundation to now examine in more depth theories of social learning.

Social learning theory has its roots in different learning theories and social science disciplines. On a psychological and pedagogical level, the first attempt to define the term and expound a theory was provided by Miller and Dollard in 1941. They suggested that individuals observe the behaviour of others, transform it into cognitive representations and execute the behaviour if it is associated with benefits, rewards or any incentives (Miller & Dollard 1941). Miller and Dollard's work initiated a flood of social learning theories, among which that of Bandura (1977) is considered to be the broadest and most comprehensive (Kihlstrom & Harackiewicz 1990). Bandura's theory of social learning highlights the importance of observing and modelling the behaviours, attitudes, and emotional reactions of others. In 1986 Bandura introduced a revised model of social learning which he deliberately renamed as 'social cognitive theory' to distance it from earlier theories and to emphasise the role of cognition. Human behaviour is explained in terms of continuous reciprocal interaction between cognitive, behavioural and environmental influences. Through feedback and reciprocity, reality is

[5] Piaget published his first theory on the cognitive development of children in 1926, which he continued to develop and revise.

perceived through the interaction between the environment and one's cognitions (Bandura 1986). Individuals are seen both as products and producers of their own environments and of their social systems. Self-regulatory and self-reflective mechanisms enable individuals to control their actions, reflect on their behaviour, beliefs and values and adapt cognition and behaviour accordingly (Kihlstrom & Harackiewicz 1990).

Authors from the domains of human resources and knowledge management have extended the sphere of application for social learning beyond the psychological level to investigate how groups (Davis & Witte 1996; Baron *et al* 2003) and social organisations (Argyris & Schön 1978; Lave & Wenger 1991; Argyris 1993) learn through interaction and collaboration. Lave & Wenger (1991), for instance, place strong emphasis on learning through interaction with others in their theory of situated learning. They define learning as social participation, which leads to shared knowledge and understanding of the world. Participation in this sense refers not just to local events of engagement in certain activities, but to a more encompassing process of being active participants in the practices of social communities and constructing identities in relation to these communities. This understanding of participation implies that it shapes not only what we do, but also who we are and how we interpret what we do. According to Wenger (1998) we all belong to 'communities of practice', for instance at home, at work, or in our hobbies. From this perspective, individuals learn through engaging in the practices of their communities, providing communities with new members and refined practices.

Similar models are proposed by social cognition theorists (e.g. Salomon 1993; Jacobson 1996; Fox 1997); Salomon (1993) states that:

> *"[…] once human behaviour is examined in real-life problem-solving situations and in other encounters with the social and technological surrounds, a rather different phenomenon emerges: People appear to think in conjunction or partnership with others and with the help of culturally provided tools and implements. Cognitions, it would seem, are not content-free tools that are brought to bear on this or that problem; rather, they emerge in a situation tackled by teams of people and the tools available to them" (Salomon 1993, p. xii f.).*

Through engaging with each other, different perspectives are likely to adapt to each other, thus perhaps coalescing into shared or complementary perspectives. Jacobson

(1996) states in his theory of situated cognition that cognition is not solely an internalised, psychological process, but is essentially context-dependent and interactive. He further claims that in order to learn, one has to become embedded in the culture in which the learning and the knowing have a meaning. Jacobson suggests that knowledge is something that exists in interactions among individuals and the context in which it takes place.

Earlier, the question of what social learning is, what it entails and what is learned was posed. This rather short review clearly illustrates the breadth of theories attempting to explain how humans learn from and with their environment. They describe different forms of social learning, where individuals act as observers or actively engage in communication and interaction. These theories also have a different understanding of the changes taking place: to some extent (a la Miller & Dollard) they all describe learning as a cognitive process, but whereas classical social learning theory emphasises behavioural changes, more recent theories of situated learning and cognition emphasise the generation of knowledge, and changes in beliefs and attitudes. They adopt a social constructivist point of view and stress the creation of shared knowledge and development of a common social reality. It is difficult to derive from these numerous models and theories one definite answer to the questions posed at the start of this paragraph, there are no right or wrong learning theories, only different assumptions about the nature of learning. Nevertheless, this review provides a foundation for the following section, which will identify how these theories and concepts have been exploited in the context of participatory NRM processes.

2.2.2 Conceptualising social learning for natural resource management

Unsurprisingly, the literature dismisses Bandura's theory of social learning as too narrow to capture all the learning processes that are considered relevant to participatory water resources management (Pahl-Wostl 2002). In fact, many authors in the context of NRM and public participation interpret social learning as emerging from the communicative (e.g. Situated learning, Pahl-Wostl & Hare 2004) and transformative

learning traditions (e.g Double and triple loop learning and experiential learning Maarleveld & Dangbégnon 1999, 2002; Pahl-Wostl 2002, Dougill *et al* 2006)[6].

Communicative and transformative learning are thought to be especially relevant in the context of wicked problems (Rittel & Webber 1973) where there is no clear knowledge, or perhaps there is conflicting knowledge, available about the nature of the problem or the best solution. When faced which such a dilemma, one cannot rely on established knowledge which eventually leads to critical reflection and perspective transformations. The theory of single and double loop learning, for instance, claims that double loop learning corrects errors by examining the underlying values and policies whereas single loop learning only corrects errors by changing routine behaviour (Argyris & Schön 1978). Experiential learning, most prominently promoted by Kolb (1984), describes how concrete experiences lead to reflection which in turn leads to abstract conceptualisations, for instance the development of new ideas. These then have to be tested in practice, which leads to new concrete experiences. Both theories describe iterative processes of assimilation, referring to the interpretation of events in terms of existing cognitive structures, and accommodation, the modification of the cognitive structure to make sense of the environment (van der Veen 2002).

Furthermore, the discourse on, and understanding of, social learning in participatory NRM not only draws from theories of communicative and transformative learning, but also employs other theoretical concepts. Leeuwis & Pyburn (2002) state that social learning has intertwined with related ideas such as adaptive management and soft systems thinking (see also Röling & Maarleveld 1999). Keen *et al* (2005) specifically refer to these concepts and even consider adaptive management as one approach to social learning. This linkage between the means and process of change is best illustrated by the model of social learning proposed by Pahl-Wostl & Hare (2004). Their framework embeds social learning in the socio-ecologic system where the outcomes of a

[6] It should be noted that these references indicate the authors who have used the respective learning theories in their conceptualisation of social learning; the development of these theories is not attributed to them.

participatory management process are of a technical and relational nature. These outcomes feed back into the adaptation of governance structures and influence intervention mechanisms and ambitions. They state that "Social learning is an iterative and ongoing process that comprises several loops and enhances the flexibility of the socio-ecological system and its ability to respond to change" (Pahl-Wostl & Hare 2004, p. 195). In summary, theorists draw from a wide variety of models and concepts in describing social learning within a participatory planning context (see Table 2-1).

Table 2-1: Theories and concepts associated with social learning in participatory NRM processes

	Communicative learning	**Transformative learning**	**Associated concepts**
Theories	Situated learning (Lave & Wenger 1991); Theories of situated cognition (Jacobson 1996; Fox 1997; Salomon 1993)	Experiential learning (Kolb 1984); Double-loop learning (Argyris & Schön 1978)	Adaptive management (Holling 1978) A guiding principle for the design of the interface between society and biosphere. It stresses the need for flexible and diverse regulation enabling change and corrective action. Soft systems thinking (Checkland & Scholes 1990) Soft systems thinking stresses the link between humans and their environment. It aims to gain insights into the whole by understanding the linkages and interactions between the elements that comprise the whole system.
View of the learning process	Learning is framed as increasing participation in communities. Individuals acquire 'meaningful' knowledge through relationships. People think in conjunction or partnership with others.	Critical reflection and perspective transformation in disorienting situations; learning through accommodation.	
Locus of learning	Co-participation; social relationships; internal construction of reality by individual.	Internal construction of reality by individual; internal transformation of perspective of individual.	
Purpose of learning	Construct knowledge; move from multiple to shared cognition.	Create more inclusive views of the world and oneself; erase distortions in thinking.	
Manifestation of learning	New knowledge, perspective transformation.	Perspective transformation.	

(adapted from van der Veen 2002)

Despite the lack of a coherent theoretical foundation and a clear definition, a common understanding of the process social learning entails, its outcomes and contributions to NRM emerges from the literature. At the core of these models is a process of collective and communicative learning which may lead to changes in interrelated dimensions,

including one or more of the following: socio-relational changes[7] (e.g. trust and relationships), cognitive changes (e.g. the generation of new knowledge and the transformation of views), emotional changes (e.g. empathy for the concerns of others), and changes in the skills and technical competencies of the involved actors (e.g. conflict behaviour). These may form the basis for and enhance actors' capacities to reach a common understanding of the system or problem at hand, agreement and collective action (Maarleveld & Dangbégnon 1999; Röling 2002; Woodhill 2004). Special reference is often made to Habermas' theory on communicative rationality (Röling & Marleveld 1999). In his inter-subjectivist paradigm of communicative action, Habermas (1987, p. 206) states that "the paradigm of the knowledge of objects has to be replaced by the paradigm of mutual understanding between subjects capable of speech and action". It follows that participants in interaction "[…] coordinate their plans for action by coming to an understanding about something in the world" (ibid. p. 298). Webler *et al* (1995) for instance stress that the crucial point of social learning in a participatory setting is when the group transforms from a collection of individuals pursuing their private interests to a 'community' which defines a common purpose and is oriented towards shared interests.

The NRM literature clearly refers to social learning as a collective process. In contrast to the theories presented in the previous section, where early theories described social learning in terms of learning *from* each other, here, there is an unambiguous emphasis on learning *with* each other. One feature which is specific to this body of literature's conceptualisation of social learning is the notion of social or collective action which is best described as the action of a group of people who share an interest and who take common action in pursuit of that shared interest (e.g. Meinzen-Dick *et al* 2004). Social learning is therefore not only seen as a prerequisite for individual behavioural change but also for collective action. It was previously pointed out that the complexity of sustainable development requires new approaches to solving societal problems and that

[7] Some authors refer to socio-relational outcomes as social capital (e.g. Rist *et al* 2006).

social learning might be the key to behavioural and eventually social change. What seems to make the social learning model even more appealing is the prospect of not only changing the behaviour of individuals but also enabling collective action. Pahl-Wostl (2006) explicitly stresses that it is assumed that social learning not only remains in the cognitive realm. Figure 2-1 presents a compound model of social learning which captures the major claims made for the model in the literature and illustrates the links between the individual components of the model. It should be noted, though, that this understanding of social learning processes is specific to NRM and is not necessarily pertinent to other contexts or problem domains.

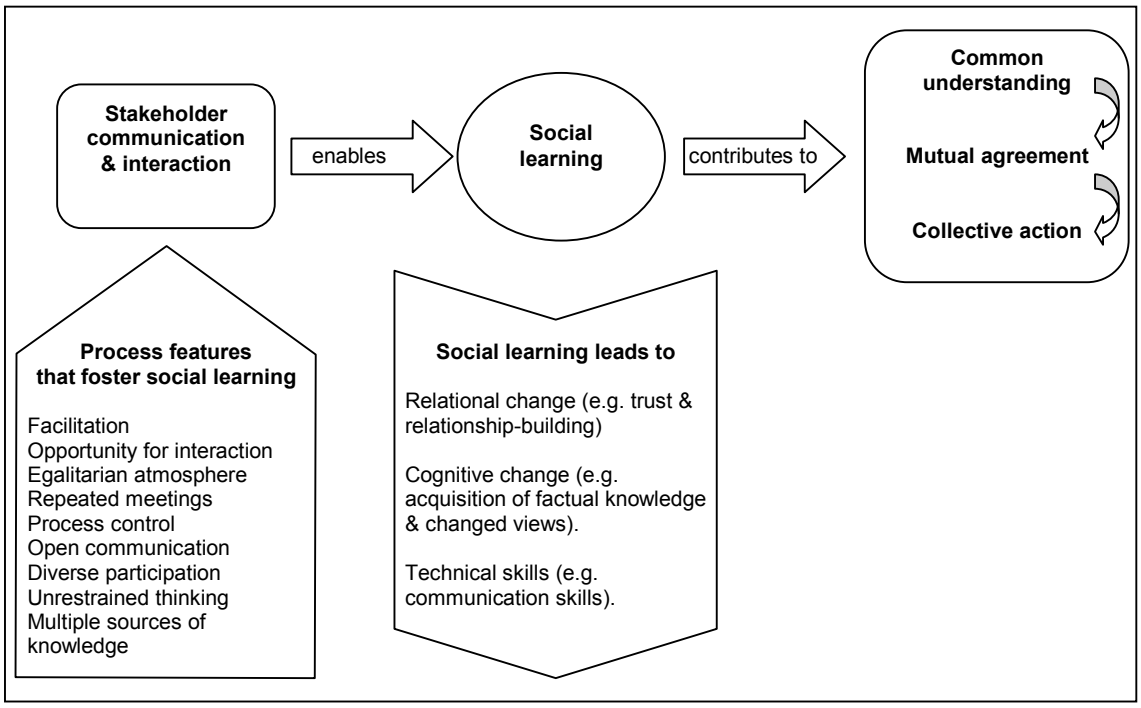

Figure 2-1: A compound model of social learning drawn from literature

2.2.3 Learning through participation?

Much has been written about the benefits of participation, and few would argue its importance for NRM, or public decision-making in general. Yet, many would agree that, despite acknowledging that participation is a 'good' thing, its success is less evident, as will be illustrated in this section. Despite a widening call for the adoption of a social learning approach to NRM, evidence substantiating the main claims put forward in the literature remains limited. This section reviews the evidence provided by previous empirical research investigating the social learning model and its central assumptions as they are presented in the literature (Table 2-2). These studies provide key reference

points for the results reported in this inquiry in Chapters 4 and 5 and are also central to the development of the research methodology outlined in Chapter 3. It should be noted that the number of studies investigating aspects of participatory or stakeholder processes which can be linked to processes of social learning far exceed this overview. Where appropriate, insights from other studies or fields of research are referred to in order to enrich this overview and the subsequent discussion.

Table 2-2: Studies of social learning in participatory processes

Reference	Definition of social learning	Components / dimensions of social learning evaluated	Application
Webler *et al* (1995)	Social learning refers to the process by which changes in popular awareness and changes in how individuals see their private interests linked with the shared interests of their fellow citizens.	• Cognitive enhancement: acquisition of knowledge as well as learning about collective values and preferences, and the subjective impressions and feelings of others; • Moral development: interest in the common good; • Features / methods of participation process.	Cooperative discourse on the siting of waste disposal facilities in a Swiss Canton.
Daniels & Walker (1996)	Social learning is the process of framing issues, analysing alternatives, and debating choices which enables constituencies to reflect on their own and others' values, orientations, and priorities in the context of inclusive deliberation.	• Understanding of the management situation; • Relationships; • Preferences concerning processes for achieving project goals; • Features / methods of participation process.	Collaborative learning workshops conducted as part of a land management planning process in the US.
Saarikoski (2000)	Collaborative learning is a process where parties learn about the policy goals, alternative strategies and their consequences, and learn to understand better their own beliefs, values, hopes, and fears and those of others.	• Understanding of the management situation; • Learning about one's own and others' values, beliefs and preferences.	EIA for a waste management strategy in Finland.
Schusler *et al* (2003)	Learning that occurs when people engage one another, sharing diverse perspectives and experience to develop a common framework for understanding as basis for joint action.	• Acquisition of factual knowledge; • Understanding other participants; • Discovering areas of agreement, disagreement; problems and opportunities; • Learning about community capacity; • Identification of common purpose; • Features / methods of participation process.	Search conference for planning for a wildlife management area in North America.

Table 2-2 (continued): Studies of social learning in participatory processes

Reference	Definition of social learning	Components / dimensions of social learning evaluated	Application
Pahl-Wostl & Hare (2004)	Social learning is an iterative and ongoing process that comprises several loops and enhances the flexibility of the socio-ecological system and its ability to respond to change.	• Understanding other participants; • Understanding the management system; • Trust and relationships; • Learning to collaborate.	Group model building for water resource management in a Swiss city.
Mostert *et al* (2007)	Social learning means learning by all stakeholders to manage the issue in which they have a stake. Social learning, which is based on dialogue and is embedded in a context of governance, structure and the natural environment, may lead to improved management and social-relational outcomes.	• Improved management; • Social-relational outcomes; • Features / methods of participation process.	Participatory river basin management processes in ten European case studies.
Steyaert & Jiggins (2007)	Social learning is seen as a collective process that can take place through interactions among multiple interdependent stakeholders, eventually leading to the convergence of goals, criteria and knowledge, accurate mutual expectations and the building of relational capital and the co-creation of knowledge. Convergence, relational capital and the change in behaviours may lead to agreement on concerted action.	• Problem perception: concrete immediate problem, metaphor of the problem, description of the problematic past, desirable soft and hard future; • Learning process: learning about the hard and the soft system, structural change; • Learning path: extent to which collective cognitive agency is being achieved at the (micro) water catchment level.	Catchment management processes in four European countries.
Rist *et al* (2006, 2007)	Social learning is understood as a process of communication, deliberation and collective learning potentially establishing and changing relationships thus contributing to transforming existing forms of governance.	• Trust and self-confidence; • Patterns of communication; • Mutual perceptions and interrelation between local and external knowledge; • Shared values regarding development and interaction; • Revision of norm, rules and responsibilities in natural resource use.	'Autodidactic Learning for Sustainability' workshops in India, Bolivia, and Mali.

Mostert *et al* (2007) report findings from 10 cases studies of participatory river basin management across Europe[8]. In most cases, researchers found evidence of positive, mainly social-relational outcomes of the participatory processes such as an increased understanding of river basin management issues as well as a better understanding of the roles and views of other stakeholders. These accounts are consistent with the findings of other studies (Webler *et al* 1995; Schusler *et al* 2003; Rist *et al* 2006, 2007; Steyaert & Jiggins 2007[9]) which report similar effects of stakeholder involvement activities. Schusler *et al* (2003) for instance claim that the investigated search conference helped the participants to discover areas of agreement and disagreement and eventually led to the identification of a common purpose for future planning efforts. However, social learning processes seem to contribute not only to the relationships among the involved actors or their knowledge of and relations to others and the system, there are also some reports of more far-reaching individual transformations. In Webler *et al's* (1995) study many participants mentioned they "learned something about what it meant to be a citizen" (p. 458.) and Fischer (2003) highlights an increased confidence of participants in their own knowledge and capabilities as a result of the involvement process.

Whilst these numerous accounts of positive social-relational corroborate the findings reported in other studies on participatory and stakeholder processes (e.g. Beierle 1998; 2000; Frame *et al* 2004, Fischer 2003; Loeber 2003; Cheng & Daniels 2005; Höppner *et al* 2005, Bulkeley 2001), they are less forthcoming about how or to what degree social learning contributes to more substantive outcomes and collective action. Pahl-Wostl & Hare (2004) conclude that the increased awareness of others' perspectives enabled the stakeholders involved in a participatory water management process in Switzerland to

[8] The case studies were carried out under the auspices of the HarmoniCOP (Harmonising Collaborative Planning) project which was supported by the European Commission under the Fifth Framework Programme for Research and Development and as part of its programme on Energy, Environment and Sustainable Development. Further references to individual case study reports can be found in Mostert *et al* (2007).

[9] Steyaert & Jiggins (2007) synthesise the main findings of the SLIM (Social learning for the integrated management and sustainable use of water at catchment scale) project. References to the detailed findings of the different case studies carried out as part of this multi-country research project can be found in the paper.

develop a new water management regime which paid equal consideration to the economic and environmental efficiency of water related services. Other authors name the development of new organisations or changes to the way natural resources are managed as outcomes fostered by processes of social learning among stakeholders (Rist *et al* 2006, 2007; Mostert *et al* 2007; Steyaert & Jiggins 2007).

Among these accounts of social learning processes, however, the literature also provides evidence less supportive of the social learning model. There are reports of reinforced stereotypes (e.g. Schusler *et al* 2003), the intensification of conflict (e.g. Spierenburg *et al* 2006; Steyaert & Jiggins 2007) or a failure to reach agreement or verifiable consensus (Nelson & Wright 1995; Leeuwis 2000; Connelly & Richardson 2004). Indeed, findings from a study conducted by McCullum *et al* (2004; see also Pelletier *et al* 1999 reporting the same study) impart quite a different story from those positive outcomes reported above. They investigated how a participatory process influenced participants' viewpoints in the context of local food and nutrition policies. Although the results confirmed that a change in cognitions had occurred, when they looked more closely at the power relations in the process they discovered that, as the participatory process progressed, the interests and concerns of the uninfluential participants became increasingly similar to those of other, more powerful participants, and less similar to the interests they expressed at the beginning of the exercise. Interestingly, the disenfranchised participants identified a distinctive set of salient issues in the safe environment of a pre-event focus group, and identified the same set of issues in a post-event focus group. The results of the process reflected the power structures of the group, although the process result was deemed a consensus and the process itself considered fair, energising and satisfying by the internal participants and external observers.

This is not to suggest that this case or indeed other cases considered to be of mixed success indicate a lack of social learning. However, there are evidently a number of limitations and challenges to the extent to which social learning processes can contribute to successful NRM, collective action and eventually social change. Firstly, the debate on social learning in this context implies that the motor for future societal progress is shared understanding and consensus. However, progress is frequently based on conflict and competition with others (c.f. Coenen *et al* 1998) and more importantly,

nothing guarantees that a generalisable interest can be found or that differing values and beliefs can be adequately reconciled (van den Hove 2006). Social learning processes can certainly help define more adequate and broadly supported management problems, and may enhance the quality of decisions by integrating different sources of knowledge. Yet, we have to acknowledge what van den Hove terms 'an irreducible plurality of standpoints' (p. 11) which might limit the potential of social learning processes to transform views and interests to enable social change.

Secondly, social learning models see cognitive learning as an important prerequisite for behavioural change and conflict resolution. However, we have already pointed out that not all behavioural changes are brought about by learning and that a change in beliefs, attitudes, and intentions does not necessarily lead to a change in behaviour. Certain behaviours are so dependant on the situational context that they become virtually unpredictable through attitudes (Ajzen & Fishbein 1980). Mostert *et al* (2007) rightly raise the question of whether and when learning should be promoted at all, for instance in cases with highly contested issues at stake. They stress that a decision whether to encourage social learning should at least consider whether there is a slight chance of success. Therefore, in some situations, other strategies, such as penalties or incentives might prove more appropriate tools to initiate a change in practices and social interests (see also Leeuwis 2000).

Thirdly, social learning posits that participants could easily overcome conflicting personal or institutional interests as well as economic and educational differences and develop a mutual view of the situation and agree on future actions. This perspective implies symmetry in the relationship of participants and presumes that the differences among people are superficial and can be mediated by group processes (Figueroa *et al* 2002; Schafft & Greenwood 2003). However, Koelen & Das (2002) rightly ask why participants in a participatory process *should* change their views or abandon their interests in favour of the group. And why should they be more likely to do so within a participatory process of social learning? Research into group processes suggests that individuals feel under pressure to hold accurate views about their surroundings and abilities and turn to others to validate their opinions and performance thus creating a social reality. Therefore, group membership serves as a means to establish who we are

and what we believe in (Baron *et al* 2003). This seems to support the social learning model, in the sense that group processes help to create a common understanding. However, if we take into consideration that a group consists of a number of people with different views, interests, status and probably different capacities to exercise influence, we need to acknowledge that group dynamics might also result in people adopting particular views, perhaps to be commensurate with those of dominant individuals or sub- groups, or might act to entrench certain views and worsen relationships (Connolly 1991).

Research, not only from the realms of NRM, demonstrates that a multitude of factors might affect the success of collaborative initiatives and the willingness of individuals to put the common good above their interests. It has been suggested that despite different value bases, cooperation is possible but depends on sympathetic engagement and the feeling of being respected (e.g. Dryzek & Braithwaite 2000) and might still evolve if other conditions obtain such as the success of previous cooperation (Axelrod 1984). Indeed, Putnam (1995, p. 664 f.) stresses that social capital, i.e. 'features of social life – networks, norms and trust – that enable participants to act together more effectively to pursue shared objectives' is self-reinforcing and cumulative; in other words, connections and trust are built through community-based initiatives, which, in turn facilitate further collaboration.

Finally, social learning is to be fostered through participatory activities. Leeuwis & Pyburn (2002) claim that social learning already serves as an inspiration to practical intervention strategies. However, only a few examples where a participatory process has been specifically based on theories of social learning could be identified from the literature (e.g. Daniels & Walker 1996; Schusler *et al* 2003; Woodhill 2004; Dougill *et al* 2006; Rist *et al* 2006, 2007). Yet, Röling & Maarleveld (1999) maintain that a number of participatory methodologies have been developed in order to guide the facilitation of social learning, such as Soft Systems Methodology (Checkland & Scholes 1990) or Rapid Appraisal of Agricultural Knowledge Systems (RAAKS) (Engel & Salomon 1997) and Platforms for Resource Use Negotiation (Röling & Jiggins 1998; Steins & Edwards 1999). So far though, there is little empirical evidence which could guide the practitioner to specific participation models or techniques which would help

the design of learning-oriented engagement processes. Few studies highlight how context, methods or process designs stimulate or hinder social learning processes. Among the factors which are considered key to the creation of a learning environment are opportunities for interaction, openness, representativeness, and facilitation (Webler *et al* 1995; Loeber 2003; Mostert *et al* 2007). Another aspect which has proven critical for fostering learning is the integration of multiple sources of knowledge (Schusler *et al* 2003; Rist *et al* 2006, 2007; see also Fischer 2003 for examples and a more general discussion on the value and integration of citizen knowledge). At the same time, a number of factors, such as limited resources and time, were identified which hinder social learning (e.g. Rist *et al* 2006, 2007; Mostert *et al* 2007). However, it remains difficult to judge which role social learning plays for NRM or under which conditions it helps pave the way for collaboration, collective action and new solutions to resource management problems.

2.3 Knowledge gaps and questions

The previous sections established that social learning processes are increasingly considered to be central to the success of NRM. Participatory initiatives are thought to encourage these learning processes which in turn might change the social environment and open new opportunities for collective action. Mostert *et al* (2007) stress that social learning is a naturally occurring social process which is intensified when stakeholders with different perceptions come together and engage with each other (see also Haxeltine & Amundsen 2005; Rist *et al* 2007).

The practical implications of acknowledging the potential role of social learning for NRM is to promote and intensify their application by establishing participatory learning platforms, where individuals can meet, interact, learn collaboratively and take collective decisions (e.g. Keen *et al* 2005). Yet, the limited evidence concerning social learning in participatory processes makes it difficult to judge the legitimacy of claims which posit a prominent role for social learning in NRM. Whilst many studies focus on assessing social learning outcomes, such as cognitive and relational changes, the question of, how these outcomes in turn impact the more substantive results of a stakeholder activities is hardly addressed. Does social learning actually facilitate mutual understanding and agreement? And if not, are other factors such as power relationships more influential

with respect to communal debate, sense making, and decision-making? The review of the scholarship in the previous sections shows that the relationship between learning and power relationships is largely neglected in contemporary research.

Furthermore, authorities wishing to design engagement processes, be it with the specific motive to facilitate learning or to realise other benefits attributed to participation, are faced with a fundamental problem: we do not know what works under which circumstances and with which effect. Although research into factors which hinder or encourage social learning is growing, there is still a distinct need to specify participation techniques and conditions which create opportunities for learning.

This knowledge gap highlights the need to analyse and explore social learning in participative management of water resources. There is a real need to investigate the dynamics, benefits and impacts of social learning process as well as understand how these can be encouraged by designing and managing appropriate processes. Hence, the research proposes the following research questions presented in Table 2-3:

Table 2-3: Overview of research objectives and questions

Research objectives	Research questions
A. To assess whether participatory processes are characterised by processes of social learning, or power relationships.	1. To what extent are participatory processes characterised by processes of social learning or power relationships?
B. To assess the extent to which social learning or power relationships influence the substantive outcomes.	2. Does social learning facilitate mutual understanding and agreement? 3. If not, are other factors such as power relationships more influential with respect to communal debate, sense making, and decision-making?
C. To assess whether process characteristics influence the creation of learning situations in a participatory process.	4. To what extent are different types of participatory processes characterised by social learning? 5. Which process formats or features thereof encourage or hinder social learning?

By exploring social leaning in participatory water resources management, this thesis contributes to a more critical debate on the benefits of social learning for participatory water resources management and NRM in general. More specifically, it will provide answers to the question of what role social learning plays in participative NRM, but

more importantly, what role *it can* play. Encouraging social learning through participatory platforms can be time-consuming and costly and careful consideration should be given to whether social learning is likely to contribute to successful process outcomes, however that may be defined in the specific situation.

Furthermore, a better understanding of the links between participatory process and learning outcomes will help to specify situations and collaborative approaches which are likely to foster learning. This knowledge can guide authorities and practitioners not only in the design and management of learning oriented engagement activities. It also gradually builds up a better understanding of the relationship between specific process formats and their outcomes which can, at a more general level, contribute to a more targeted, objective-driven participation practice.

CHAPTER 3: A MIXED METHODS STRATEGY OF INQUIRY

This Chapter describes the adopted methodological approach which employs a mixed methods strategy collecting both quantitative and qualitative data though two distinct but interrelated pieces of research: multiple case studies and a survey. Section 3.1 provides an overview of the mixed methods study design, explains the characteristics and philosophical underpinnings of mixed methods research as well as justifies and illustrates its application in this study. Detailed descriptions of the research strategy, the development of data collection methods and procedures, and the analysis of the data are provided in Section 3.2 and 3.3 respectively. The subsequent Section 3.4 illustrates how they are integrated to respond to the research questions, objectives and aims. The final Sections outline strategies adopted to ensure the ethical conduct of this research (3.5) and provide a brief summary of the Chapter 3.6).

3.1 Research design

This study combines case study research with a stakeholder survey. Thus, the research design can be broadly described as a mixed methods strategy of inquiry. The following section will briefly introduce the characteristics of and rationales for using mixed methods approaches before describing the design employed in this study.

3.1.1 Applying mixed methods designs

Mixed methods strategies can be defined as "the collection or analysis of both quantitative and qualitative data in a single study in which the data are collected concurrently or sequentially, are given a priority, and involve the integration of the data at one or more stages in the process of research" (Creswell *et al* 2003, p. 212). Whilst a tremendous uptake of mixed methods designs in social inquiry indicates an increasing acceptance of these approaches, there are a number of substantial and practical issues to consider when applying mixed methods designs.

The mixing of methods is not without controversy. It is argued that each approach is based on contrasting philosophical assumptions or paradigms concerning reality (ontology), knowledge of that reality (epistemology) and processes for studying it (methodology). Quantitative methods are based on positivism which posits that there is

only one truth and that an objective reality exists independent of human perception. Thus, research strives to develop a link between cause and outcome, by primarily employing deductive logic and quantitative methods of research. Qualitative researchers on the other hand, typically locate themselves within an interpretevist or constructivist tradition. Reality and knowledge are both subjective and socially constructed, implying that multiple rather than one objective truths exist. Inductive logic and qualitative methods are usually employed with the goal of understanding a particular phenomenon in its social context (Creswell 2003; Johnson & Onwuegbuzie 2004). From a purists' perspective, regardless of whether judging from a quantitative of qualitative perspective, methods should not be mixed since they embody such fundamentally different understandings of the world and knowledge claims. In short, they are deemed incompatible (Howe 1988).

Advocates of mixed methods research reject an 'incompatibalist, either/or approach to paradigm selection' and recommend a more pluralistic approach (Johnson & Onwuegbuzie 2004). It is often emphasised that researchers should use those methods which most adequately respond to the research questions and best meet the practical demands of the particular inquiry rather than engage in paradigmatic discussions. Although multiple views exist of the philosophical foundations of mixed methods research - indeed, some authors argue that it should strictly be viewed as a method (see Hanson *et al* 2005 for further discussion) – it is most commonly linked to pragmatism (Tashakkorie & Teddlie 2003; Johnson & Onwuegbuzie 2004; Hanson *et al* 2005). A pragmatist perspective acknowledges both objective and subjective knowledge and emphasises the need to understand the problem, thus meriting the use of pluralistic approaches to derive knowledge about the problem (Cherryholmes 1992).

Table 3-1 provides a brief overview of the underlying assumptions of qualitative, quantitative and mixed methods approaches to social inquiry along with their associated research strategies and procedures. Mixed methods designs are discussed in more detail below.

Table 3-1: Quantitative, qualitative and mixed methods approaches to social enquiry

	Quantitative approach	**Qualitative approach**	**Mixed methods approach**
Knowledge claims	Positivism Explanation via analysis of causal relationships and fundamental laws. World is external and objective. Observer is independent. Science is value free.	Constructivism Explanation of subjective meaning held by subjects through understanding. World is socially constructed and subjective. Observer is part of what is observed.	Pragmatism Problem-centred. Knowledge is viewed as being both constructed and based on the reality of the world we experience and live in. Pluralistic.
Research strategies	Experimental designs, surveys.	Narratives, phenomenologies, ethnographies, grounded theory, case studies.	Sequential, concurrent, transformative.
Research methods	Closed-ended questions, predetermined approaches, numeric data, statistical analysis.	Emerging methods, open-ended questions, interview data, observation data, document data, and audiovisual data.	Both predetermined and emergent methods, both open- and close-ended questions, both quantitative and qualitative data and analysis.

(adapted from Creswell 2003)

What are the benefits of combining methods which the use of either approach in isolation cannot warrant? Recognising that each method has its limitations, Johnson & Onwuegbuzie (2004) argue that a mixed methods approach allows researchers to "collect multiple data using different strategies, approaches and methods in such a way that the resulting mixture or combination is likely to result in complementary strengths and non-overlapping weaknesses" (p. 18). The reasons for combining quantitative and qualitative approaches are most commonly cited as triangulation, complementarity, development, initiation, and expansion. To increase a study's validity and confidence in the findings, mixed methods are often used to corroborate results from one method with those of another (triangulation). However, mixed methods are rarely used to achieve convergent validity alone but to investigate and reveal interrelated but different facets of a phenomenon (complementarity). Results from one method can be used to inform the design of a second method, thus serving the refinement and refocusing of research

methods (development). To add depth and breadth to inquiry results and interpretations, inconsistent qualitative and quantitative findings can intentionally be analysed to obtain 'fresh insights' (initiation). Finally, the inclusion of multiple research methods can extend the breadth and range of the study (expansion) (Greene e*t al* 1989). As the subsequent sections will show, in this research, the survey seeks to complement and confirm the initial findings of the case studies.

How the use of mixed methods is rationalised in a particular study certainly influences the design of the research strategy. Creswell (2003) identifies three general strategies: sequential, concurrent and transformative procedures. Sequential designs seek to elaborate or expand the findings of one method with another method. In concurrent procedures, the researcher converges quantitative and qualitative data in order to provide a comprehensive analysis of the research problem. Different forms of data are collected at the same time and then integrated in the interpretation of the overall results. Transformative designs can both follow a sequential or a concurrent approach but use a particular theoretical perspective which acts as a framework for data collection and analysis. In the literature, we often find six primary types of designs, three sequential (explanatory, exploratory, and transformative) and three concurrent (triangulation, nested, and transformative) designs. Yet, Johnson & Onwuegbuzie (2004) highlight that "one can easily create more user specific and more complex designs" (p. 20).

Despite the stated benefits of mixed methods design, the challenges they pose should not be forgotten. Using different methods implies collecting and analysing extensive data. Their analysis cannot only be time consuming but also requires the researcher to be familiar with both quantitative and qualitative forms of research. The following subsections will demonstrate that this approach was useful for this study given the complexity of the phenomenon under investigation and the limited evidence-based knowledge found in the current literature. It will illustrate a clear decision-trail, demonstrating the choices involved in selecting and the evolution of research strategies and methods.

3.1.2 Selected strategy of inquiry

Mixed methods researchers frequently argue that the complexity of human phenomenon demand more complex designs to fully capture them (Sale *et al* 2002). One research method at best only provides a partial picture of a complex phenomenon which contains a multitude of dimensions and aspects. This is particular important in this study which investigates the multidimensional and dynamic phenomenon of social learning. The research approach adopted throughout this study can be broadly described as a sequential mixed methods strategy of inquiry which was carried out in two phases. The sequencing and mixing of approaches seeks both to develop the empirical research by informing later phases with findings from earlier phases and to complement results from one set of activities with those of another. Morgan (2007) suggests that this design is appropriate to use when testing elements of an emergent theory resulting from the qualitative phase and that it can be used to generalise qualitative findings to different samples.

In the first research phase, case studies of two RBM initiatives, one in Germany and one in the UK, were carried out. A case study strategy provides the opportunity to observe a social process over an extended period of time and to collect comprehensive data to develop a better understanding of a social phenomenon (Walton 1992). Walton (ibid.) highlights: "The logic of the case study is to demonstrate a causal argument about how general social forces shape and produce results in particular settings" (p. 122). Case studies were selected based on a set of process features which are proposed in the literature to encourage social learning (see Section 3.2.1). Two structured questionnaires were used to elicit quantitative and qualitative data from the stakeholders participating in two RBM initiatives, one in Germany and one in the UK. Both types of data were treated equally in the analysis to allow for in-depth investigation of the social dynamics of the stakeholder process. Thus, this part of the research could be described as a concurrent exploratory strategy. A preliminary analysis of the questionnaire and textual data collected through the pre-test survey highlighted the prominent role of certain process attributes in enabling social learning. The case study results suggested that learning was influenced mainly by the degree of interaction but other features, such as a limited timeframe or lack of process control, all of which are connected to the way stakeholder activities were organised and managed, were among the factors named by

the respondents. Informed by these results, a second piece of research was undertaken. Two participatory initiatives, this time involving a number of cases and differing considerably in their timeframe and the degree of interaction they provided, were selected for investigation. Stakeholders participating in the respective initiatives were surveyed on their learning experiences using a self-administered questionnaire. Data collected was predominantly quantitative in nature. Data analysis occurred both within the case studies (descriptive numeric and content analysis) and the survey (descriptive and inferential statistical analysis) before findings were integrated and interpreted in the final research phase.

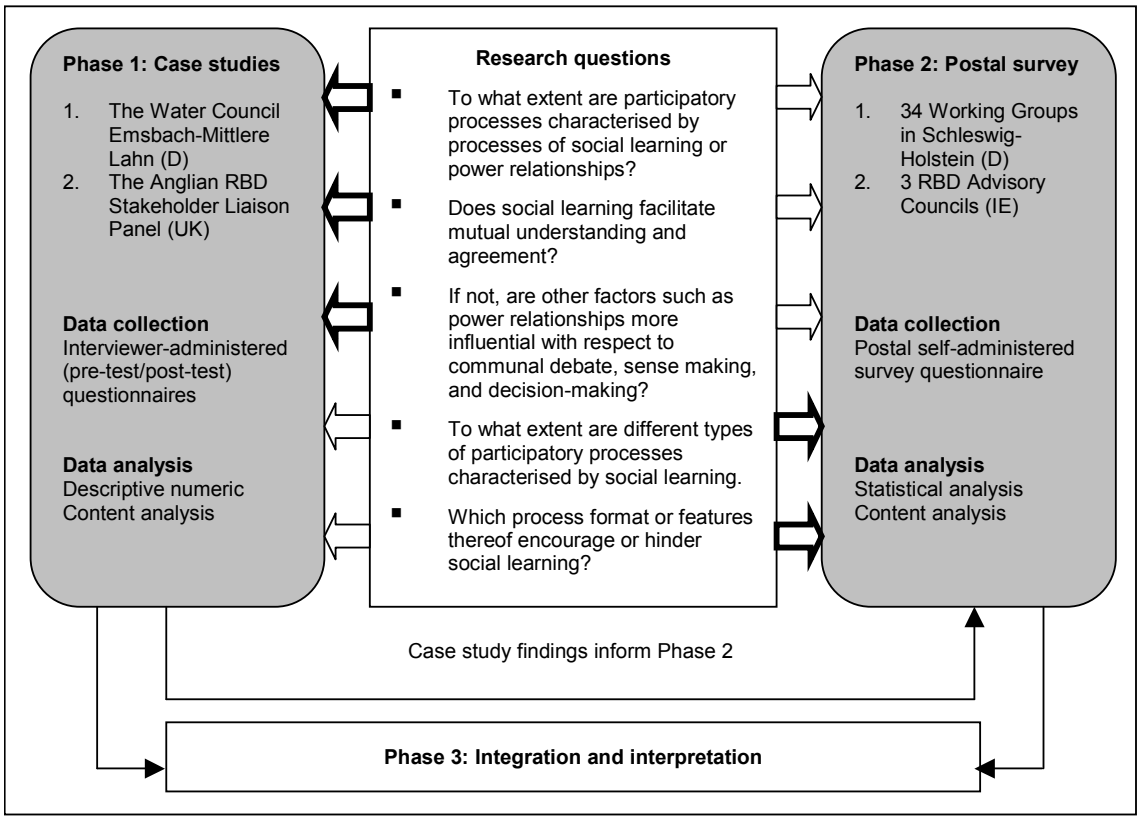

Figure 3-1: Overview of the sequential mixed methods research strategy adopted in this study

* Bold arrows indicate which of the five research questions each of the fieldwork activities primarily address.

Figure 3-1 illustrates the overall study design and the individual research strategies and methods which were designed to answer specific research questions, although it is acknowledged that these questions are interrelated. Together, findings provide a more comprehensive analysis of the multi-faceted nature of social learning in public and stakeholder involvement and a degree of confirmation and completeness which would not have been achieved with one approach alone. It is necessary to briefly reiterate that

all investigated cases were drawn from the current efforts to engage stakeholders in the implementation of the WFD. The WFD distinguishes three levels of participation which are aimed at supporting the effective implementation of the directive: information, consultation and 'active involvement' (Art. 14). Whilst information and consultation mechanisms are (to some extent) defined by the directive, the related guidance document concedes that the term 'active involvement' leaves room for interpretation by competent authorities. However, it is repeatedly emphasised throughout the document that 'active involvement' implies a higher degree of participation than information and consultation procedures provide. It is particularly stressed that active involvement requires the continuous participation of stakeholders in the development and implementation of RBM plans. It is worth noting that, although the multiple benefits of participation are highlighted, e.g. increased public awareness of environmental issues and the integration of knowledge and experiences of a wider spectrum of actors, (social) learning is considered key to the directive's success. (Working group 2.9 2002). Whilst this thesis' focus on stakeholder involvement to support WFD implementation proved to impose certain limitations on the number of initiatives available for analysis – this point will be discussed in more detail in Chapter 7 – it ensured that the context in terms of subject matter was comparatively consistent across all the investigated stakeholder activities.

The following sections describe in greater detail the research strategies and methods employed in the two research phases. It should be noted that for mixed methods research, reliability and validity measures apply just the same as for both quantitative and qualitative approaches. However, since the methods, instruments and procedures necessitate different procedures to ensure research quality, the implemented strategies are discussed in the respective sections.

3.2 Case studies

The key strength of case study research is the opportunity to develop an in-depth understanding of a limited number of cases in their 'natural' setting (Hodkinson & Hodkinson 2001). This is especially important in the investigation of social learning, which is not observable, emerges out of interactions and is dynamic. By being grounded in 'lived reality', case studies can uncover new themes, and variables and explore

relationships which make them so appealing to this study which aims to develop a deeper understanding of the dynamics of social learning and the conditions under which it occurs.

This study employs a multiple case study design to allow for the identification of similarities and differences across cases (Punch 1998). This enhances external validity and contributes to a refinement of a theory of social learning for participatory NRM (Neumann 1997). The cases, or the 'units of analysis' (Yin 2002), were identified from the stakeholder involvement activities supporting implementation of the WFD as explained in Chapter 1. The 'search area' was deliberately limited to Germany and the UK, based on the language abilities of the researcher and existing contacts to authorities in Germany as well as the UK[10]. Cases were purposefully selected rather than utilising random sampling strategies. Since typical or average cases might not be the most informative or illustrative, case study selection sought to identify information-rich cases. Flyvbjerg (2006), on the subject, further explains that "it is often more important to clarify the deeper causes behind a given problem and its consequences than to describe the symptoms of the problem and how frequently they occur. Random samples emphasising representativeness will seldom be able to produce this kind of insight" (p. 229). This 'information-oriented' selection process may seek to identify various types of cases, such as extreme, maximum variation, critical or paradigmatic cases[11].

In this study, the selected cases could be considered 'extreme cases', meaning that they are assumed to be especially suitable in demonstrating social learning processes (Flyvbjerg 2006). Broadly speaking, the likelihood of social learning to occur among participants is thought to increase with the level of participation and the degree of interaction, diversity and openness. Although this view is based on limited empirical and contradictory evidence, the suggested relationship between participation process and social learning was used as a starting point to formulate case study criteria and

[10] During the second phase of the research process, this focus was extended to the Republic of Ireland.

[11] See Flyvbjerg (2006) for a more detailed discussion on case study selection strategies.

subsequently identify two participatory RBM initiatives for in-depth investigation. One might say that the term 'extreme cases' for the envisaged stakeholder processes might not be most suitable. They are representative for a multitude of new initiatives to comply with the participation regulations of the WFD but provide higher levels of participation than most engagement activities supporting implementation of the WFD.

To capture the effects of social learning, a pre-test/post-test research design which included partially identical data being collected at two points in the stakeholder consultation process was adopted. Pre-test/post-test designs are commonly used in psychological studies and have been applied by a number of authors investigating effects of participatory processes within NRM (Stagl 2004; Huitema & van de Kerkhof 2006) as well as other policy fields (Schulz *et al* 2003; McCullum *et al* 2004). By indirectly measuring changes in attitudes, perception or knowledge, such an approach is also useful to avoid socially desired behaviour in the sense that respondents might not be willing to reveal their feelings if they think they are negative or contrary to what is expected to the opinion of the majority of the group (Creswell 2003).

The main sources of information were the stakeholders involved in the investigated participatory initiatives. Social learning, although a collective process, first of all affects the perceptions of the individual necessitating an approach which captures the views of the participants themselves (see Blackstock *et al* 2007). Therefore, participant observation was excluded as a method for data acquisition in favour of techniques which allowed the respondents to report and interpret their experiences directly. Two interviewer-administered questionnaires provided a structure for collecting data about stakeholders' perceptions, concerns and interactions within the collaborative processes.

Although the knowledge of and empirical research into social learning is limited, a model of social learning can be drawn form the literature. Previous studies of social learning have operationalised social learning by defining the properties of learning processes and their effects through a number of indicators. To ensure comparability between case studies and relate findings to the literature, a very structured approach was taken to elicit information form the respondents. Although these indicators are quantifiable, as will be shown below, a purely quantitative method seemed inappropriate to fully capture the complexity of people's perceptions, motivations and

reasoning. By administering the questionnaires, both quantitative and qualitative data could be collected. The structured data collection also reflects a strategy to enhance the generalisability of case study findings and demonstrate scientific rigour, criticisms often found in the case study literature (see Yin 2002 or Flyvbjerg 2006 for more in-depth discussions). Yin (2002) highlights the importance of clear research questions and propositions to avoid a lack of focus or allowing 'chance' evidence to influence the findings and conclusions.

Finally, it should be stressed that, although in-depth interviews might have been a viable alternative for data collection, this option was excluded for practical reasons. Initially, the empirical fieldwork was envisaged to focus on four case study sites. Depending on the number of respondents in each site, the number of potential interviews, one needs to remember that each respondent would have been interviewed twice, would have exceeded the financial and time resources of the researcher. Having established the overall case study design and procedures, the following sections outline the case study selection process as well as methods and procedures for data collection and analysis.

3.2.1 Case study selection

Case study selection was based on the assumption that the intensity of social learning is dependent on the specific learning environment, i.e. the participation process. The literature identifies a number of process attributes which describe both features of the process format as well as qualities of stakeholder communication and interaction which are deemed essential in fostering learning. Table 3-2 illustrates the criteria that are most frequently cited in the literature: inclusiveness, extended engagement, information exchange, opportunity for interaction, and openness. Process equity and process control are less frequently cited by these sources but are consistent with criteria for effective or successful stakeholder collaborations, however that may be defined (Rowe & Frewer 2000; Schulz *et al* 2003; Frame *et al* 2004).

Table 3-2: Process features assumed to foster social learning

Feature	Webler *et al* (1995)	Schusler *et al* (2003)	Rist *et al* (2006)	Tippet *et al* (2005)	Selection criteria applied in this study
Inclusiveness	X	X		X	X
Extended engagement	X	X	X	X	X
Information exchange	X	X	X	X	X
Opportunities for interaction	X	X	X	X	X
Openness	X	X		X	
Process equity		X	X		
Process control	X	X			

Since some of the criteria describe features of the communication and interaction process among stakeholders which could not be assessed prior to the investigation, only the first four, inclusiveness, extended engagement as well as opportunity for information exchange and interaction were used to identify suitable participatory initiatives. Furthermore, the specific research questions and the methodology necessitated the inclusion of two additional aspects in the search for appropriate cases. First, since the study aimed to look at the links between social learning and process outcomes, participatory processes needed to feature some form of group decision-making process. Second, the choice of adopting a re-test approach meant that stakeholder activities had to provide the opportunity to access participants early in the process in order to identify any shifts in their perceptions and views. Consequently, selection criteria were specified as follows:

- Inclusiveness: Participatory RBM initiatives should involve a variety of stakeholders with different opinions, interests and backgrounds. This criterion reflects the claim made in the literature that diversity enhances social learning by exposing participants to a breadth of viewpoints enabling them to recognise the legitimacy of views other than their own (Schusler *et al* 2003).

- Extended engagement: Cases should provide the opportunity for stakeholders to meet at least four times over the course of one year with each meeting lasting at least half a day. The intent here was to limit eligible cases to those initiatives which allowed sufficient time for social learning to occur since time is assumed to be

crucial in fostering trust and establishing relationships among participants (Webler et al 1995, Schusler et al 2003, Tippett et al 2005).

- Opportunity for interaction: Cases should provide stakeholders with the opportunity to engage in dialogue and discussion; participants must not be reduced to being observers, or simply be informed or consulted (Schusler et al 2003). This criterion reflects the literature's proposition that social learning relies on opportunities for dialogue among stakeholders, requiring a balance between information exchange and the discussion of beliefs and views to explore similarities, differences and to reshape ways of thinking about the situation and other parties (Meppem & Gill 1997; Tippett et al 2005).

- Decision-making: Cases should involve a group decision-making process. This criterion reflects the study's intent to explore the linkages between social learning and process outcomes, namely the development of a shared problem perception and mutual agreement. For this study, decisions were defined rather broadly and included agreements, plans or measures or even a vision statement or reports. The deciding factor was that the decision or 'product' should be generated or arrived at through a group decision-making process.

- Age: Cases should incorporate stakeholder initiatives which are in their early stages. This pre-requisite was selected to ensure that baseline data on participants' perceptions could be collected at a point where only few interactions had taken place and potentially affected stakeholder thinking.

Case studies were identified through an assessment of the current participation initiatives in the context of WFD implementation in Germany and the UK. Chapter 4 will provide a brief account of the participation practice in the two countries to contextualise the investigated cases. Existing contacts, facilitators, councils, and different companies and organisations were approached to obtain a shortlist of participatory initiatives which potentially fulfilled the selection criteria. The final selection was made by contacting the authorities in charge of organising the short listed initiatives, confirming that the processes met the specified criteria and obtaining permission to approach stakeholders involved in the respective cases. Eventually, two

appropriate case studies, the Regional Water Council Emsbach-Mittlere Lahn (Germany) and the Anglian River Basin District (RBD) Stakeholder Liaison Panel (UK) were identified. It is necessary to stress that the process of identifying suitable case studies as well as obtaining and maintaining access to the study participants posed a number of challenges and required considerable time and effort. First, it should be noted that a number of four case studies was envisaged originally. However, the adoption of a re-test methodology meant that the selection had to be limited to processes which were about to start or which had just started which severely limited the number of potential case studies. Second, the decision as to whether processes met the study criteria had to be based on the formal descriptions and information provided by the responsible authorities. Therefore, a number of representatives of candidate processes had to be contacted before making the final selection. Third, the study objectives and process had to be communicated to and discussed with both the responsible authorities as well as individual stakeholders before access was granted and the stakeholders' consent to participate was ensured (see Section 3.2.3). Finally, in order to maintain the commitment of the competent authorities and panel members, they were continuously informed about the study procedures, progress and results; an interim as well as a final report were compiled and disseminated among respondents and authority contacts in order to allow them to provide feedback and comments (see Section 3.2.4). These and other methodological challenges will be discussed in more depth in Chapter 7.

3.2.2 Pre-test and post-test questionnaires

Data was predominantly collected using two interviewer-administered structured questionnaires. To isolate questions, de Vaus (2002) proposes following a procedure he terms 'descending the ladder of abstraction' where a phenomenon is first defined, then dimensions and sub-dimensions are delineated before indicators and questions are specified.

To recap, the review in Chapter 2 concluded that social learning, the central phenomenon under investigation in this research, is thought (i) to occur in a participatory setting, (ii) through a communicative process, (iii) leading to a set of changes (social learning outcomes), (iv) contributing to a shared understanding and agreement among stakeholders (process outcomes). Following de Vaus' methodology,

these can be considered as the individual *components* of social learning in participatory NRM. To analyse social learning among stakeholders and explore the linkages between these components, these rather vague descriptions have to be specified in order to define empirical indicators. For example, what type of changes are attributed to social learning and how can these changes be identified? Or, which process characteristics are thought to facilitate social learning? Eventually, each component can be further specified into *dimensions* and *sub-dimensions*. To illustrate, changes associated with social learning can be broadly grouped into the following dimensions: relational, cognitive, and technical changes (skills). Relational change can be further broken down into the following sub-dimensions: improved relationships, trust and connectedness among stakeholders. The remainder of this section specifies the (sub-) dimensions investigated under each component of the social learning model and outlines the selected indicators, followed by a description of the data collection instruments and their development.

Indicator selection and question development

There are various ways in which indicators can be identified such as using established measures deployed in previous research or developing new indicators through expert consultation or pilot studies. In this research, previously published studies of social learning have operationalised social learning by defining the properties of learning processes and their effects through a number of indicators. These indicators have been tested and proven useful in analysing processes of social learning (e.g. Webler *et al* 1995; Craps & Maurel 2003; Schusler *et al* 2003). The following describes the indicators used under each component of the social learning model as explained above.

(i) Process format

Social learning is a collective process which occurs through stakeholder communication and interaction and takes place in a specific 'organisational shape'. Therefore, an investigation of the conditions for social learning requires attention to the process format. Social learning cannot be imposed on actors but it is thought that participants of involvement processes can be positively influenced by the creation of learning situations (Rist *et al* 2006), an assumption which also guided the selection of case studies. The following process features were selected for inclusion in this study, after

they were identified as prerequisites of social learning in the literature: inclusiveness, extended engagement, information exchange and opportunity for interaction. Despite the seemingly evident relationship between the design of a participatory technique and a favourable learning environment, there are other closely related factors which might impact learning opportunities. A number of authors suggest that participants should be able to guide the direction of the process by determining the content of discussion and deciding upon priorities to be addressed in the discussion. It is claimed that increased process control by the stakeholders allows for surprise and the exploration of new possibilities for working together (Schusler *et al* 2003; Frame *et al* 2004; Webler *et al* 1995).

(ii) Communication and interaction

Social learning describes a process of communicative action where multiple stakeholders collectively learn about and understand each others' interests, concerns and preferences through dialogue and deliberation (Röling & Marleveld 1999). Thus, social learning is not only signified by a set of outcomes (see below) but also by a process leading to these effects which in turn trigger and shape new learning processes. From this perspective, social learning needs to be understood as self-reinforcing and cumulative, making it difficult to neatly distinguish between process and outcome indicators. The literature suggests a number of properties of stakeholder activities which are assumed to be essential elements of processes of social learning. Firstly, social learning requires open exchange and debate about knowledge, goals and concerns. Indeed, Tippet *et al* (2005) emphasise that social learning requires both the exchange of information as well as opinions to enable stakeholders to learn about and appreciate different and competing views. Secondly, learning processes need to be undisturbed by power relationships, enabling equal participation by all stakeholders (Webler *et al* 1995; Frame *et al* 2004; Schulz *et al* 2003; Mostert *et al* 2007).

(iii) Social learning outcomes

Social learning, like any type of learning, is fundamentally about change. The precise nature of these changes varies depending on the author but is usually represented by one or all of the following skills or competencies gained by participating stakeholders:

cognitive competencies (Rist *et al* 2006), relational and emotional competencies (Webler *et al* 1995; Rist *et al* 2006) as well as technical skills (Rist *et al* 2006). This study focuses relational and cognitive change. Relational changes are associated with the development of new and a strengthening of existing relationships. According to Weber (1981) relationships define the way we feel and behave towards each other. Different relationship categories describe the nature of these connections and place them in a hierarchy indicating the strength of association. Thus, the intensity of relationships can be captured by how they are characterised. For instance, friendship signifies a strong bond between two or more individuals which is based on mutual trust and sympathy whereas acquaintances are considerable weak forms of relationships (Auhagen & von Salisch 1996).

A second frequently cited indicator of relational change is trust (Schusler *et al* 2003). Trust is most commonly defined as a belief or expectancy regarding the attitudes or future behaviour of a person or group (Offe 1999). Trust, itself a complex and multi-faceted phenomenon, is usually assessed along several dimensions, such as commitment, respect or honesty. For this study, trust building was evaluated by recording the respondents' belief in the panel members' commitment as well as their interest in the common good and other stakeholders' interests. However, these shifts involve a transformation in the way individuals perceive others but also how they place themselves within the group. In other words, social learning is thought to not only affect an individual's attitude towards others but also their own motivations and orientations. Webler *et al* (1995) speak of moral development which results in a sense of self-respect and responsibility to oneself and others, a sense of solidarity, commitment to the common cause and the adoption of collective interests as one's own (see also Frame *et al* 2004; Rist *el al* 2006). Here, the term 'connectedness' is used to describe this increased interest in pursuing shared interests and working as part of a group. To analyse the degree of connectedness, the stakeholders' sense of community, commitment to the activity and the adoption of collective interests were analysed.

Further to transforming how individuals relate to other group members, social learning is thought to involve cognitive change. To recap, cognitions describe both the process and the result of recognising, organising and interpreting information. Thus, it is

integral to the knowledge and views held by an individual as well as the process of generating or adapting knowledge and perceptions (see Chapter 2). The cognitive changes attributed to social learning are indicated both by the acquisition of knowledge as well as the transformation of views. To capture these shifts, the degree to which factual knowledge and knowledge about the interests and concerns of other participants as well as the extent to which views were changed were analysed.

(iv) Level of agreement (Process outcomes)

The described cognitive changes ideally initiate a shift from multiple to collective cognitions, a process, often ascribed to social learning (Röling 2002). In the context of participatory resource management, multiple cognitions describes a situation which is commonly found at the start of a collaborative effort, where stakeholders holding different views based on their beliefs, experiences and interests enter the process. By going through different stages of deliberation, reflection, and learning, stakeholders might accommodate and transform their views, eventually merging them into collectively held views and shared understandings (Pahl-Wostl 2002; Schusler *et al* 2003). To capture these shifts, the degree to which views were changed and accommodated were analysed. These transformations are seen as a first step towards consensus-building and collective action (Pahl-Wostl 2002; Schusler *et al* 2003). To assess whether stakeholder decisions were based on agreement, stakeholders ware asked to characterise the decision-making process as well as the fairness of and their satisfaction with outcomes.

Table 3-3 provides an overview and brief description of the dimensions and sub-dimensions assessed under each component (of the social learning model) in the questionnaires. Sources which identify these dimensions and sub-dimensions as integral to social learning, are cited.

Table 3-3: Dimensions and sub-dimensions investigated in the case study questionnaires

Components & (sub-) dimensions	Description	References
PROCESS FORMAT		
Inclusiveness	Refers to the diversity of interests represented.	Webler *et al* (1995), Schusler *et al* (2003)
Extended engagement	Refers to opportunities for prolonged & frequent interaction.	Webler *et al* (1995), Schusler *et al* (2003)
Information exchange	Refers to opportunities to exchange knowledge & information.	Webler *et al* (1995), Tippet *et al* (2005)
Interaction	Refers to opportunities for stakeholder dialogue.	Schusler *et al* (2003), Tippet *et al* (2005), Mostert *et al* (2007)
Process control	Refers to participants' ability to define the collaboration agenda & procedures.	Schusler *et al* (2003)
COMMUNICATION		
Openness	Refers to extent to which participants share information & expose interests.	Webler *et al* (1995), Schusler *et al* (2003), Mostert *et al* (2007).
Process equity	Refers to extent to which communication & interaction are characterised by equal participation by all parties involved.	Schusler *et al* (2003)
SOCIAL LEARNING OUTCOMES		
Relational change		
Relationships	Refers to the way participants feel about & behave towards each other.	Webler *et al* (1995), Schusler *et al* (2003)
Trust	Refers to participants' belief in the honesty & commitment of others.	Webler et al (1995), Schusler et al (2003)
Connectedness	Refers to the way participants relate to the group.	Rist *et al* (2006, 2007).
Cognitive change		
Knowledge acquisition	Refers to processes of knowledge acquisition & reflection.	Webler *et al* (1995), Schusler *et al* (2003)
Altered views	Refers to processes of changing perceptions, views & opinions.	Webler *et al* (1995), Schusler *et al* (2003)
LEVEL OF AGREEMENT		
Common views	Refers to extent to which a shared perception of the environmental situation develops.	Webler *et al* (1995), Schusler *et al* (2003)
Consensus	Refers to extent to which stakeholders ascribe to the group's decisions.	Webler *et al* (1995), Schusler *et al* (2003)

Table 3-4 illustrates the social learning indicators utilised in this study as well the literature sources they were drawn from to assess each of the identified (sub-) dimensions.

Table 3-4: Overview of indicators drawn from the literature

Indicators per (sub-) dimension	References
PROCESS FORMAT	
Inclusiveness	
All relevant interests represented	Webler *et al* (1995), Schusler *et al* (2003), Frame *et al* (2004), Buchy & Hoverman (2006)
Extended engagement	
Length of meetings	Schusler *et al* (2003)
Number of meetings	Webler *et al* (1995), Frame *et al* (2004)
Information exchange	
Methods facilitate information exchange	Webler *et al* (1995), Frame *et al* (2004), Tippet *et al* (2005)
Interaction	
Methods facilitate interaction	Webler *et al* (1995), Figueroa *et al* (2002), Schusler *et al* (2003), Schulz *et al* (2003), Frame *et al* (2004)
Process control	
Agenda setting	Schusler *et al* (2003), Schulz *et al* (2003)
Process design	Webler *et al* (1995), Schusler *et al* (2003), Schulz *et al* (2003), Frame *et al* (2004)
COMMUNICATION	
Openness	
Information sharing	Webler *et al* (1995), Schusler *et al* (2003), Tippet *et al* (2005)
Sharing interests & goals	Webler *et al* (1995), Schusler *et al* (2003), Tippet *et al* (2005)
Expressing oneself	Figueroa *et al* (2002), Schulz *et al (*2003), Frame *et al* (2004)
Process equity	
Perceived level of influence	Figueroa *et al* (2002), Craps & Maurel (2003), Schulz *et al* (2003), Frame *et al* (2004)
Own level of influence	Figueroa *et al* (2002), Schulz *et al* (2003)

Table 3-4 (continued): Overview of indicators drawn from the literature

Indicators per (sub-) dimension	References
SOCIAL LEARNING OUTCOMES	
Relational change	
Relationships	
New/improved relationships	Webler *et al* (1995), Figueroa *et al* (2002), Leach *et al* (2002), Craps & Maurel (2003), Schusler *et al* (2003), Schulz *et al* (2003), Frame *et al* (2004), Ison *et al* (2004),
Willingness to cooperate	Frame *et al* (2004)
Trust	
Perceived level of commitment	Frame *et al* (2004)
Perceived interest in other participants	Webler *et al* (1995), Schusler *et al* (2003), Schulz *et al* (2003)
Perceived interest in common good	Webler *et al* (1995), Schusler *et al* (2003), Schulz *et al* (2003), Ison *et al* (2004)
Connectedness	
Commitment	Webler *et al* (1995), Frame *et al* (2004),
Interest in common good	Webler *et al* (1995), Schusler *et al* (2003), Ison *et al* (2004)
Sense of community	Schulz *et al* (2003), Frame *et al* (2004), Ison *et al* (2004)
Cognitive change	
Knowledge acquisition	
Factual knowledge	Webler *et al* (1995), Leach *et al* (2002), Schusler *et al* (2003), Frame *et al* (2004), Ison *et al* (2004)
Knowledge about other participants' interests	Webler *et al* (1995), Leach *et al* (2002), Schusler *et al* (2003), Frame *et al* (2004), Ison *et al* (2004)
Knowledge about one's own interests	Webler *et al* (1995), Schusler *et al* (2003), Frame *et al* (2004), Ison *et al* (2004)
Altered views	
Altered view of most important RBM issues	Craps & Maurel (2003), Schusler *et al* (2003), Ison *et al* (2004), Stagl (2006)
LEVEL OF AGREEMENT	
Common views	
Common view of RBM problems and causes	Webler *et al* (1995), Figueroa *et al* (2002), Craps & Maurel (2003), Schusler *et al* (2003), Frame *et al* (2004), Ison *et al* (2004)
Consensus	
Consensual decision-making	Craps & Maurel (2003), Frame *et al* (2004), Ison *et al* (2004)
Fairness of decisions	Germain *et al* (2001), Frame *et al* (2004)
Satisfaction with decisions	Schulz *et al* (2003), Frame *et al* (2004)

Questionnaire format

Both existing questions from previous research into social learning in particular and participatory NRM in general as well as novel questions were utilised to construct the questionnaires (see Appendix 1 for references). The drafting of questionnaire items included several rounds of consultations with colleagues to evaluate the question wordings. The final pre-test questionnaire contained 23 questions eliciting stakeholder perceptions of relationships, trust, connectedness as well as openness and process equity. The post-test questionnaire included 38 questions in total of which eleven were replicated from the pre-test questionnaire. Additional questions elicited information on stakeholder knowledge and views, process outcomes as well as the process format. Both questionnaires contained further questions in the opening sections related to stakeholder background, reasons for participation and expectations. A copy of the questionnaires is provided as Appendix 2.

The questionnaires consisted mainly of closed questions with standardised response categories. The majority of questions employed a four-point Likert type response scale providing two responses to indicate strong and weak affirmation ('to a great extent' and 'to a moderate extent') and strong and weak disaffirmation respectively ('not at all' and 'to a slight extent'). A four- rather than a more commonly used five-point scale, offering a distinct neutral point, was purposefully chosen to avoid respondents selecting this alternative. Studies suggest that providing a middle alternative is likely to produce the same results as neutral points since they affect the polar positions of the response scale proportionally (Germain *et al* 2001). There is little agreement among scholars concerning the question of how many response points to use, other than that at least three response categories should be provided (Devlin *et al* 1993). For this research, a four-point scale was selected since research shows that respondents often struggle to indicate their point of view on larger scales and might only use a sub-set of response categories. To ensure that a sufficient number and range of options was provided, the semantic difference test (ibid. 1993) was conducted during the piloting of the questionnaire (see below).

A number of questions asked the respondents to describe their perceptions of other panel members. In order to enable participants to distinguish between individual group members or sub-sets within the group, a visual response format displaying a two-dimensional coordinate-system was used. The response options are displayed along the x-axis while the proportion of the group in percentage terms was indicated on the y-axis. The respondents were asked to illustrate with dots, crosses or bars, depending on their individual preference, the proportion of participants they placed in a specific response category. An example of this response format is included in Appendix 2.

Only a few open, multiple choice and list questions were included. The advantage of using close-ended rather than open ended questions is that it enabled the researcher to identify both the direction and magnitude of changes in responses between the first and the second data collection activities at the individual level as well as compare change patterns across the group. The problem of using this question format is that it fails to capture respondent's beliefs and perceptions by forcing them to choose between categories created by the researcher (Neumann 1997). To counter this disadvantage, the questionnaire was administered to the respondents, as explained earlier. As can be seen in Chapter 4, which will present case study findings, this structured approach was very useful in generating a rich but clearly focused qualitative data set to interpret the numerical data. During questionnaire development, particular consideration was given to ensuring concrete questions, providing definitions do reduce ambiguities, bias, double-edged or loaded questions.

Piloting the draft questionnaires

The draft questionnaires were piloted with students from Cranfield University. A group decision-making process was designed which imitated the 'real life' situation of a stakeholder activity. Thus, the activity had to include a diverse group of people, provide interaction over an extended period of time, and generate a genuine 'stake' in the process for the participants. Four groups of four participants each were established with the task of deciding on how to invest a certain amount of money provided by the

researcher. Specifically, they were asked to select a game or sports bet offered by a large betting and gaming company[12]. The financial incentive and the prospect of maximising returns provided the necessary motivation to warrant the participants' genuine interest in the process. Groups were instructed to vote to make their final investment decision. To simulate the varying degrees of influence often found in participatory activities, one group member in each group was assigned two votes whereas the remaining members were only given one vote. Due to a limited timeframe, the pilot took place within the space of two weeks with each group convening on three occasions. Ethical considerations taken into account throughout the conduct of this pilot are discussed in Section 3.5.

The pre-test questionnaire was administered to the participants after the first group meeting and the post-test after the last group meeting. Following the post-test questionnaire, a debrief interview was carried out with each participant with the goal of evaluating the efficacy of the data collection instruments. The debriefing questions followed a semi-structured interview framework focusing on misunderstandings, inconsistencies, unclear questions or terms, inappropriate response options and incomplete coverage of particular themes in the questionnaires. The technique used by the interviewer can be described as verbal probing, where the interviewer asks the respondent probing questions after he or she has filled in the questionnaire. These are designed to clarify how the respondent went about answering a question. Standard probing questions inquire into what specific terms mean to the respondent, how they arrive at their answers and often ask the interviewee to paraphrase questions or terms used (Czaja & Blair 2005). A semantic difference test was carried out, where respondents were asked to sort and characterise the response categories (four-point Likert-type response scale) in order to ensure that a sufficient number and range of options was provided (Devlin *et al* 1993). Feedback from the pilot revealed some weaknesses in the structure of the questionnaires. It was specifically noted that the

[12] www.ladbrokes.com

questionnaire seemed repetitive in places which resulted in a reorganisation of the question route. Some terms, such as 'relationships' and 'trust' seemed too broad and ambiguous. To alleviate these problems, definitions were introduced in the questionnaire and ambiguous questions refined. Some extraneous questions were deleted, especially from the originally very lengthy post-test questionnaire. These modifications and refinements helped to reduce potential ambiguities and redundancies in the instruments. The data collection instruments were initially designed in English and then translated into German. The German version was checked by a second native speaker to ensure their equivalence.

Finally, some difficulties which arose during the administration of the pre-test questionnaire in the case study which led to subsequent changes in the post-test questionnaire. One of the ambitions of data elicitation was to generate information which would allow assessment of whether participants had developed a shared understanding of the situation. In the pre-test questionnaire two open questions were included to identify which issues the respondents considered to be the most important in the basin which needed to be addressed (Pre-test: Question 5) and whether they would expect any conflicts with other respondents (Pre-test: Question 16). Post-test questionnaires were to include the same questions and by means of comparisons, the researcher hoped to identify whether there were increasing overlaps between the respondents. However, especially stakeholders in the Anglian case found it difficult to respond to these questions given the sheer size of the basin, their non-familiarity with water management issues in general and the rather broad scope of the planning process. Therefore, it was decided to replace these questions with a direct question asking the respondents to assess the extent to which a common view had emerged (Post-test: Question 26).

3.2.3 Data collection

In order to obtain access to case study participants, the study aims and procedures were introduced to, and discussed with, the respective competent authority early in 2006. Following internal consultations, the permission to approach members of the Regional Water Council and the Liaison Panel was granted. Initially, an information letter was sent to each stakeholder, outlining the details of the research. Then, the research aims

and procedures were described to both stakeholder groups at their second and first meeting respectively. Eventually, the pre-test questionnaire was administered to the study participants between August and October 2006 and the post-test questionnaire was completed between May and October 2007, after each panel had convened on five occasions. No qualifying criteria for inclusion in the study were applied other than regular group membership. Since a re-test approach was adopted, the level of attendance could only be established in retrospect. However, since the Regional Water Council had already convened twice prior to the time of the first data collection, a 'core' of regular panel members had already emerged. Consequently, only those 13 individuals, out of 20 invited members, who had attended both the first and the second meeting, were approached with the request to participate in the study. In the Liaison Panel, all members who had participated in the first meeting were contacted. In all, 14 stakeholders had attended of which one was a substitute and two were pro-temp members; one seat still had to be allocated, reducing the number of eligible respondents to eleven. In each case study site, eight stakeholders participated in the first and seven in the second data collection (Table 3-5). Only those fourteen participants who completed both questionnaires were included in the analysis reported in Chapter 4.

Table 3-5: Eligible and effective case study participants

Case	Eligible case study participants	No. of pre-test participants	No. of post-test participants	Effective number of participants
Regional Water Council (Germany)	13	8	7	7
Liaison Panel (UK)	11	8	7	7

Questionnaire completion required on average 45 minutes but some of the post-test meetings extended to 1.5 hours. Responses were recorded on the questionnaire sheet; any further comments were noted by the researcher. Since the post-test questionnaire was more extensive than the first, responses were tape recorded to ensure greater accuracy in the analysis of the qualitative data. Furthermore, experiences from carrying out the pre-test survey suggested that the complexity of the concepts under investigation prompted many respondents to elaborate on their responses. Oral consent to tape recording the sessions was obtained prior to post-test questionnaire administration.

Additional information about the panels was obtained through contacts with the staff of the competent authority responsible for organising the respective involvement activity. These individuals provided descriptions of the stakeholder panels, on the basis of which panels were selected for the study. Informal contacts with competent authority staff between data collection events provided access to background and working documents, enabling the researcher to monitor the panels' progress and to appropriately time the second data collection activity. Furthermore, the researcher provided the competent authorities as well as the case study respondents with interim as well as final reports of the research results (see Section 3.2.4).

3.2.4 Data analysis

The data collection generated both numerical as well textual data in the form of notes and audiotapes. Since the case studies were concerned with both identifying as well as understanding processes of social learning, it was important to be able to recognise individual response pattern or extreme shifts. The small sample size provided the opportunity to look beyond simple aggregates of the quantitative data. Whilst aggregates are useful in obtaining a snapshot of group dynamics, they are limited in their ability to track individual changes (see Schulz *et al* 2003). For example, openness of a stakeholder activity might score high at the group level. However, taking a closer look at the individual level might reveal that only powerful actors perceived the process to be open whilst those who perceived themselves to be less influential felt a lack of opportunity to participate. Therefore, only simple descriptive statistics were used to analyse the quantitative data (see below).

For the analysis of the qualitative data, an inductive content analysis approach was adopted, meaning that the coding structure was developed and refined throughout the analytical process. Robson (1993) asserts that there is no clear and accepted set of conventions for qualitative data analysis. Indeed, a typology of qualitative analyses developed by Tesch (1990) distinguishes between twenty-six different kinds of approaches which can be grouped, first by their specific focus, and second, sorted according to their degree of structure or formalisation. Tesch (ibid.) identifies the four foci of qualitative analysis and orders them from more to less formal approaches: (1) to discover the characteristics of language, (2) to identify regularities, (3) to understand the

meaning of text or action, and (4) to reflect on earlier findings and thus inform subsequent research activities. Highly reflexive approaches to qualitative data analysis tend to take place throughout the data collection process, for example through thematic analysis. In contrast, content analysis, which was used in this study, is a more formal approach where the researcher systematically works through a piece of text (e.g. an interview transcript or field notes) assigning codes to specific characteristics within the text. The following text details the steps undertaken to process, analyse and integrate the different data formats.

Processing and data reduction of close-ended questions

Responses to close-ended questions were coded and entered into Microsoft Excel 2003. Questions, which used the visual response format (see Appendix 2) as explained earlier produced two-dimensional and often multiple responses. For instance, some respondents located the whole group in one category, e.g. 100% are moderately committed to the process, whereas others sorted varying proportions of the group into two or more categories, e.g. 50% were greatly committed, 10% moderately and 40% not at all. For ease of interpretation, the percentages in the categories indicating strong and mild affirmation ('to a great extent' and 'to a moderate extent') were added together and the same was done with percentages in the two categories indicating weak affirmation or disaffirmation ('to a slight extent' and 'not at all'). Responses to those questions which provided the standard Likert-type response format were similarly grouped into two categories.

Processing and initial content analysis of notes

Notes taken during the administration of the questionnaires were entered into Microsoft Excel 2003, clearly indicating the question number they referred to and the respondent stating the comment. Preliminary content analysis was carried out to identify common themes among participant responses. This involved reading through the notes, identifying similar statements and developing a specific label to code passages of text of similar content.

Listening to audiotapes and revision of notes

The tape recordings were imported into the qualitative analysis software Transana 2.21 (Center for Education Research at the University of Wisconsin). The recordings were listened to in consultation with the field notes. Rather than generate verbatim transcriptions, audio files were annotated using the list of codes which had evolved from the analysis of the questionnaire notes. Field notes were amended accordingly. Halcomb & Davidson (2006) highlight that for techniques which seek to identify common ideas from the data rather than carry out linguistic analysis (as was the case here) verbatim transcripts are not necessarily required.

Integration and comparison of pre-and post-test data

Pre-test and post-test responses to close-ended questions were compared to identify changes and specifically the direction of change in the responses. The textual data was then used to enrich the results by providing possible explanations as to why certain changes had occurred. The small number of respondents provided opportunity to trace individual response patterns and link them to respondents' comments as well as provide an assessment of dynamics of change at the group level.

Cross-case comparison

In the final stage of the analysis, findings of the two case studies were compared to identify differences and similarities. Final case study reports were sent to study participants to determine whether findings were considered to be accurate.

Throughout this case study process, different strategies were applied to ensure the reliability and validity of research methods, instruments and findings. It is crucial to understand that in contrast to survey approaches, case study research aims to provide a detailed description of the phenomenon under investigation in the specified case rather than to generalise. From this perspective, validity and reliability need to be assessed in context rather than against an external and objective standard. In other words, the 'trustworthiness' of findings has to be ensured and established (Creswell 2003). The main strategies adopted to ensure adherence to this principle during the case study

research included triangulation and member-checking. Triangulation refers to the integration of different sources or types of data to build a single and consistent interpretation of findings, thus increasing the validity of research results. In this study, both quantitative and qualitative data were used to provide a coherent analysis of the social learning in two participatory RBM initiatives and, by means of comparison, helped to corroborate findings across cases. Study participants were provided with interim and final reports of the analysis to ensure that information was accurate and used in the intended context. Only few comments, mainly relating to the history and establishment of the panels were received from the representatives of the competent authorities. Furthermore the development of data collection instruments was grounded on existing research instruments, thus providing a clear focus for and allowing a comparison to existing knowledge of this research. This continuous comparison of emerging insights to the theoretical basis was key in the development of the second research activity presented in the following Section and which directly resulted from the early findings of the case study research process.

3.3 Postal survey

One of the key strengths of case study research is to throw up significant issues that might not be expected at the outset of an investigation (Hodkinson & Hodkinson 2001). Early in the data-gathering process of the case studies, it became apparent that whilst power relationships only played a minor role in stakeholder interaction, opportunities for learning seemed to be constrained in both stakeholder activities by other process attributes, such as a lack of opportunity for interaction and a limited timeframe. Indeed, the literature presented in Chapter 2 suggests that certain qualities of the communicative process are key prerequisites for stakeholder learning. Albeit these cases were selected on the basis of these, or at least some of these characteristics, the 'reality' of the stakeholder interaction only partially met these criteria and raised the question whether learning could be anticipated as an outcome. Conversely, it prompted the query whether different types of stakeholder activities would result in higher degrees of stakeholder learning. To this end, stakeholders participating in two purposefully selected engagement initiatives, the Working Groups established to support WFD implementation in the German state of Schleswig-Holstein and the RBD Advisory

Councils which were set up for the same purpose in Ireland were surveyed about their learning experiences. Whilst the latter closely resembled the case study processes (reported in the previous Chapter), the Working Groups are characterised by more frequent and intense interaction, as will be illustrated in Chapter 5. Admittedly, such a purposive sampling strategy does not provide a comprehensive description of social learning in participatory processes in general, but it does generate useful comparative data to draw some conclusions about the relationship between type of process and learning outcomes. Furthermore, it should be noted that the selection of these initiatives as well as their classification as consultative or interactive is based purely on their formal descriptions. Whether they really differ in the degree of stakeholder interaction they allow (thus potentially providing more or less 'ideal' conditions for social learning), can only be determined based on the information elicited from the respective participants (reported in Chapter 5).

A postal[13] survey was carried out and data was collected from participants in both initiatives using a self-administered questionnaire. This dissemination mode facilitated a timely turn-around of data collection which would not have been possible with telephone or face-to-face administration. Thus, a postal survey not only provided the means to implement the survey at limited costs, it was also the most suitable strategy to reach potential respondents who were located in different European countries. Naturally, using a self-administered questionnaire has certain limitations and implications for the type of data that can be collected. In contrast to the approach used in the case studies, a self-complete survey cannot achieve the same level of insight into the dynamics of stakeholder interaction and perceptions. However, whilst the focus of the case studies was on exploring and understanding the dynamics of social learning in participatory RBM, the survey aimed to investigate and to some extent confirm the relationships between the learning environment (in this case the participation format) and the actual learning process which merits a quantitative approach. The following

[13] As will be described in the remainder of the Section, an online version of the questionnaire was designed but generated only limited (4) responses.

sections outline how participatory initiatives were selected and the methods and procedures for data collection and analysis.

3.3.1 Sample selection

A purposive and multi-stage sampling strategy was adopted to obtain suitable survey respondents. Although purposive sampling should be avoided in quantitative research, it is considered appropriate under certain circumstances (Neumann 1997). For the purposes of this part of the research, it was important to identify particular types of initiatives for investigation. Initiatives were required to meet the following criteria:

- Initiatives should be inclusive, provide opportunity for interaction and extended engagement. Following the same rationale underlying the selection of case studies, it was assumed that participatory initiatives needed to warrant learning opportunities to qualify for inclusion in the study. Therefore, the same selection criteria relating to the structural features of the initiatives were applied.

- The collaborative initiative should have a history of one or more years. The study intent here was to limit eligible initiatives to those that have had enough time to for social learning to occur.

- Initiatives should vary in their degree of interaction, timeframe, age etc. This prerequisite was selected to ensure that the final sample of collaborative initiatives included diverse participation formats which would allow for a comparative analysis between types of processes.

Potentially suitable initiatives were drawn from the review of current participation practice carried out in the previous research phase in Germany and the UK. The Republic of Ireland was included in the search process to widen the scope of potentially suitable stakeholder activities. The first target sample consisted of 340 stakeholders participating in 34 local Working Groups to support implementation of the WFD in the German state of Schleswig-Holstein, hereafter referred to as Working Groups, and the second sample of 240 stakeholders were involved in the seven River Basin District Advisory Councils in Ireland, hereafter referred to as Advisory Councils. The engagement processes will be described in greater detail in Chapter 5. The final sample

of study respondents was obtained by contacting the responsible authorities to confirm that the initiative met the study criteria and to gain access to participants. In Germany, all 34 Working Groups agreed to participate in the survey. In contrast, only three out of seven Advisory Councils agreed to participate, highlighting again the challenge of both identifying and obtaining access to study participants. Similar to the case study selection process (reported in Section 3.2.1), only few suitable initiatives could be identified and, after having presented the study aims and methods to the responsible authorities, some declined to participate. These methodological challenges will be discussed in more detail in Chapter 7.

3.3.2 Survey questionnaire

The survey consisted of four general sections: first, a background section included a number of items related to the interests represented by and the level of attendance of the respondent. The second section included a number of items concerned with process characteristics, such as diversity of interests represented, timeframe, degree of interaction and information exchange and degree of process control. The third section asked participants to evaluate the stakeholder interaction in terms of openness and equity and the fourth broadly addressed outcomes attributed to social learning, including perceived relational and cognitive changes as well as an assessment of the level of agreement reached by participants. Finally, respondents were invited to provide any further comments at the end of the questionnaire which disappointingly only resulted in a few statements. Since the survey sought to further elaborate and confirm case study findings, the components and (sub-) dimensions assessed by the survey questionnaire largely correspond with those investigated with the pre- and post-test questionnaires employed in the case studies (see Section 3.2.2), as illustrated by Table 3-6. However, the length of the questionnaire had to be minimised to avoid non-response and to generate a manageable data set without compromising the information needed to satisfy the research questions. As a result, some dimensions were assessed using different and fewer items than the instruments utilised in the previous fieldwork phase (see below). Following the same rationale, no questions were included testing for connectedness, focusing the investigation of relational change on relationship- and trust-building.

Table 3-6: Comparative overview of social learning components and (sub-) dimensions assessed by the different data collection instruments

Components & (sub-) dimension	Case studies		Postal survey
	Pre-test questionnaire	Post-test questionnaire	Survey questionnaire
PROCESS FORMAT			
Inclusiveness		X	X
Extended engagement		X	X
Information exchange		X	X
Interaction		X	X
Process control		X	X
COMMUNICATION			
Openness	X	X	X
Process equity	X	X	X*
SOCIAL LEARNING OUTCOMES			
Relational change			
Relationships	X	X	X*
Trust	X	X	X*
Connectedness	X	X	
Cognitive change			
Knowledge acquisition		X	X*
Altered views		*X*	*X*
LEVEL OF AGREEMENT			
Common views		X	X
Consensus		X	X

* The survey questionnaire used fewer items than the pre- and post-test questionnaires or questionnaire items differed.

Of the 32 questionnaire items included in the survey instrument, 26 were replicated from the case study questionnaires and slightly rephrased to suit the overall style of questioning. For example, the question "To what extent do you have a better understanding of water resources and river basin management as a result of the involvement process?" (Question 35, post-test questionnaire) was changed to "To what extent do you agree or disagree with the following statement: As a result of the involvement process, I have a better understanding of water resources and river basin management" (Question 30, survey questionnaire). A limited number of new questions (meaning they were not taken from the case study questionnaires) were derived from the literature (see Appendix 1) to reduce the number of items in instances where the case study questionnaires utilised several questions to explore one dimension. For example, case study questionnaires contained two questions to characterise respondent's relationships to other stakeholders. Given the need to minimise the length of the survey

instrument, only one item was selected to evaluate the extent to which stakeholder relationships improved.

Table 3-7 provides a detailed overview of the components and (sub-) dimensions assessed through the survey questionnaire as well as the selected indicators and the number of the related questionnaire items. Appendix 3 contains a copy of the survey instrument.

Table 3-7: Overview of (sub-) dimensions, indicators and related survey questionnaire item

Components, (sub-) dimensions & indicators	Questionnaire number
Process format	
Inclusiveness	4*
Extended engagement	
Length of meetings	5*
Number of meetings	6*
Information exchange	7*
Interaction	8*
Process control	
Agenda setting	11*
Process design	12*
Communication	
Openness	
Information sharing	14*
Openness about interests & goals	15*
Expressing oneself	16*
Expressing disagreement	17*
Process equity	
Own ability to influence	18
Other participants listen	19

Table 3-7 (continued): Overview of (sub-) dimensions, indicators and related survey questionnaire item

Components, (sub-) dimensions & indicators	Questionnaire number
Social learning outcomes	
Relational change	
Relationship-building	
New working relationships	25
Ability to cooperate	26*
Sense of community	27*
Trust	
Perceived level of commitment	28*
Perceived fairness	29
Cognitive change	
Knowledge	
Factual knowledge	30*
Knowledge about other participants' interests	31*
Altered views	
Altered view of most important RBM issues	32*
Level of agreement	
Common views	
Common view of RBM problems and causes	24*
Consensus	
Consensual decision-making	21*
Fairness of decisions	22*
Satisfaction with decisions	23*

*Questionnaire items taken from the pre-test/post-test questionnaires deployed in the case studies.

In addition, the opening section sought to establish the specific stakeholder activity the respondent was associated with. The inclusion of this open question enabled the researcher to track responses and proved very useful in directing follow-up at groups with slow response rated during the subsequent implementation of the survey. A further two close-ended questions elicited information on the interest represented and the level of attendance. Both questions were included to enable comparisons between sub-samples and to provide further variables which might explain differences in the social learning dynamics.

Following the response format selected for the case study questionnaires, the majority of the questions were designed as Likert-type statements addressing requesting responses on a four-point scale of agreement, in which '1' indicated strongly agree and '4' strongly disagree. Points '3' and '4' indicated mild agreement or disagreement,

respectively (see Section 3.2.2). However, all close-ended questions provided the opportunity to chose a "Don't know" option. The questionnaire was organised in four sections, namely general information, process format, communication and interaction, and outcomes. With the exemption of the questions in 'General information' and one question in the subsequent section, all items followed the same format. Overall, the questionnaire made limited use of open questions to ensure comparability of responses and keep the data to a manageable size. As noted above, only at the end of the questionnaire was space provided to encourage further feedback and comments.

Time constraints did not allow for the test/re-test approach which was adopted in the case studies. Therefore, great care was taken to word statements asking for an assessment of outcomes (for example 'better relationships') in such a fashion that questions clearly related to the stakeholder activity. For instance, many statements included the phrase "as a result of this process" to highlight that respondents should reflect on their response as a function of their involvement. One point which should be critically noted is that all items were formulated in the affirmative potentially causing acquiescence, that is the tendency to disagree or agree with a statement regardless of its content (de Vaus 2002). Although it cannot be completely ruled out that this shortcoming in the question wording had the described effect, the analysis in Chapter 5 shows that there was considerable variation in responses both when we compare survey data by dimensions as well as individual items suggesting that respondents made considered choices when selecting from the response categories. Since most items (26 out of 32) were taken from the previously used questionnaires, it was deemed sufficient to pilot the questionnaire with a limited number of colleagues due to the extensive piloting of the case study questionnaires (see Section 3.2.2). Post-pilot revisions only included minor grammatical changes.

The survey instrument as well as accompanying documents were carefully designed and compiled in a survey pack to enhance response rates. Following principles outlined by Dillman (2006) bold, dark print was used for questions and light print for answer choices. Questions were consecutively numbered in reverse print to clearly structure the questionnaire. Answer categories were listed vertically instead of horizontally. A general introduction reiterated the confidentiality and anonymity agreement and clearly

explained how to complete the questionnaire. Furthermore, each question was accompanied by instructions. The front cover clearly stated the title of the survey, the researcher's affiliation and return address. A self-addressed, pre-paid envelope was enclosed. The survey instrument was initially designed in English and then translated into German for dissemination to the respondents in Schleswig-Holstein. The German version was checked by a second native speaker to ensure its equivalence.

3.3.3 Survey implementation

Questionnaires were distributed to the 340 stakeholders involved in the Working Groups in Schleswig-Holstein by the groups' chairs. Advisory Council secretaries disseminated the questionnaires among the 117[14] stakeholders participating in the three councils which had agreed to contribute to this study (the Eastern RBD Advisory Council, ERBD AC, the South-Eastern RBD Advisory Council, SERBD AC and the South-Western RBD Advisory Council, SWRBD AC). An offer was made by the researcher to disseminate the survey directly via post to the potential respondents but authorities preferred Working Group chairs and Advisory Council secretaries to act as 'gatekeepers'. Paper copies of the questionnaire accompanied by a letter explaining the background to the study and a freepost return envelope were posted to respondents or disseminated during meetings. The information letter directed the respondents to a web based survey which was operational at the time of the initial mail out in mid June 2007. It was hoped that such a multimodal strategy would raise the response rate as suggested by Dillman (2006). The advantages and disadvantages as well as the specific implementation challenges of online surveys are certainly a topic for broad discussion. However, as only four respondents chose to complete the online version of the survey questionnaire, a more detailed account of the considerations and decisions followed when designing the web based questionnaire will be foregone.

[14] Only three of the seven RBD Advisory Councils agreed to participate in the survey. Thus, only 117 of a possible 240 respondents were approached in the mail out.

Two follow-up mailings were made following techniques suggested by Dillman (2006). A first reminder letter was disseminated by the Working Group chairs and Advisory Council secretaries four weeks after the first mailing in mid July. Since the response rate, especially from the Advisory Council members, remained unsatisfactorily low, a new questionnaire and a final reminder were sent out after a further six weeks at the end of August. Data collection was completed in October 2007. 40% (130) of the stakeholders involved in the Working Groups in Schleswig-Holstein and 38% (44) of the Advisory Council members completed the questionnaires[15].

A major difficulty in survey implementation was that questionnaire dissemination was facilitated by gatekeepers. As a result, non-respondents could not be specifically targeted[16]. Potential inconsistencies in the dissemination and follow-up procedures might have potentially impacted the responses received from the Advisory Councils. However, the low response rate might also be connected to poor attendance of Advisory Council meetings. Records, where available, show that with the exemption of the SWRBD AC, attendance was low in the investigated councils[17]. On average, only about a third of the members serving on the ERBD AC and the SERBD AC attended the meetings prior to the implementation of the survey. In the case of the SERBD AC, the problematic of obtaining full attendance was further confirmed by the responsible river basin manager (Ray Spain, 23 April 2007, personal communication).

3.3.4 Data analysis

Upon return, questionnaires were provided with identification numbers. Survey data was directly entered into SPSS 10.0 for Windows based on a prepared coding sheet. To assess accuracy of data entry, a random sample of surveys was selected and crosschecked by an individual previously not involved in the data entry process. Further

[15] Before the final mail out, the response rate for the Advisory Councils stood at 25% (29).

[16] Gatekeepers in the SWRBD AC and two Working Groups (Working Group 7 and 19) provided contact details of the respondents after the initial mail out.

[17] Minutes of meetings are available at www.wfdireland.ie.

data cleaning procedures were applied to identify invalid responses or errors. Initially, descriptive analysis of the whole data set was carried out to obtain an initial impression of the distribution of each variable across the two samples. The mean was used as a measure of central tendency and percentages were used instead of frequencies given the comparative nature of the research questions and the unequal sample sizes. Scales were constructed from conceptually linked items to reduce the number of variables for subsequent analysis. Index reliability and internal consistency was tested using the Cronbach's alpha statistic.

Subsequent statistical analysis mainly employed the Mann-Whitney-U and Kruskal-Wallis tests. The Mann-Whitney-U-Test is the non-parametric or distribution-free test which assesses whether two samples have been drawn from population distributions with the same central tendency. To apply the Mann Whitney test, samples should be unrelated, meaning that respondents differ in the two samples, and the number of elements in each sample is no less than five. In order to measure significant differences, two samples are combined into one data set and then ranked. The sum of ranks for each sample is calculated and then compared. If the two populations have the same distribution then the sum of the ranks of the first sample and those in the second sample should be close to the same value. The Mann-Whitney-U-Test is regarded as the most powerful non-parametric alternative to the available parametric tests (Pallant 2005).

The test is appropriate when the requirements of parametric tests, normality of distribution and a measurable distance between scores, are not met. Per definition, ordinal data, such as the majority of the data generated with the survey questionnaire does not meet these requirements. The literature, however is contradictory when it comes to the performance of Mann-Whitney-U-Tests for unequal sample sizes, as is the case in this study (Working Groups: n=130; Advisory Councils: n=44). Whilst some sources suggest that the Mann-Whitney-U-Test is applicable to arbitrary sizes (Siegel & Castellan 1988) other sources stress the importance of equal sample sizes (Zimmerman 2006). Small deviations from this requirement usually do not affect substantive conclusions but large inequalities, like the one given in this research, might lead to falsely rejecting the null-hypothesis. In the light of contradictory opinions, Mann-Whitney-U-Test were performed first with unequal sample sizes (Test 1) and then with

approximately equal sample sizes by randomly drawing sub-samples[18] of the larger German sample (Tests 2 and 3). Results from performing the test with equal and unequal sample sizes were consistent. Therefore, reporting of results in Chapter 5 draws from Test 1.

Additionally, Kruskal-Wallis-Tests were applied to assess whether sub-samples significantly differed in their responses. Like the Mann-Whitney-U-Test, this test is performed using the ranked rather than the original data. It tests the null-hypothesis that multiple independent samples come form the same population and measures how much the groups' ranks differ from the average rank of all groups. It does not assume normality and can be used to test ordinal variables with unequal sample sizes (Siegel & Castellan 1988). Since some of the sample sizes were below the threshold values required for asymptotic testing (ibid.), the exact test method was used to calculate significance levels. Reporting of differences is based on the commonly accepted 0.05 significance level.

To test for associations between variables, Kendall's tau ranking coefficient was calculated. The coefficient is a non-parametric statistic which measures the association between two ordinal level variables and is, like the Mann-Whitney-U-Test carried out on the ranks of the data. The value of the coefficient lies between –1 and 1 indicating negative associations and positive associations respectively. If two variables are completely independent, the coefficient has a value of or close to 0. Thus, Kendall's' tau not only measures associations but also indicates the direction of association. There are three variations; Kendal's Tau a, b, and c. In this case, Kendall's tau c was used as it corrects for ties in the data (unlike Kendall's tau a) and can be used for larger tables (unlike Kendall's tau b). The coefficient essentially represents the difference between the two probabilities of observing concordant and discordant pairs (Conover 1980). Since the survey questionnaire provided only limited space for comments, qualitative data was limited. Data was imported in Microsoft Word for Windows. Using the codes

[18] Test 2: n_1= 56, n_2 = 44; Test 3: n_1=57, n_2=44.

developed from a first content analysis, the data was reviewed again to identify common themes to enrich the quantitative survey results.

The above description of the survey indicated in several places the measures undertaken to ensure reliability and validity throughout the design, implementation and analysis process. In contrast to the case study research presented earlier, questions of reliability play a crucial role in survey research. Essentially, a measurement is considered reliable if it produces the same results on repeated occasions. Therefore, a test-retest method where the same people are asked the same questions at a certain interval is an ideal way to check reliability but is also hardly practicable. To alleviate this problem, de Vaus (2002) suggests using multiple-items testing the same concept, as was done in the survey instrument, rather than single questions. By assessing inter-item correlations, the consistency of one person's response to one item in comparison to other items on the scale can be established. This study employed the commonly used Cronbach's alpha coefficient to examine the reliability of questionnaire items.

Furthermore, several steps where undertaken to ensure that questions measure what they are intended to measure or, in other words, that they are valid. In developing the survey instrument, great care was taken to identify indicators which reflect the social learning model proposed in the literature. Questionnaire items were largely developed from instruments used in previous studies (see Appendix 1) and extensively tested in a pilot study[19], thus minimising construct validity threats. Additionally, survey reports were compiled and disseminated to survey participants to review the accuracy of results. However, this only prompted few positive comments which confirmed the study findings and particularly the participation challenges identified through this research.

[19] As explained earlier, the majority of items were replicated from the data collection instruments utilised in the earlier fieldwork phase which were piloted with Cranfield University students (Section 3.2.2).

Finally, a brief word on the external validity of the survey results: are survey findings generalisable beyond the immediate processes? Although generalisability is considered one of the key strengths of survey research, we should be cautious in generalising the results of this survey to the whole population of participatory initiatives in the context of the WFD. Chapter 7 will elaborate on in this point more extensively when discussing the limitations of this study. However, it is important to understand that the survey initiatives were purposefully selected because they represent two distinct types of engagement process, namely a consultative and an interactive approach and, in this sense, findings may be generalised to similar types of processes. Nevertheless, neither the sample nor findings can be used to infer social learning experiences of stakeholders involved in participatory RBM across Europe.

3.4 Integration, interpretation and discussion of findings

This phase of the study focuses on the integration of the findings of the two previous phases. However, rather than merging or converging the datasets, they complement, support, confirm or contradict each other. Results are interpreted and discussed to respond to the research questions and overall study aims. Findings are compared and contrasted with the literature to highlight where they support previous research and the current debate and to identify new themes and insights (Chapter 6). The process of synthesising and interpretation of findings is illustrated in Figure 3-2.

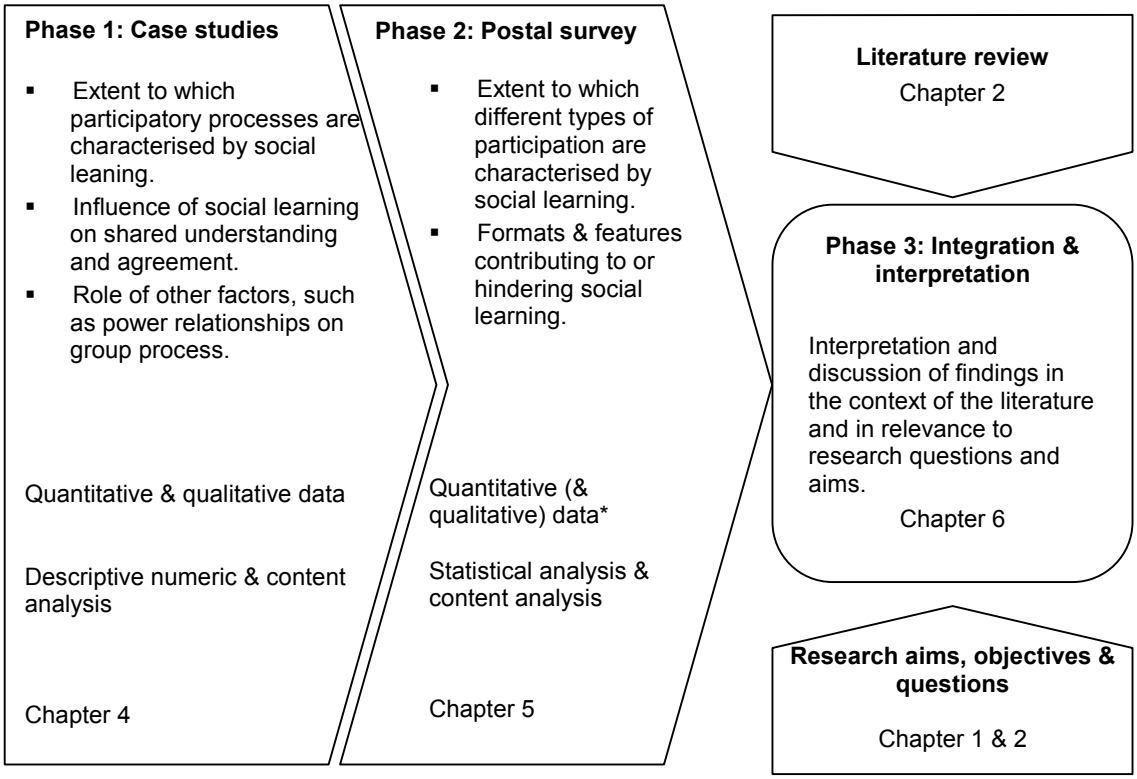

Figure 3-2: Integration, interpretation and discussion of findings from phase 1 and 2

* The postal survey mainly generated quantitative data; qualitative data analysis was therefore limited.

3.5 Ethical considerations

Permission to conduct the studies was granted by the authorities organising the participatory RBM initiatives investigated in this research. All data collection and analysis were carried out in accordance both with the 1998 Data Protection Act and using the ethical research guidelines provided by the British Sociological Association (BSA 2002).

Informed consent

Information sheets and consent forms were used throughout all stages of the research process (Appendix 4). As can be seen from the information sheets, the type of involvement as well as expected time commitments are clearly stated. Consent forms (both for pilot and case study respondents), emphasised that participation in the study was voluntary and potential respondents were free to withdraw from the investigation at any time. Since the pilot study involved gambling and betting, the information material and consent form specifically highlighted the associated dangers. Participants were required to return the consent form before the pilot and the data gathering process in the

case study sites commenced. Consent to the survey was implicit in the return of the instrument. However, both the accompanying information letter as well as the introduction to the survey questionnaire clarify that questionnaire completion was voluntary. All information materials provided full contact details of the researcher for further inquiries as well as contact details of the research supervisor, should any issues arise which participants did not wish to discuss with the researcher.

Privacy and confidentiality

Throughout this study, pilot and case study data participants were only referenced with identification numbers and no information was provided which could identify particular respondents. Since the survey was, apart from few exemptions, disseminated by Working Group chairs and Advisory Council secretaries, the researcher had very limited access to names or contact details of the respondents. Survey data was only coded with the specific group or council name which facilitated the tracking of responses. All data was stored in a secure location and was only accessible by the researcher.

3.6 Summary

This Chapter has provided a detailed description of the research design, procedures and methods used in the two main phases of empirical fieldwork. In summary, this study employs a sequential mixed methods research design to explore social learning in participatory water resources management and to develop an understanding of the conditions under which it occurs. In the first phase, a multiple case study strategy was carried out to analyse the multidimensional nature of social learning in two participatory RBM initiatives. Data were collected using partially identical pre-test and post-test questionnaires. These were administered to stakeholders participating in these initiatives which allowed for the collection of both quantitative and qualitative data. Insights gained through the preliminary analysis prompted a second research activity. Stakeholders participating in two different types of participatory initiatives, one consultative and interactive process, were surveyed on their learning experiences. This Chapter aimed to provide a clear description of how social learning is investigated in each of these phases and the decisions involved in selecting procedures and methods to achieve the overall aims of this study. The following Chapter 4 will present the findings

of the first phase of the research, the case studies. It will illustrate how these findings led to an expansion of the focus of this inquiry and as a consequence, the implementation of a survey (Chapter 5).

CHAPTER 4: EVIDENCE OF SOCIAL LEARNING? – A COMPARATIVE STUDY OF TWO STAKEHOLDER PANELS

This Chapter presents the findings of a field study of social learning in two participatory RBM planning initiatives in Germany and the UK which were established in compliance with the European WFD. The two cases, the Regional Water Council Emsbach-Mittlere Lahn and the Anglian RBD Stakeholder Liaison Panel, were purposefully selected for this investigation, as these panels were expected to warrant the degree of interaction and deliberation between stakeholders which is assumed necessary for social learning to occur. Section 4.1 will illustrate the case study context as well as describe the composition, purpose and working procedures as well as their main contributions to the planning process during the study period. As will be seen, panels are similar in their organisation but vary in the scale at which they were established and the type of stakeholders involved. In both cases, the researcher attended several meetings to introduce the study and to present interim as well as final results. Meeting documents were regularly made available which enabled the researcher to closely monitor each initiative's progress.

The reporting of results in Section 4.2 mainly draws from the data which was collected using two administered questionnaires. The broad focus generated a large data set including both quantitative and qualitative data. In the interest of presenting a concise and focused analysis and to respond to the research questions stated in Chapter 2, the subsequent analysis exposes evidence of four categories of indicators associated with social learning processes: effective communication and interaction, changes in group relationships and cognitive changes as well as the level of agreement reached by the groups. Furthermore, the Chapter reports the stakeholders' assessment of the process format generating valuable insight into the social learning environment. Although these results are largely discussed in Chapter 6, a certain, if limited degree of interpretation of the findings is undertaken throughout the Chapter and some preliminary conclusions are drawn in Section 4.3. This is necessary to illustrate the rationale for carrying out the survey based on case study findings in the second phase of the empirical research (reported in Chapter 5).

4.1 Case study background

Chapter 1 described how the empirical fieldwork draws from the experiences which are currently made with the active involvement of stakeholders to support implementation of the WFD. To recap, the WFD prescribes three forms of participation: information, consultation and 'active involvement'. Whilst information and consultation procedures are outlined to some extent by the directive, neither the term nor mechanisms for 'active involvement' specified. However, it is widely acknowledged, both in the official documents supporting WFD implementation (Working group 2.9 2002) as well the literature (e.g. Huitema & van de Kerkhof) that active involvement of stakeholders refers to interactive and deliberative forms of participation. Given the rather vague provisions of the WFD, approaches to engage with stakeholders vary in the European member states, mainly depending on local conditions, institutional structures and participation traditions. The following sub-sections briefly outline how stakeholder engagement is integrated in RBM planning in Germany and the UK, before profiling in more detail each case. It should be noted that the description of current participation practice in the UK context focuses on England, where the investigated case is located, rather than the whole of the UK.

4.1.1 The Regional Water Council Emsbach-Mittlere Lahn

The first case, the Regional Water Council Emsbach-Mittlere Lahn, is located in Germany. Water resources management in Germany is characterised by a clear division of responsibilities between institutions of the national government and the 16 federal states ('Länder'). The states take a prominent role in water management, with the federal government only being able to specify framework laws, leaving considerable room for the states to determine the actual structure and substance of water management. Germany decided to forego the establishment of river basin organisations and rather set up cooperative arrangements among those federal states which share a river basin. By adopting a coordination model to implement the WFD, the federal states maintain their legislative as well as executive autonomy. In principle, at each level of administrative organisation a mechanism for coordination at the hydrological level is being set up (LAWA 2001; Strathenwerth 2002)

To facilitate this process, the ten considerably large RBDs (Figure 4-1) were broken down into more workable sub-basins (‘Teileinzugsgebiete’), the number and size of which vary between districts.

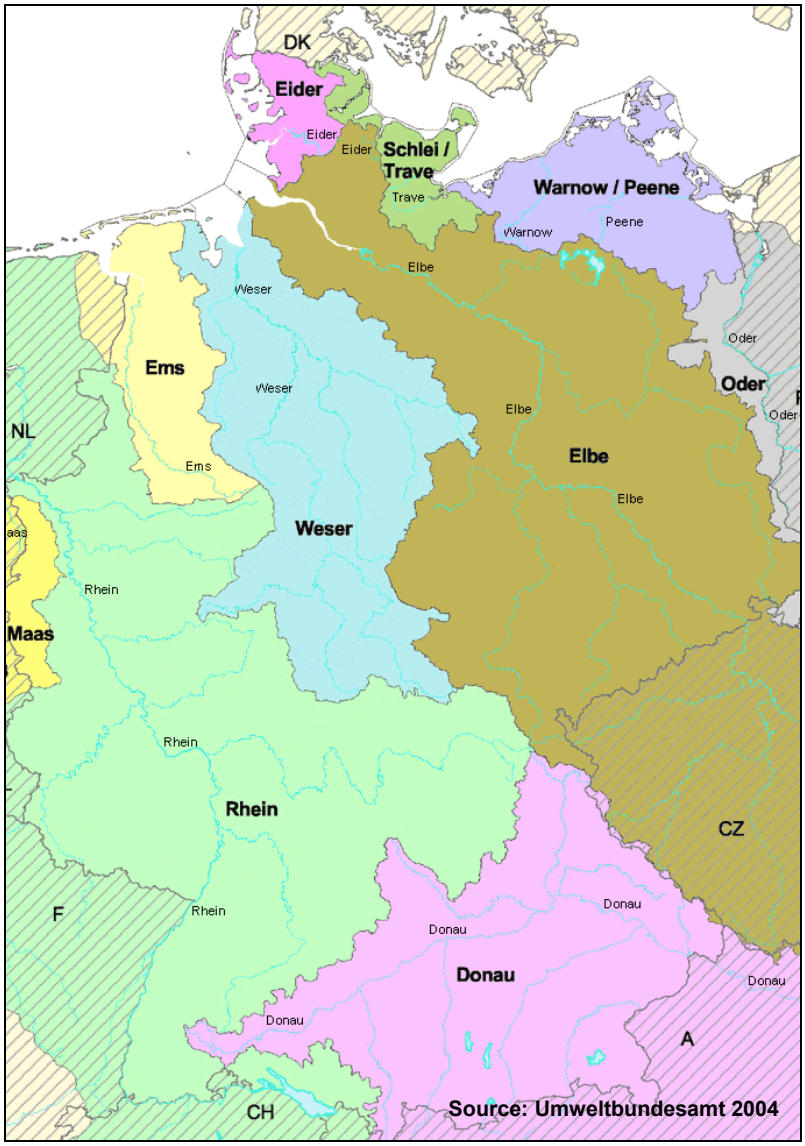

Figure 4-1: River Basin districts in Germany

In the RBD Elbe, for instance, five co-ordination units (‘Koordinierungsräume’) were specified, whereas the Rhine was subdivided into nine working areas (‘Bearbeitungsgebiete’). Often, a third level or ‘work unit’ is identified at the level of water bodies which are usually within one federal state only. In consequence, all management activities have to be coordinated at the state as well as at a river basin level. The emerging practice shows that while the EU procedures are formally harmonised within basins and sub-basins, e.g. in common reports, the methods, models,

and assessment procedures, used for pressure analysis and impact assessment for instance, may still differ from federal state to federal state sharing a basin or sub-basin (Dombrovsky 2007). Although, by the same token, approaches to actively involve stakeholders in the implementation of the WFD vary between states, it is possible to identify some commonalities. Many of the federal states have institutionalised advisory bodies within their respective Environmental Ministry which is usually the state's highest water authority. Their role is to support the water authority in the specification of its implementation strategy for the WFD. At the regional and local level, depending on the spatial organisation of the RBM planning process, engagement platforms on sub-basins and water bodies respectively have been established. These fora, councils or conferences generally aim to keep the public informed about the implementation of the WFD and to obtain a picture of public knowledge, views and concerns and usually meet up to three or four times a year. Initiatives at the local level tend to be more interactive. The Working Group s in Schleswig-Holstein, for example, meet up to once a month and actively contribute to each step of the planning process by assessing planning documents, providing data, and formulating recommendations. Although by no means exhaustive, Figure 4-2 illustrates the different approaches to public and stakeholder engagement found at different scales and indicating the level of participation they provide.

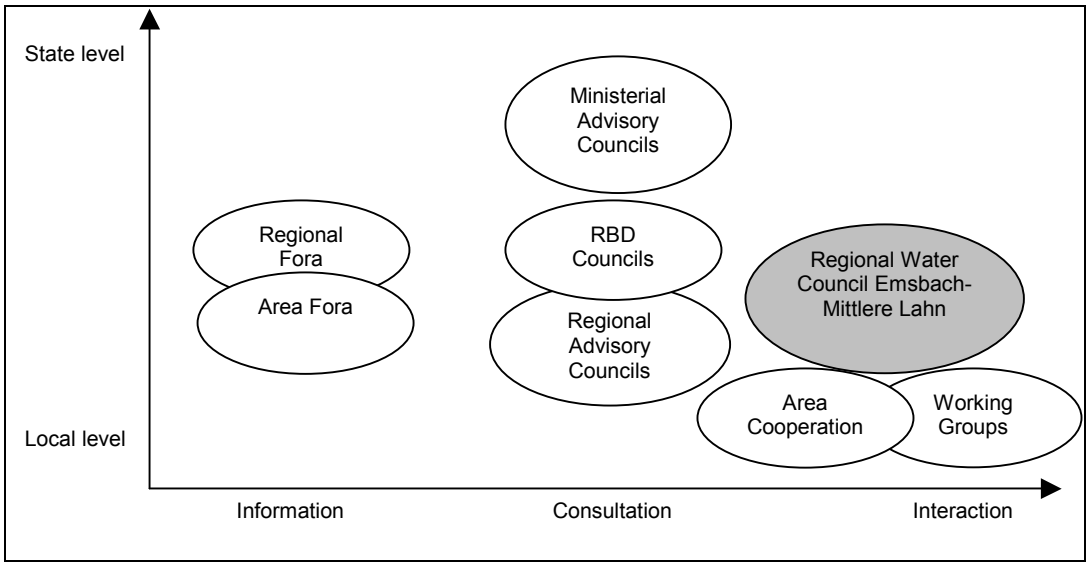

Figure 4-2: Approaches to stakeholder engagement in Germany by spatial and participation level

The Regional Water Council Emsbach-Mittlere Lahn which was investigated in this research and which will be described in more detail below, can be located at the more interactive end of the participation spectrum. The Regional Water Council Emsbach-Mittlere Lahn, from hereon referred to as the 'Regional Water Council', was established shortly before the beginning of the study period and is part of one of four pilot projects aiming to develop and test methods and procedures for the implementation of the WFD in the state of Hesse. The pilot project Emsbach-Mittlere Lahn[20] focused on a number of water bodies covering an area of approximately 4,756.6 km^2 which form part of the RBD Rhine (Figure 4-3).

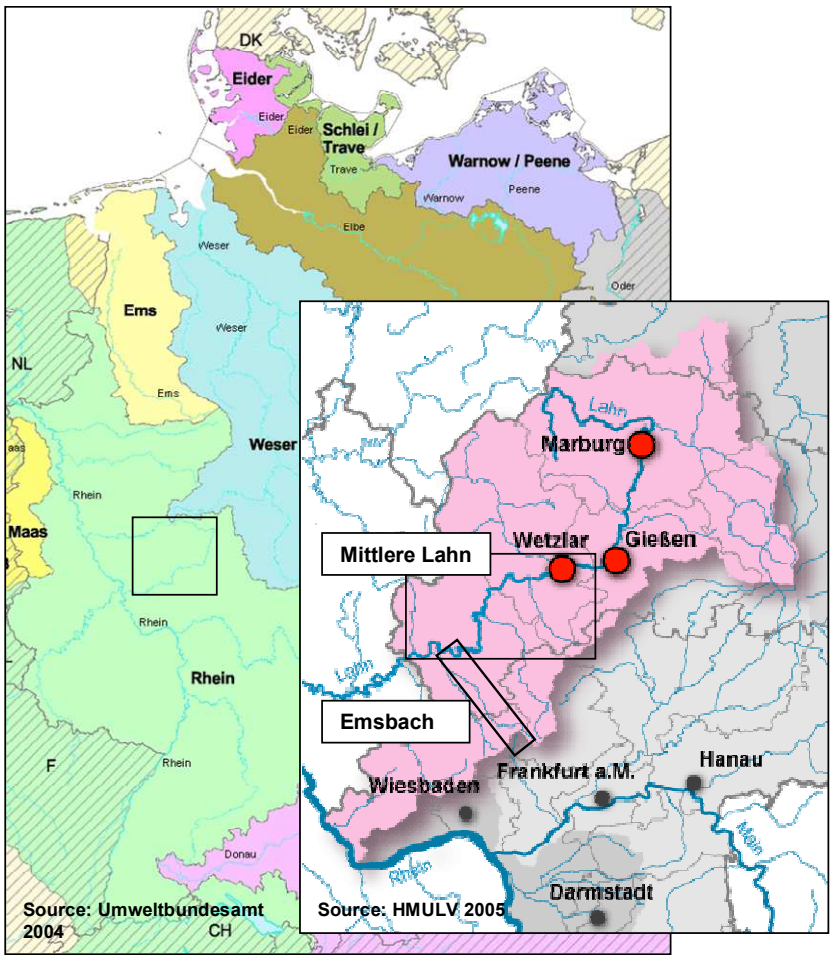

Figure 4-3: Focus of the pilot project Emsbach-Mittlere Lahn

[20] Project duration: 1 July 2005 – 31 December 2006.

The specific goal of the pilot project was to select cost-effective measures for these water bodies which represent typical pressures to be found in the RBD: the Mittlere Lahn was classified as heavily modified, due to structural alterations to its original morphology; the river Emsbach is severely affected by diffuse pollution from intensive agricultural land use in the surrounding catchment and was consequently reported to be at risk of achieving good status by 2015 (Regierungspräsidium Gießen 2006). The pilot project was managed by the upper water authority[21] which was supported by a project group including all agencies and authorities expected to take an active part in the implementation of the WFD and its subsequent RBD plans and Programmes of Measures. Whilst the water authority was mainly responsible for coordinating the project, specification of planning steps and decision-making lay in the hands of the project group. The planning process, which involved the evaluation and verification of the initial characterisation of the water bodies, definition of preliminary environmental objectives, and the selection of measures to achieve environmental objectives based on a cost-benefit analysis was furthermore supported by a group of external consultants from the University of Kassel. The project's final output was a matrix of potential measures to address the problems and issues identified in the characterisation of the investigated water bodies.

The Regional Water Council was established to integrate local and regional knowledge and perspectives in the planning process and first convened in October 2005, approximately two months after the first meeting of the project group. Local stakeholder groups and organisations were asked to nominate official representatives to serve on the Council, resulting in a membership of representatives from agriculture, environment and nature conservation, industry and commerce, water supply, wastewater treatment, hydropower, fisheries, tourism (canoeing and motor boating) and the municipalities. The majority of participants were volunteers meaning that they did not represent their

[21] Water resources management is embedded in the three-tier administrative structure of the state of Hesse: the Ministry for Environment acts as the highest water authority, the three regional governments ('Bezirksregierung') as upper water authorities within their regions, and municipalities as lower water authorities.

sector in a professional capacity. After its inception, the Council met on four subsequent occasions over the course of 18 months with the main purpose of advising the competent authority on the selection of measures to achieve good ecological status in the water bodies within the remit of the pilot project. Meetings were prepared by the authority staff, information and data was provided ahead of the meetings and was accessible through a project website. During the meetings, which were organised as round table discussions, staff of the regional authority and external consultants presented results of each process phase and the methods applied to the group, followed by a plenary discussion. The Council's concerns and discussions were then communicated by the authority staff to the project group for further consideration. A limited number of Council members were also able to join the meetings of the project group. Results were documented in two interim reports and one final report, which were disseminated to the individual participants of the Council for further comment prior to their finalisation. After the presentation and discussion of the project results, the Regional Water Council was disbanded in April 2007.

4.1.2 The Anglian RBD Stakeholder Liaison Panel

The second case, the Anglian RBD Stakeholder Liaison Panel, is located in the UK, more specifically in England. In contrast to the coordination model adopted in Germany, the Environment Agency (EA), a non-departmental government body generally responsible for pollution regulation, has been designated as the sole competent authority for implementing the WFD in England and Wales[22]. Eleven RBDs were identified, of which two cross the border with Scotland and two the border with Wales (Figure 4-4).

[22] In Scotland, the Scottish Environmental Protection Agency has been named as the competent authority.

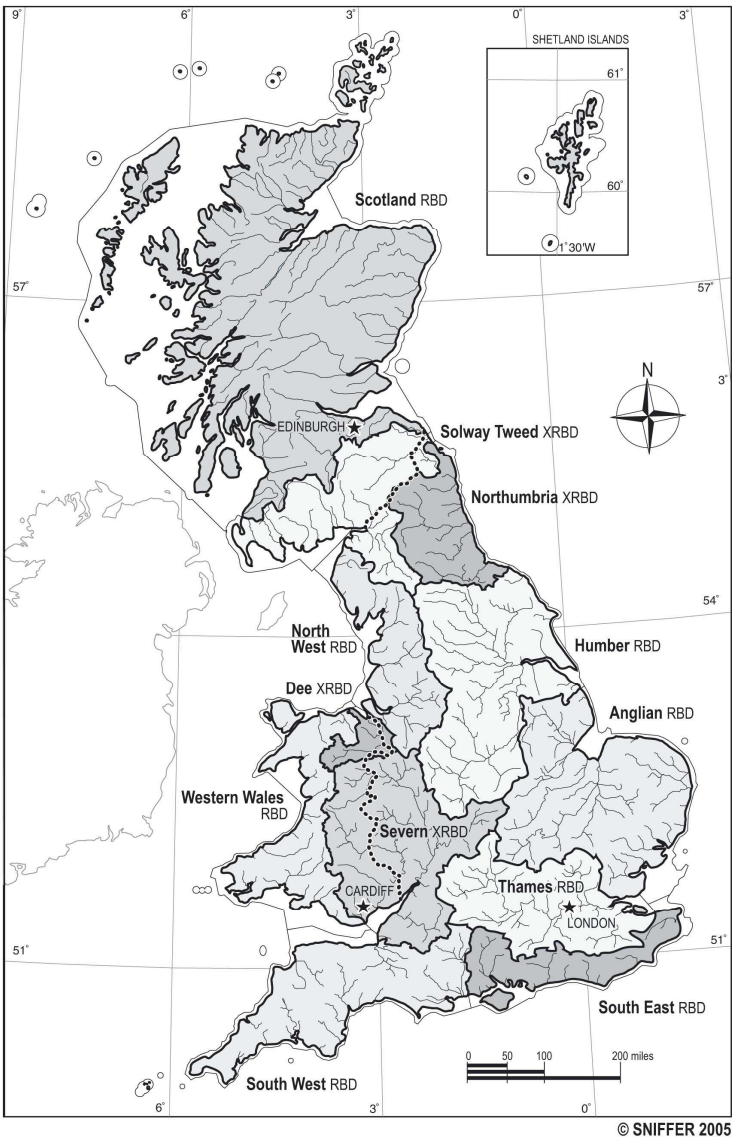

Figure 4-4: RBDs in the UK

As a consequence of assigning the responsibility for the implementation of the WFD to only one authority, a coherent multi-level approach to involve stakeholders in RBM planning is under way (Figure 4-5). At the core of the EA's participation strategy are the eleven RBD Stakeholder Liaison Panels which were established to ensure active involvement of co-deliverers (i.e. agencies and institutions which statutory powers to implement measures to deliver RBMPs) and professional stakeholder groups in the planning process. A National Stakeholder Liaison Panel contributes to the formulation

of national measures to support implementation of the WFD across England[23]. At catchment and water body level, the EA plans to access existing networks and groups, such as Coastal Fora or River Trusts for involving stakeholders in RBM (Orr *et al* 2007).

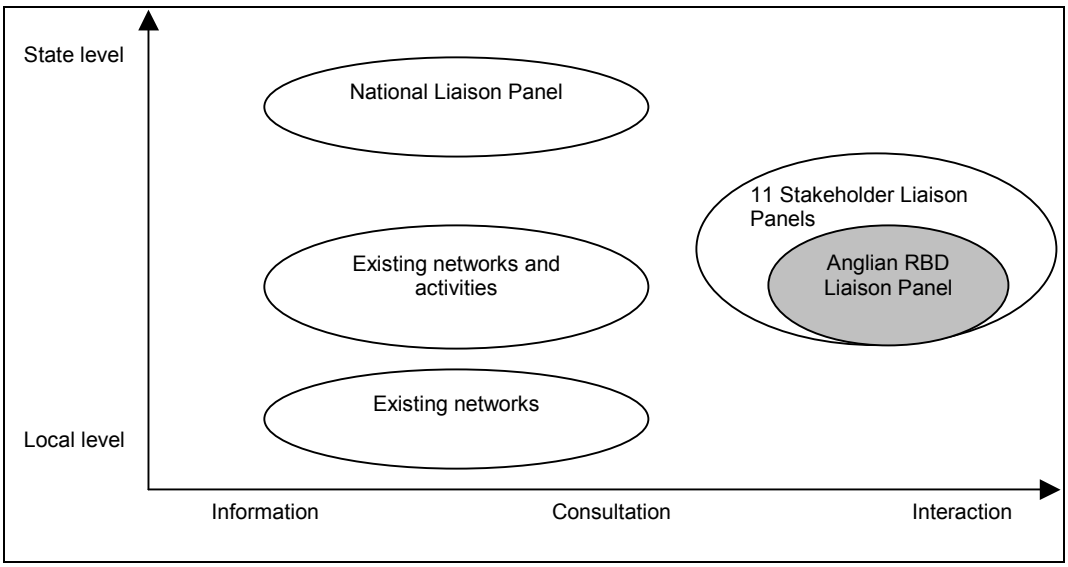

Figure 4-5: Involvement levels and approaches in RBM planning in England and Wales.

The purpose of the RBD Stakeholder Liaison Panels, from hereon referred to as Liaison Panels, is outlined by the following terms of reference:

- Provide their knowledge and understanding of the RBD as well as help the Agency identify and gather the data for effective river basin planning;
- Assist the Agency and other Panel members in devising and implementing river basin management plans; assist and guide the resolution of conflict that may occur over the course of the planning process;
- Provide help, support and advise to the Environment Agency in its role as competent authority for the planning process;

[23] A similar panel is intended to be institutionalised in Wales.

– Scrutinise the implementation of the WFD and the planning process to ensure that the WFD's requirements are met (EA 2006).

Each Liaison Panel meets approximately four times a year and is managed by the river basin management team for the respective RBD. The Anglian RBD, whose Liaison Panel was investigated in this study, covers over 27,890 km² and is characterised by a multitude of pressures: diffuse pollution is the most common negative impact on the water quality of rivers, lakes and groundwater bodies; morphological pressures also severely affect rivers, transitional and coastal water bodies; nearly half the lake water bodies and nearly 60% of transitional water bodies are reported to be at risk of not achieving good status due to point source pollution and water abstraction affects the good status of more than 40% of the water bodies at risk (DEFRA 2005).

The fifteen stakeholders serving on the Anglian RBD Stakeholder Liaison Panel were appointed by the Environment Agency on a 'Scheme of Appointment' and took up their posts in July 2007. The following sectors and institutions were each represented by one participant in the panel: the Environment Agency, Regional Assemblies, Regional Development Agencies, Local Authorities, Natural England, the Internal Drainage Boards, National Parks, water companies, environmental Non-Governmental Organisations (NGOs), farming, business and industry, ports, extraction and minerals, consumers as well as fishing (EA 2006). Initially, meetings were moderated by an external facilitator and are currently chaired and facilitated by members of the RBM team. Panel members are invited to present their work during the meetings and frequently report from other WFD-related meetings and events they attend during the Panel sessions. Relevant information is usually provided ahead of the meetings; results are summarised by the agency staff and disseminated for comment to the panel members after the meetings.

During the period of this study, members specifically contributed to the development of the strategy to consult the wider public in the planning process and helped identify the RBD's most significant water management issues. Both contributions were developed in an iterative process which involved several rounds of deliberation, best illustrated by the procedure adopted to identify the most important issues for the Anglian RBD. Initially, Panel members brainstormed a broad list of issues, followed by an

identification of selection and assessment criteria, which were determined by vote. This list of preliminary criteria was discussed during a national workshop which a number of members of the Anglian and other Liaison Panel attended. There, selection criteria were finalised and then used in the Anglian RBD Liaison Panel to score and finally select the most significant issues for the RBD. This list of issues was complied in a report, signed off by the Panel and then published for public consultation. In the future, the Liaison Panel will continue to contribute to each step in the process towards drafting and implementing the RBM plan and Programme of Measures for the Anglian RBD.

Table 4-1 summarises the main features of the two participatory initiatives. Although some features of the Regional Water Council (Germany) and the Liaison Panel (UK) vary, such as scale and overall timeframe, they both satisfy the case study criteria specified earlier in Chapter 3: a diverse set of sectors and interest groups are involved (inclusiveness), stakeholder activities are envisaged as interactive discussion fora rather than consultation processes (high level of participation), and repeated opportunities for stakeholder interaction were provided over the course of the study period (extended timeframe). The executive authority for making final decisions remained in both cases with the competent authorities,. Yet, the Regional Water Council was expected to actively contribute to the selection of measures for the respective water bodies. In the case of the Liaison Panel, the Terms of Reference specifically state that stakeholders advise the Agency on decisions for the river basin planning process and where possible decision-making will be by collective agreement. Thus, some degree of group decision-making was anticipated at the outset of the study. Finally, the date of their establishment, which coincided with the envisaged study period, allowed accessing both initiatives fairly early, before perceptions and views were likely to have been fundamentally changed by the interaction.

Table 4-1: Main features of the participatory processes investigated in the case studies

Case	Regional Water Council Emsbach-Mittlere Lahn (Germany)	Anglian RBD Stakeholder Liaison Panel (UK)
Scale	Water bodies	RBD
Actors involved	20 members representing agriculture, environment & nature conservation, business & industry, water supply, wastewater treatment, hydropower, angling, tourism, and the local authorities.	15 members representing the Environment Agency, Regional Assemblies, Regional Development Agencies, Local Authorities, Natural England, the Internal Drainage Boards, National Parks, water companies, environmental NGOs, farming, business & industry, ports, extraction & minerals, consumers, and angling.
Purpose	Advisory Council to provide information, contribute to the selection of measures, provide a 'regional and local perspective' throughout the process.	Advisory panel to identify and gather data for effective RBM, assist in devising and implementing RBM plans, support conflict resolution.
Methods	Chaired by staff of competent authority, presentations are followed by group discussions.	Chaired by staff of competent authority, presentations are followed by group discussions.
Timeline	Oct 2005 – April 2007; five meetings in total.	Jul 2006 – continuing; four meetings a year.

4.2 Comparative analysis

Seven out of thirteen stakeholders regularly attending the Regional Water Council sessions and seven out of fifteen stakeholders on the Liaison Panel contributed to the results reported here. Findings from the quantitative data are described and where possible, supplemented by insights gained through an analysis of the textual and audio data. To link the qualitative to the quantitative data, rather than simply stating frequencies with which certain statements were made, the following text indicates which respondent is quoted by referencing a unique identification alphanumeric. The data was not further aggregated at the group level although this would have certainly illustrated the broader group tendencies. However, in the light of the limited number of respondents and in the interest of both identifying as well as understanding these changes, it is important to be able to recognise individual response patterns or extreme shifts. Table 4-2 describes the interests represented by the study participants, the type of organisation they were affiliated to and the number of meetings attended by each participant.

Table 4-2: Description of the study participants

Respondent	Interest represented	Type of organisation	Meetings attended
Regional Water Council (Germany)			
G1	Environment & nature conservation ; Water supply	Professional	5
G2	Environment & nature conservation ; Angling	Voluntary	3
G3	Environment & nature conservation ; Angling	Voluntary	5
G4	Region/Municipality	Professional	3
G5	Waste water	Professional	3
G6	Environment & nature conservation	Voluntary	4
G7	Business & Industry	Professional	4
Liaison Panel (UK)			
UK1	Region/Municipality	Professional	4
UK2	Farming	Professional	4
UK3	Business & industry	Professional	5
UK4	Navigation	Professional	4
UK5	Recreation	Professional	3
UK6	Water level management	Professional	3
UK7	Environment & nature conservation	Professional	4

Respondents involved in the Liaison Panel represent a more diverse spectrum of interests than the German participants where stakeholders advocating environmental interests are marginally in the majority. Furthermore, three of the German respondents consider themselves as representatives of a number of interests whereas the stakeholders on the Liaison Panel have a mandate to represent one sector only. A possible explanation for this difference lies in the type of organisation these individuals are associated with. In the German case, a large number of stakeholders were nominated by a voluntary group or an NGO, whereas stakeholders participating in the Liaison Panel are acting within their capacity as an employee of a public body or an organisation. This in turn is largely due to the scale at which the respective stakeholder platforms were established. It should be noted that only few respondents attended all of the five meetings of the Regional Water Council and the Liaison Panel which had taken place

by the time of the last data collection. Whilst both the inception and the final meeting of the Council were well attended, only about half of the nominated stakeholders took part in all sessions[24]. For the Liaison Panel, records show that attendance is irregular with many of the stakeholders frequently being represented by substitutes. Out of the six meetings which took place during the study period, only one was attended by all the nominated Panel members[25]. Reporting of results is structured by the components and dimensions investigated in both case studies (see Chapter 3) in order to highlight differences and commonalities between cases and to avoid repetition.

4.2.1 Process characteristics

Respondents from both case studies were asked to assess the following characteristics of the process format: inclusiveness, timeframe, opportunities for information exchange and interaction as well as process control. Figure 4-6 shows that the majority of respondents from both panels viewed the involvement activity as inclusive and the timeframe as sufficient to allow for stakeholders to engage with one another. The data suggests that the panel meetings provided opportunities for information exchange and group discussions. However, respondents from both cases commented that opportunities for in-depth discussions of views and opinions were limited. It was widely noted that too much time was spent on gathering and exchanging information, rather than cross-examining and discussing information (G1, G2, G3, G5, G7 and UK1, UK2, UK3, UK6). One respondent poignantly stated that the Liaison Panel was 'being smothered with information' (UK2), a feeling which also emerged in the meetings with the German respondents. They stressed that too many complex topics were addressed during the meetings and a lack of previous knowledge made it difficult to process the information in the short amount of time available and engage in a meaningful discussion (G1, G2, G3, G4).

[24] Minutes of Regional Council meetings as well as further background documents are available at http://www.uni-kassel.de/integer/PGEmsbach.htm.

[25] Minutes of Liaison Panel meetings as well as further background documents are available at www.environment-agency.goc.uk (→Anglian RBD)

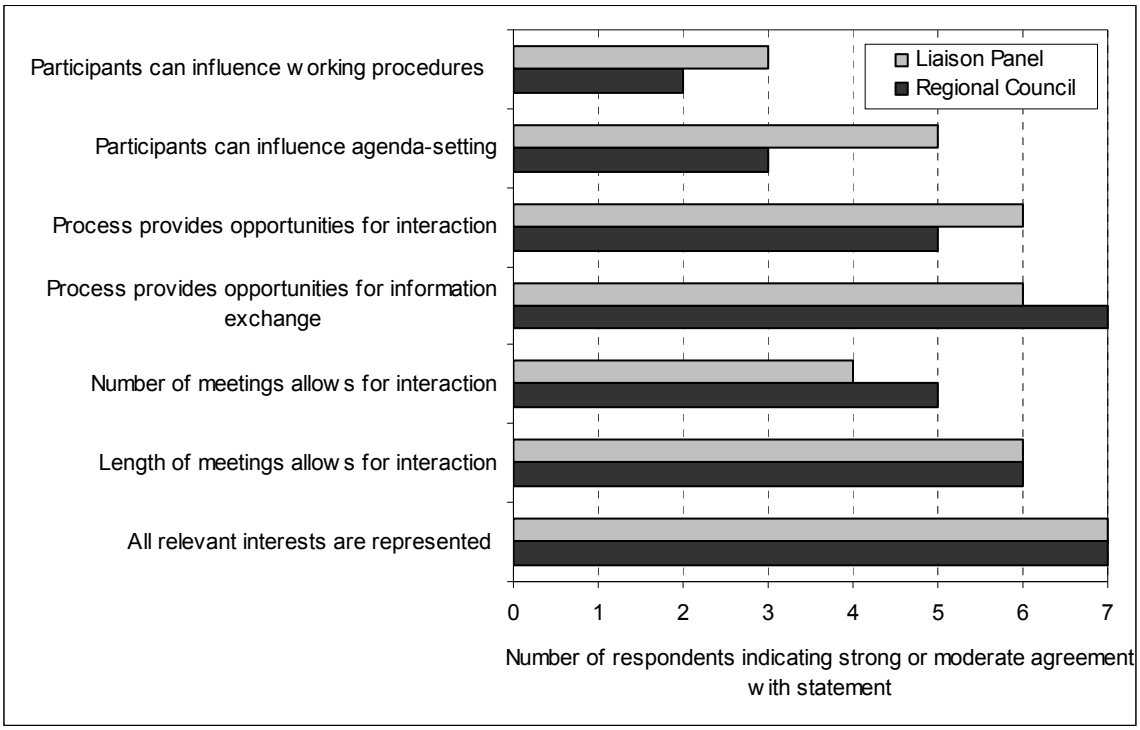

Figure 4-6: Assessment of the process format

Surprisingly though, UK respondents attributed the lack of meaningful deliberation not to the participation techniques but the regulatory framework and its translation into procedures and priorities by the competent authority. UK respondents noted that the authority's approach to implementing the WFD dictated the focus of stakeholder activities, thereby limiting their interaction to certain topics, preventing them from exploring each others' views, motivations and concerns (UK1, UK2, UK3, UK6, UK7). According to one respondent, the WFD was 'set in stone' only allowing people to work their way around it (UK6), meaning that there was limited opportunity to steer away from the objectives, procedures and methods defined by the competent authorities' implementation strategies. Consequently, it is not surprising that most respondents from the Liaison Panel felt they were able to influence the agenda of panel meetings but to a lesser extent the procedures and methods of working together as a panel. In comparison, German respondents rated their level of influence lower in both questions. However, stakeholders admitted that they could have exercised more influence, should they have wished to do so (G1, G4, G7 and UK2, UK5, UK7). In the Liaison Panel, a number of stakeholders highlighted that their suggestions have been taken up or would be accommodated if voiced, but also stress that they were not encouraged by the competent

authority to do so. According to these respondents, the agenda and the process were mainly driven by the authority (UK1, UK2, UK3, UK5, UK7).

4.2.2 Communication characteristics

Stakeholder communication and interaction was assessed with respect to openness and equity. Figure 4-7 compares the pre-test and post-test responses to questions assessing respondents' perceptions of the other group members' willingness to share information as well as reveal their goals and concerns. As it was explained in Chapter 3 (Section 3.2.4) questions, which used the visual response format (see Appendix 2) produced two-dimensional and often multiple responses. For ease of interpretation, the percentages in the categories indicating strong and mild affirmation ('to a great extent' and 'to a moderate extent') were added together and the same was done with percentages in the two categories indicating weak affirmation or disaffirmation ('to a slight extent' and 'not at all'). Although this aggregation of responses bears the threat of oversimplifying the respondents' assessment of the group, it can be assumed that these evaluations are likely to represent rough estimates of the perceived tendencies within the group rather than carefully considered figures.

Figure 4-7 can be read in two ways: at the individual level it illustrates what proportion of the group each respondent believed (for example) to openly share knowledge and information in the pre- and the post-test. To illustrate whether participants indicated a high or low level of open information sharing, percentages ranging from zero to and including 50% are presented in white circles and percentages higher than 50% in grey circles. Consequently, white circles indicate where half or less of group members were believed to share information, therefore indicating that only a few stakeholders communicated and shared knowledge or exposed their views. In the case of the Regional Water Council, the data suggests that the willingness to share information and knowledge was remarkably high and increased among the Council members throughout the study period. In comparison, some respondents perceived a large portion of the group to be less willing to openly discuss goals and concerns. A similar response pattern can be seen in the Liaison Panel, where stakeholders are perceived by their peers to readily exchange knowledge and information but to be less forthcoming about their concerns, interests and goals.

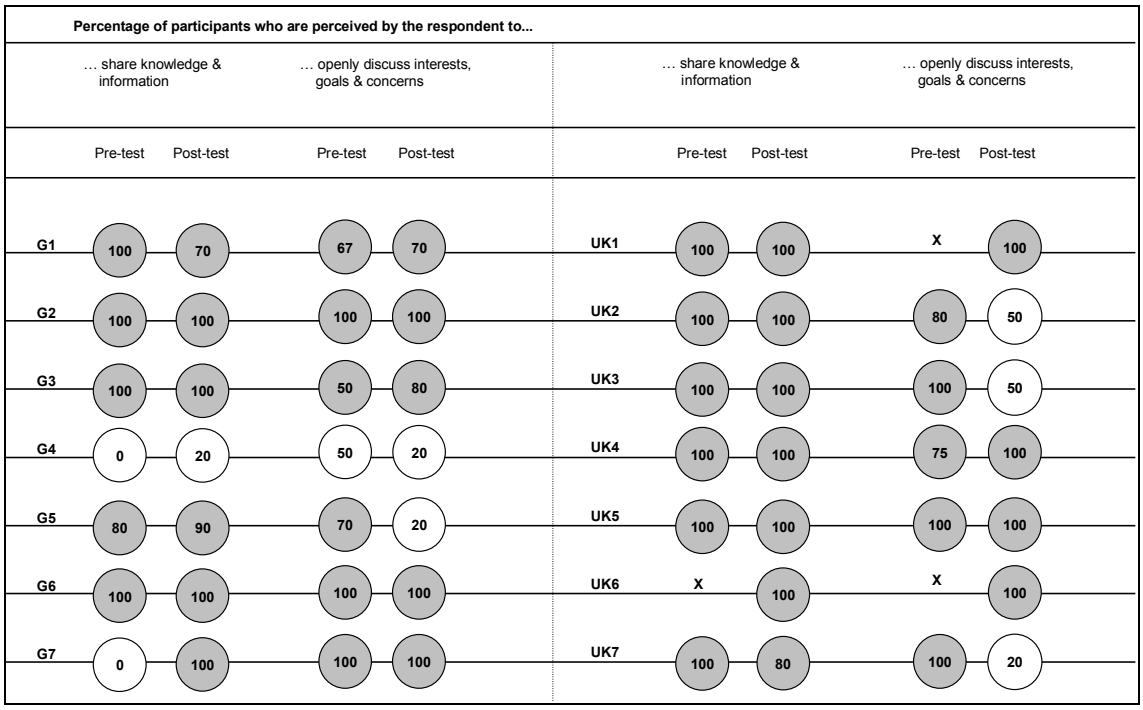

Figure 4-7: Indicators of openness

'X' signifies missing values due to non-response.

The extent to which the stakeholder activities provided all stakeholders with the same opportunities to engage in the group's discussions was assessed as a means to identify potential power hierarchies among participants. Figure 4-8 illustrates the respondents' perceptions of other members' ability to influence discussions and group decision-making. Only two of the German respondents perceived more than half of the Council members to be in a better position than themselves to exercise influence during the pre-test. At the time of the post-test survey the extent of these asymmetries were reduced since only one respondent in the German case study still perceived other panel members to exercise more influence on the stakeholder group. Interestingly, the relevant stakeholder in the German case study (G5) had not expressed this view during the pre-test survey. The data form the Liaison Panel similarly suggests power relationships were perceived to be rather weak, both in the pre- and the post-test. Those respondents who identified these differences attributed them to a variety of reasons, frequently quoting better access to information, their organisational affiliation as well as the ability of some stakeholders to build alliances with actors pursuing similar interests (see Appendix 5).

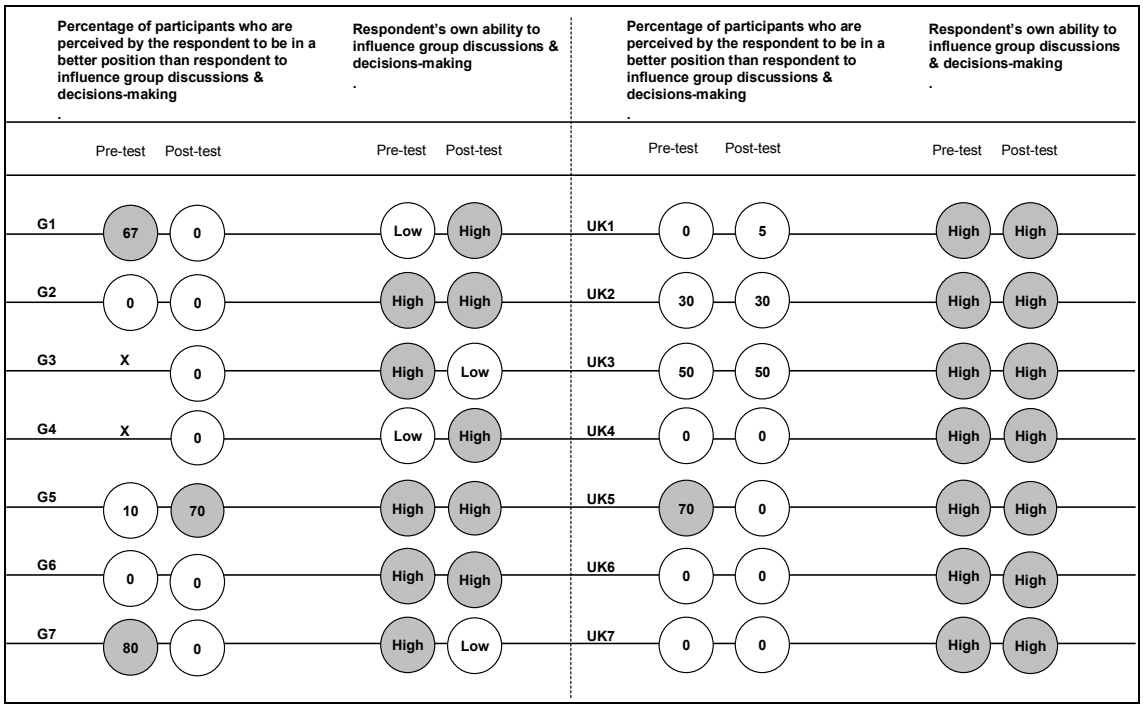

Figure 4-8: Indicators of process equity

'X' signifies missing values due to non-response.

When we look at how respondents assess their own influence, changes in both directions can be observed in the case of the Regional Water Council, although the majority of respondents still consider their ability to influence as somewhat high (Figure 4-8). We can compare the responses of those stakeholders who perceived their influence to be significantly lower during the post-test than during the pre-test, meaning they moved from high or moderate to a low level (G 3 and G7) with how they perceived the rest of the group. Both respondents also rate other Council members' ability to influence group discussions and decision-making to be low. One respondent explains that, although he thinks that he could have potentially exercised more influence, he was not motivated enough to contribute to the group (G7). In comparison, the UK respondents' belief in their ability to be heard remained high throughout the process.

Surprisingly, it was the regulatory framework which caused most respondents to speak of constraints and a feeling of powerlessness. Firstly, UK stakeholders noted that the implementation of the WFD by the competent authorities constrained both the topics to be addressed and the procedures followed by the Liaison Panel (UK1, UK2, UK3, UK6, UK7). Secondly, respondents from both case studies considered the WFD to be an 'environmental directive' implying that there was a bias towards the environmental

sector (G2, G3, G6 and UK2, UK3, UK5, UK6). Two respondents gave an indication of how this perceived bias affected their behaviour in their communication with other stakeholders by expressing a feeling of being the 'bad guys' (UK2 and G5). One German respondent noted that there seemed to be a division in the group between the people who wanted to protect the river and those who prevented the river from reaching 'good' status. As a representative of a sector who was likely to be affected by the provisions of the WFD and expected to deliver some of the measures, this stakeholder grew increasingly unwilling to discuss his sectors' interests openly (G5). It should be noted that the same actor was the only respondent to identify power imbalances among Council members. A similar view was expressed by one stakeholder in the UK who represented the farming sector which was linked to most of the significant water management issues in the RBD during the discussions of the Liaison Panel. This respondent admitted that he did sometimes 'hold back in order not to stir things up' (UK2). When these two respondents were asked whether they felt comfortable expressing their opinions, even when they differed from the ones expressed by others stakeholders both individuals (G5 and UK2) seemed to be slightly less comfortable than the rest of their peers with the exception of one other respondent in the Liaison Panel (see Appendix 5).

4.2.3 Relational change

Indicators used to assess socio-relational change were relationship-building, trust towards other group members and connectedness to the group. Respondents where initially asked to characterise existing relationships using one of the provided descriptions, namely acquaintances, professional relationships and friendships. Whilst stakeholders from the Liaison Panel characterised the previously existing relationships as work-related, both in the pre-and post test, the responses of the German respondents are slightly more varied. Regional Water Council members described some of the other Regional Water Council members as acquaintances during the pre-test, of which some seemed to have developed into closer professional relationships at the time of the post-test (Figure 4-9, Graph A).

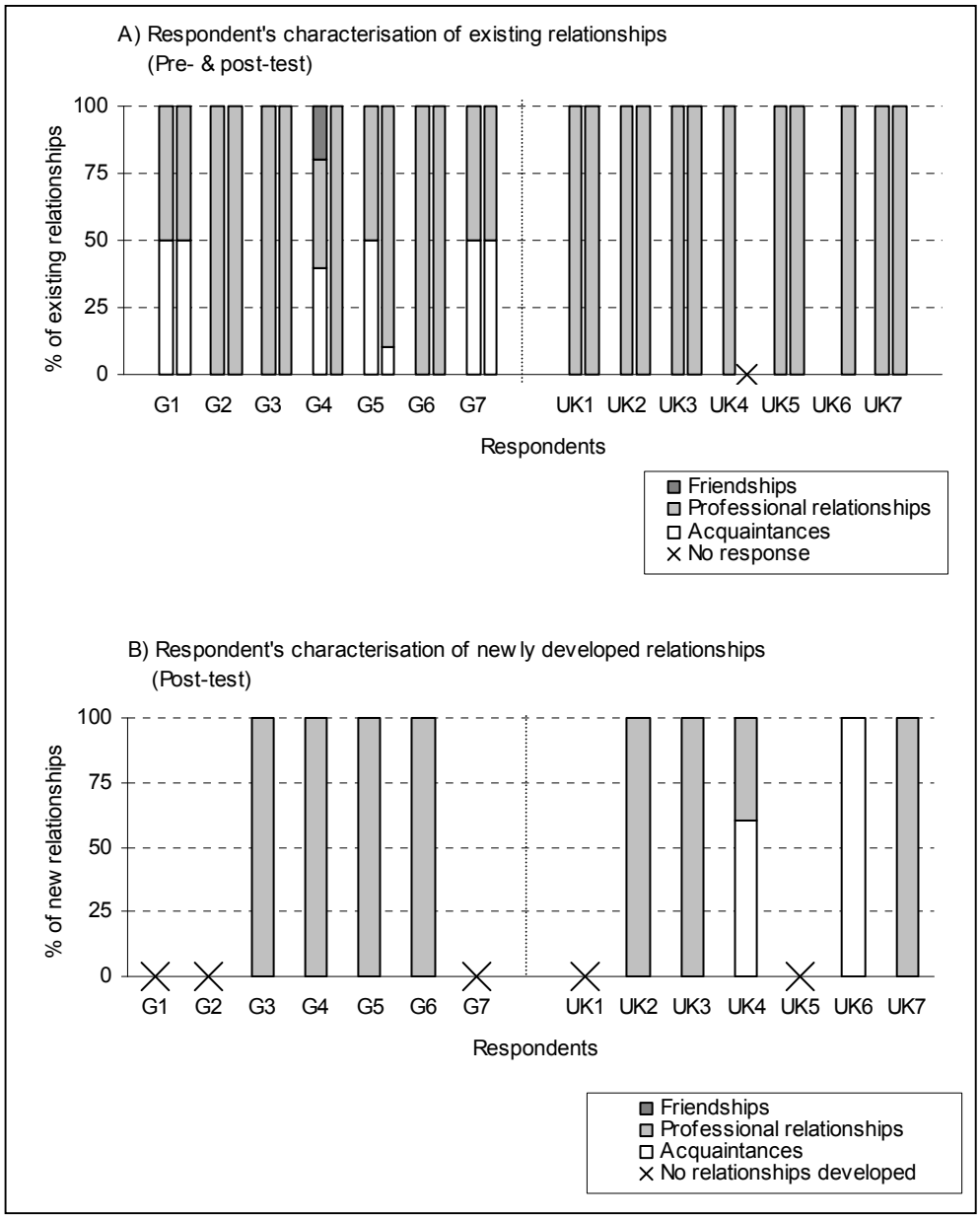

Figure 4-9: Indicators of relationship-building

With the previously unknown participants, new, mainly good professional relationships were developed to some extent in both cases (Figure 4-9, Graph B). It seems that some of the German as well as the UK respondents did not develop any kind of rapport with those members of the respective groups that were unknown to them before the beginning of the initiatives. However, it was highlighted by a small number of stakeholders that contacts have deepened with those representatives who pursued similar interests (G2, G3 and UK1). The respective German respondents explained that whilst they grew closer to some user groups, the collaboration had reinforced views and perceptions of other sector representatives and underlined their belief in the

irreconcilability of certain interests. Nevertheless, the fact that respondents in the UK case were increasingly confident that stakeholders would be able to continue the collaboration, and in the case of the Regional Water Council, to collaborate again with the same group should the situation come up again (see Appendix 5), suggest that relationships, although they did not vastly improve, also did not deteriorate.

When we look at indicators of trust, UK respondents displayed a remarkably high level of trust towards other panel members during the early phase of the involvement activity (Figure 4-10). Most respondents believed that the majority of panel members were committed to the involvement process as well as the common good, meaning that they were working towards results which were in the best interest of all stakeholders involved. Participants also felt that panel members were genuinely interested in learning about each others' concerns. In comparison, responses by the German stakeholders were far less coherent in the pre-test survey but showed a slight increase in trust towards the other panel members after having worked together for a year. Only one respondent developed a more negative impression of the other panel members during the time of the study (G7) (Figure 4-10).

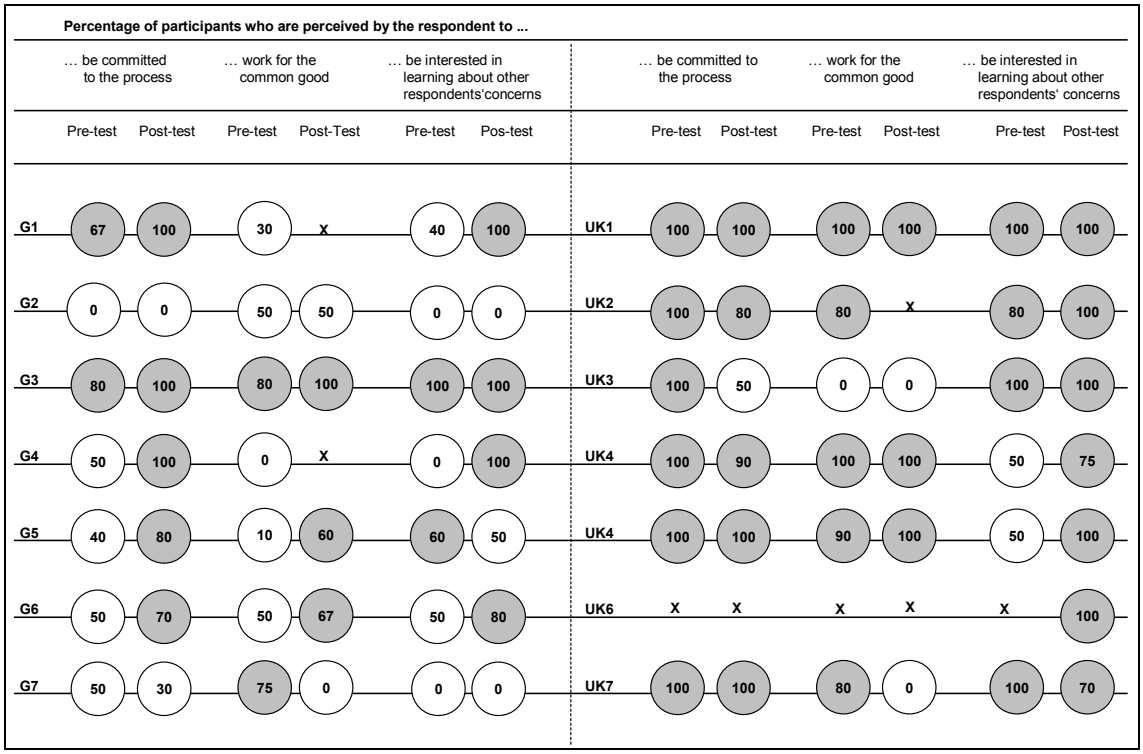

Figure 4-10: Indicators of trust

'X' signifies missing values due to non-response.

It should be noted that a number of respondents, both in the German and the UK case study, experienced difficulties in stating their views of the panel members, specifically when it came to rating their interest in the common good. Across both panels, four respondents felt unable to answer this question in the post-test survey, despite three of them having done so during the pre-test survey (see Figure 4-10). Although we need to acknowledge the difficulty of responding to these questions as it involved a process of reflecting on the entire group and one's own perceptions, an inability to answer might also be linked to respondents' expectations at the outset of the stakeholder activity. Stakeholders perhaps entered the process with a certain level of optimism and therefore responses provided during the pre-test survey might have been motivated by anticipation or hope rather than experience. This might also explain why, although trust remains high among Liaison Panel members, there are some slight negative tendencies (UK3, UK7) along with the already mentioned instances of non-response (UK2, UK6).

Little seems to have changed between the pre- and post-test surveys when we look at indicators of connectedness, i.e. how respondents related to the stakeholder process and the group (Figure 4-11). Respondents from both cases remained highly committed to the process and the common good throughout the study period. It should be highlighted though that although there are no extreme shifts in responses to these two questions, there is a noticeable move from a very high level of commitment and interest in the common good, to a more moderate level. As explained above, this might be linked to high expectations at the outset of both stakeholder activities. The sense of belonging to a group was low in the pre-test survey, especially in the Liaison Panel. This is perhaps unsurprising, given that the groups had only convened on few occasions prior to the pre-test. Group identity in this sense has increased with only one exemption among the German respondents (G7), predictably from the same stakeholder who indicated the strongest decrease in trust towards the group (see Figure 4-10).

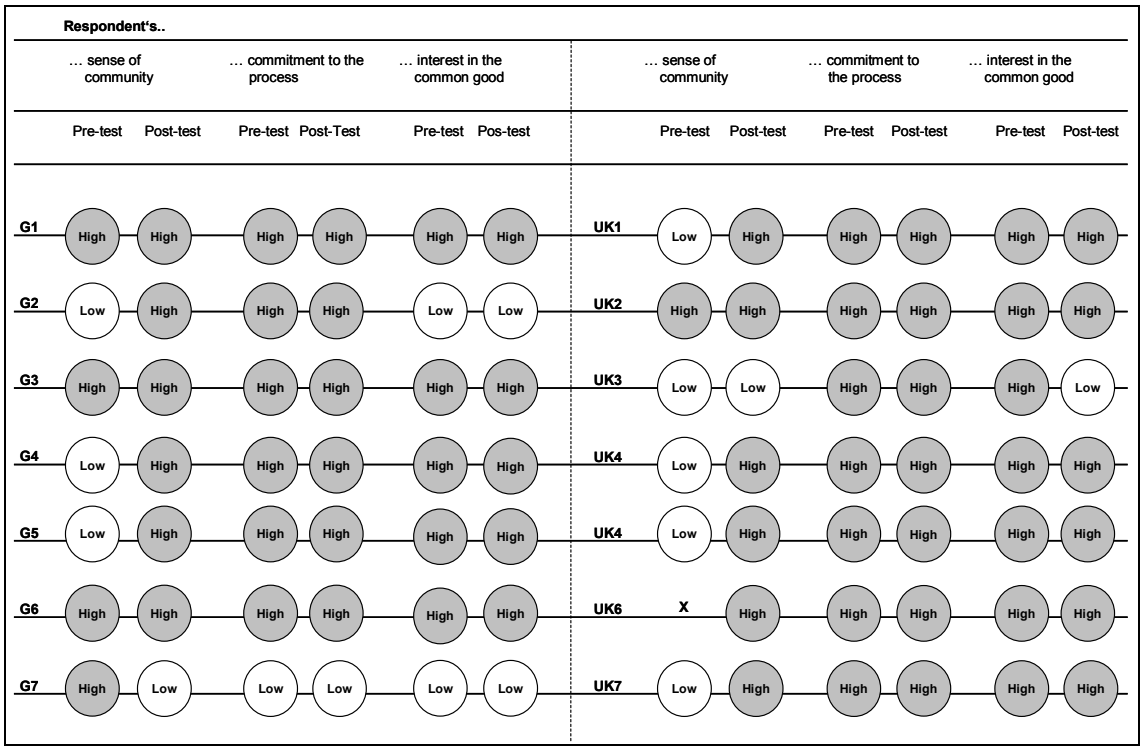

Figure 4-11: Indicators of connectedness

'X' signifies missing values due to non-response.

Considering these results in isolation they invite the conclusion that participants were strongly orientated towards the group and willing to work towards achieving shared benefits through a collaborative effort from the start. However, if we compare how respondents from both cases assess their own motivations and attitudes with those they ascribe to the other panel members, a somewhat different picture emerges. Whilst the majority of stakeholders claim to be working for the common good, there seems to be some doubt, especially doubt regarding other panel members' pursuit of the same objective. Especially among the German respondents there are some negative perceptions along with a number of non-responses among stakeholders from both groups. Although trust seems to increase in some aspects of the stakeholders' relationships, participants felt insecure about other panel members' motivations and agenda. A number of the UK stakeholders stressed that they were working for the common good, or what they perceived to be the good of the general public as a matter of course in their daily activities (UK1, UK5, UK6). Although none of the respondents elaborated on this point, it raises the question of whether it implies a belief that some stakeholders work for the common good whilst others pursue individualistic interests

which only serve a certain section of the population. Taking into account how some group members, from the Regional Water Council and the Liaison Panel, described their feeling of being the 'bad guys', there is some evidence for implied 'moral superiority' among some members of both panels. We do not have the data to investigate this question in more detail but against this background it seems questionable whether the involvement activities really increased connectedness among participants.

4.2.4 Cognitive change

The assessment of cognitive changes among Regional Water Council and Liaison Panel members are illustrated in Figure 4-12. As a result of the involvement activities, stakeholders in both case studies have increased their knowledge of water resource issues and RBM as well as their understanding of the interests and concerns of other panel members. In the UK case, the experienced process prompted the majority of stakeholders to reflect upon their own interests in RBM planning, an effect which seemed weaker among German respondents. Respondents were asked whether they had altered their views on the important issues in the river basin and their immediate causes. Respondents from both panels indicated that they had developed more comprehensive views (G1, G2, G6 and UK3, UK5, UK7) but highlighted that this new understanding had no impact on the interests they pursued or their general views of the main issues and problems for RBM (Figure 4-12).

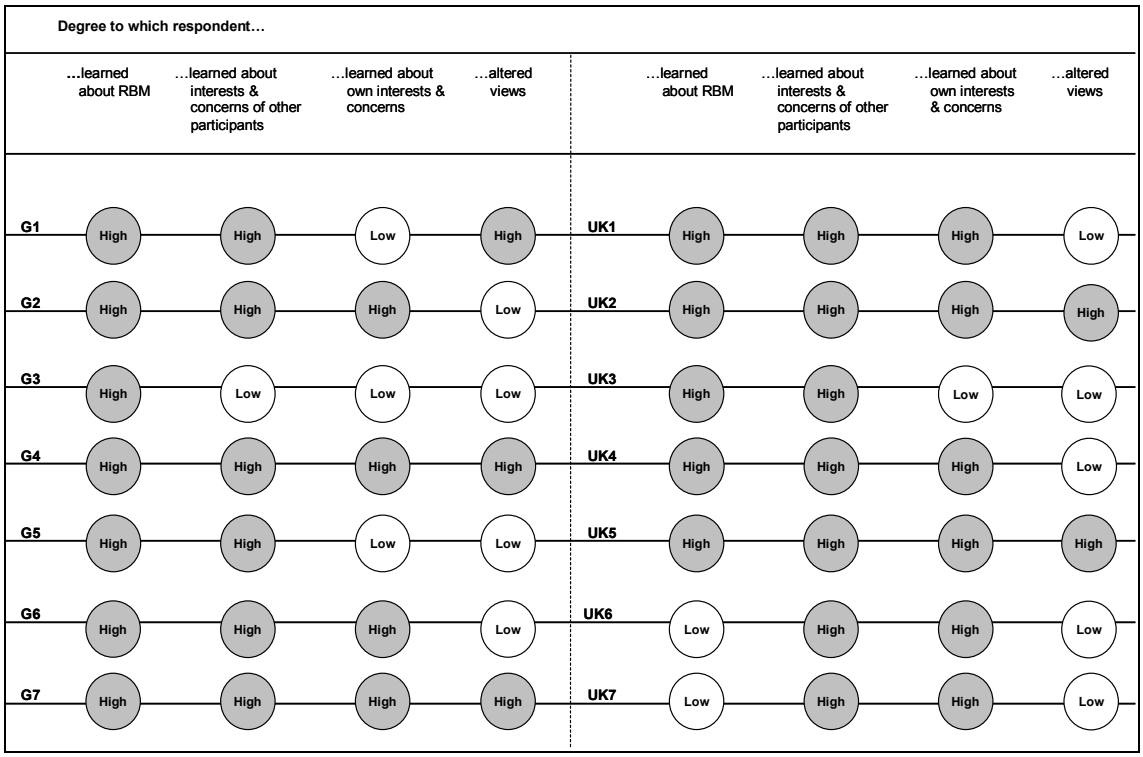

Figure 4-12: Indicators of cognitive change

Additional analysis of this response set demonstrated that neither the number of meetings attended nor the type of interest represented is correlated with the degree to which respondents indicated relational or cognitive changes.

4.2.5 Level of agreement

Given that only a few respondents reported to have changed their perceptions of important water management issues, it is unsurprising that the majority of stakeholders in both cases concede that the collaborations have so far failed to generate a common view of the current status of the water bodies as well as immediate problems and their causes. Three of the Regional Water Council respondents (G5, G6, and G7) and one Liaison Panel member (UK 1) observe the development of a shared perception of water management issues (see Appendix 5). German respondents noted that the timeframe was too short for a shared understanding to evolve (G1 and G7), a view which was also expressed by UK respondents (UK2, UK4 and UK7). Furthermore, it was assessed whether each groups' decisions were characterised by a high level of agreement. However, when asked to evaluate whether the Regional Water Council's decisions were based on consensus, this and a related subsequent question remained unanswered by

most of the respondents because they all felt that they had not made any decisions as a group. Respondents conceded that they contributed individually, both during meetings and when they received various planning documents, but there was only limited deliberation among the stakeholders. Within this context, a number of respondents highlighted, though, that it seemed unlikely that a group decision-making process would have resulted in a consensual or well-balanced decision, given the diversity of interests (G3 and G6). Nevertheless, the majority of respondents was still satisfied with the group's contributions to the planning process (Figure 4-13).

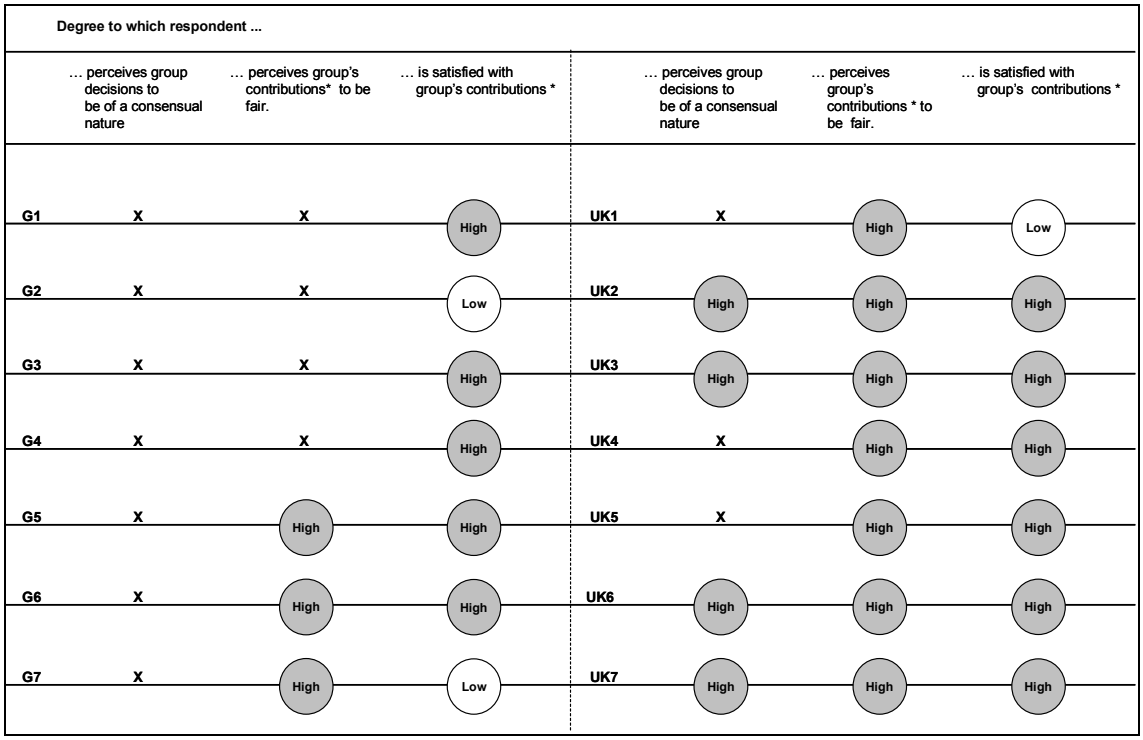

Figure 4-13: Indicators of agreement

'X' signifies missing values due to non-response; * Refers to the groups' contributions to the RBM planning process.

Whilst the respondents from the Liaison Panel seemed to be satisfied with the Panel's contributions to the RBM planning process and largely considered these to be fair, there was also some disagreement as to whether these products were generated through a group decision-making process (see Figure 4-13). To recap, at the time of the second data collection, the Liaison Panel had contributed to and signed off two reports, the first one outlining a strategy for the involvement and consultation of the wider public in the RBM planning process and the second one describing the most significant water management issues in the RBD. A number of respondents thought that they had

expressed their views individually but not necessarily discussed their different perspectives to arrive at an agreed upon standpoint or decisions (UK 1, UK4). Others were very positive about the group's ability to achieve consensus but noted that achieving consensus was easy as the group only dealt with questions which lacked conflict or whose outcomes were obvious, such as the identification of the significant water management issues in the basin (UK3, UK6, UK7). Respondent UK6 explained that 'everyone agrees that the sky is blue'. Furthermore, respondents conceded that decision-making took place within the limited scope that was defined by the EA (UK1, UK2, UK3, UK6, UK6 and UK7). On several occasions, respondents highlighted that there was tension between the (regional) views of the Panel and the overall implementation strategy specified at the national level (UK1, UK2, UK3). Two respondents illustrated this comment with the same example (UK2 and UK3). They explained that the Panel had been asked whether, after the identification of the significant water management issues for the Anglian RBD, they preferred continuing their work with a geographical or issue focus. Although the majority of the Panel voted for a geographical approach, an issue approach was adopted in line with the national strategy.

4.3 Summary

Having presented the results in the previous sections, this Section briefly summaries the findings by returning to the research questions formulated in Chapter 2. To recap, the case studies aimed to respond to the following three research questions: (i) To what extent are participatory processes characterised by processes of social learning? (ii) Does social learning facilitate mutual understanding and agreement? (iii) If not, are other factors such as power relationships more influential with respect to communal debate, sense making, and decision-making?

The analysis of participatory processes in two stakeholder panels reported above demonstrates that social learning played a minor role both in terms of relational and cognitive changes as well as its potential impact on stakeholder perceptions. Relationship building was moderate and coincided with individual accounts of a manifestation of stereotypes. On the contrary, there are individual accounts of irreconcilability of views, especially in Germany, whilst UK respondents seemed to

distinguish between representatives who worked for the common good of the group, or even the public in general, and those who only pursued their own interests. Whilst there was a moderate increase in trust among German respondents, UK respondents tended to adapt previously high levels of trust to more moderate levels. The main effects of a collective learning process can be found amongst the recorded changes in the cognitive dimension. Whilst the involvement activities greatly contributed to stakeholders' knowledge of RBM and a better understanding of the issues and concerns which were relevant to other interest groups, the collaboration had little effect on their own perceptions. However, these (rather) weak indications of social learning should be evaluated bearing in mind the limited time span investigated in both cases, which saw many of the members attending the stakeholder meetings irregularly, a point which will be addressed in more detail in Chapters 6 and 7.

Does social learning facilitate a shared understanding and agreement? Only a few respondents in both cases felt the engagement activities aided the development of a common view of the environmental context. Opinions as to whether the stakeholder panels generated any decisions as a group varied, making it difficult to judge the level of agreement reached. The data suggests that stakeholder interaction was relatively undisturbed by conflict or tension, leaving the question as to whether factors such as power relationships are comparatively more influential with respect to communal debate, sense making, and decision-making unanswered.

The study also threw up some unexpected results. Members from both panels criticised an imbalance between information provision and information discussion indicating that both panels provided limited opportunity to expose and debate stakeholder views and perceptions. Yet, interaction was not only limited by how the process was organised. Results suggest that the institutional and regulatory frameworks played a significant role in the quality of stakeholder communication and interaction: Stakeholders criticised the, in their view, narrow definition of goals and procedures of the experienced process. The translation of the WFD into objectives, procedures and methods by the competent authorities was considered to dictate the focus of stakeholder activities, thereby limiting opportunities to explore the challenges posed by the RBM planning process as a group.

Thus, despite an absence of power relationships among stakeholders, a lack of process control seems to have affected group dynamics.

CHAPTER 5: SOCIAL LEARNING IN TWO TYPES OF STAKEHOLDER INVOLVEMENT – RESULTS OF A POSTAL SURVEY

The literature suggests that social learning requires an interactive approach to participation, allowing for in-depth deliberation among stakeholders. Findings from the case studies support this notion, although one should be cautious interpreting the lack of strong indications of social learning solely to the limited opportunities for interaction. Like the cases studies presented in the previous chapter, the literature only provides anecdotal accounts of individual cases. Missing from the debate so far is a systematic investigation of social learning in participatory processes, and more specifically, participation processes offering various degrees of interaction. To this end, the central questions investigated with this research activity are as follows: To what extent are different types of participatory processes characterised by social learning? Which process formats or features thereof encourage or hinder social learning?

This Chapter presents the results of a postal survey of stakeholders involved in participatory RBM initiatives in Germany and Ireland. Two sets of cases were purposefully selected from the review of current participation practices carried out during a previous research phase (see Chapter 3), the Working Groups for the implementation of the WFD in the German state of Schleswig-Holstein and the RBD Advisory Councils in Ireland. Both initiatives serve the purpose of involving a diverse set of stakeholders in the RBM planning process prescribed by the WFD, in Schleswig-Holstein at the catchment and in Ireland at the RBD level. However, they differ considerably in how these interactions are organised, as will be illustrated in the subsequent Section.

It is necessary to highlight that the two types of initiative comprise several individual groups: 34 Working Groups and three Advisory Councils. Although individual cases under each initiative might be ‘atypical’, implying that stakeholder experiences potentially differ between cases, the data analysis compares stakeholder learning across participation initiative rather than individual cases. This approach has certain implications for the type of analysis which can be conducted. Given that the survey

essentially generated perceptual information both of the respondents' learning experience as well as their view of the participation format, statistical analysis of correlations between process and outcome was considered inappropriate. Ideally, data would be disaggregated by case to generate aggregate measures of process characteristics and outcomes. Considering the small number of cases which could be included in such an analysis - as the subsequent sections will illustrate, only a limited number of cases provided sample sizes which would allow aggregate measures per case to be generated - a type-wise comparison provided the best and most suitable alternative to draw conclusions about the relationship between social learning and process type. It should be noted, though, whilst the data could not be further analysed to satisfy this study's research objectives and questions due to the described limitations (see Chapter 7 for a detailed discussion), additional statistical tests (e.g. Kruskal-Wallis-Tests or Kendal's correlation analysis) could have been carried out to generate further insight into the perceptions and characteristics of as well as the differences between sub-samples. Further correlational analyses, for instance, could have investigated whether individuals who recorded strong relational changes were more likely to experience shifts in stakeholder cognitions, thus maybe revealing differences in the extent to which individuals are able to change and adapt. However, in the interest of maintaining a clear focus on responding to the research questions formulated at the outset of this study, no additional analyses were undertaken.

This Chapter proceeds as follows: Section 5.1 briefly details the two surveyed initiatives, followed by a presentation of the survey data in Section 5.2. Reporting of results is structured along the components and (sub-) dimensions investigated in the two initiatives. The Chapter concludes with a summary of the results.

5.1 Profile of the surveyed initiatives

A purposive multi-stage sampling strategy was adopted to identify suitable survey respondents. To be considered for inclusion in the survey, stakeholder groups had to meet at least four times a year, include a diverse set of interests and be located at the higher end of the participation spectrum, i.e. provide opportunities for dialogue and interaction between stakeholders. Furthermore, only cases were considered which had been operational for at least one year (see Chapter 3). It should be noted that the

purposive sampling method requires a degree of caution when drawing conclusions. Whilst the study cannot draw any conclusions for all participatory initiatives currently operating in the context of RBM in Europe, the surveyed cases are certainly representative of two common types of stakeholder involvement and in this sense allow us to infer from the experiences made with these activities to other, similar types of participation.

The sample includes the stakeholders involved in the 34 Working Groups which were established at catchment level to actively contribute to the RBM planning process in the German state of Schleswig Holstein. As explained in Chapter 4, RBM in Germany lies within the hands of the federal states. In the state of Schleswig-Holstein the three River Basin Districts within or partly within the state territory, were divided into 34 working areas (Figure 5-1). In each working area, usually covering a catchment or small river system, the states environmental Ministry and highest water authority, established a Working Group, consisting of up to ten members including various interests.

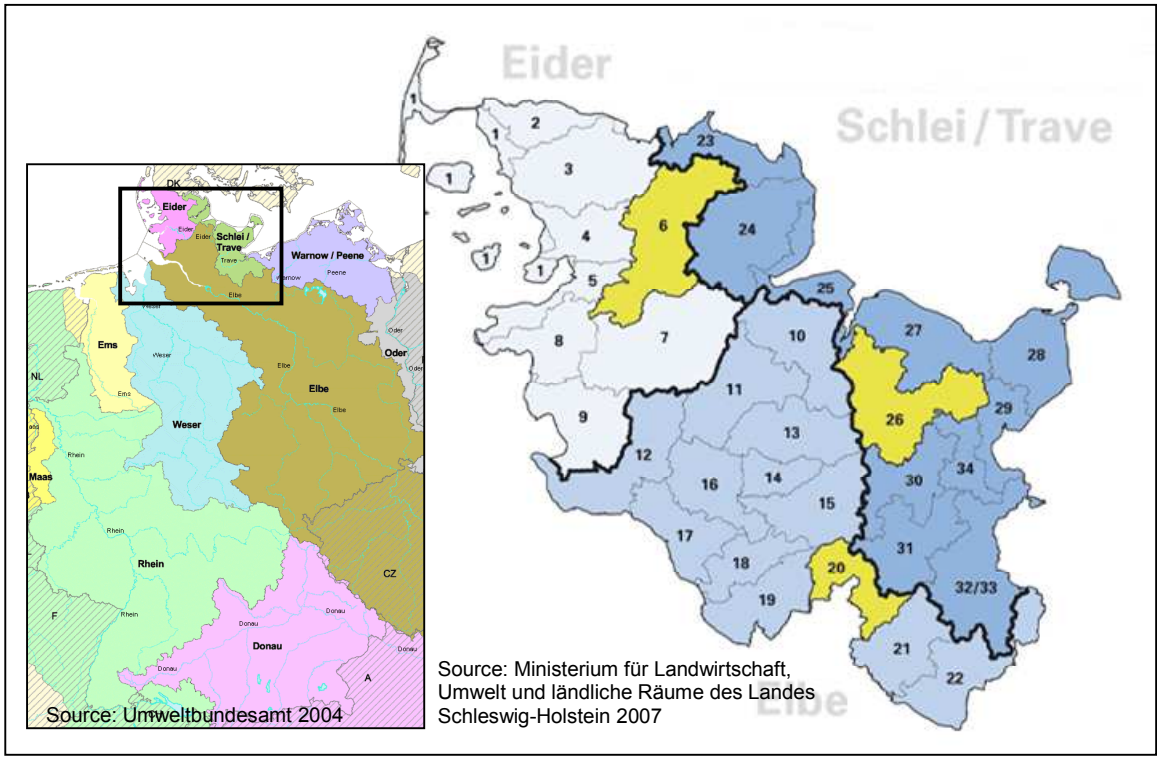

Figure 5-1: Working areas in Schleswig-Holstein

Working Areas 6, 20 and 26 (in yellow) were designated pilot areas for the implementation of the WFD in Schleswig-Holstein by the Environmental Ministry.

The second set of cases comprises the RBD Advisory Councils in the Republic of Ireland. RBM planning within each of the seven Irish RBDs falls within the responsibilities of the local authorities (Figure 5-2). In 2006, the coordinating authorities established seven RBD Advisory Councils[26] to provide permanent fora for direct dialogue and interaction between interested parties and the relevant authorities.

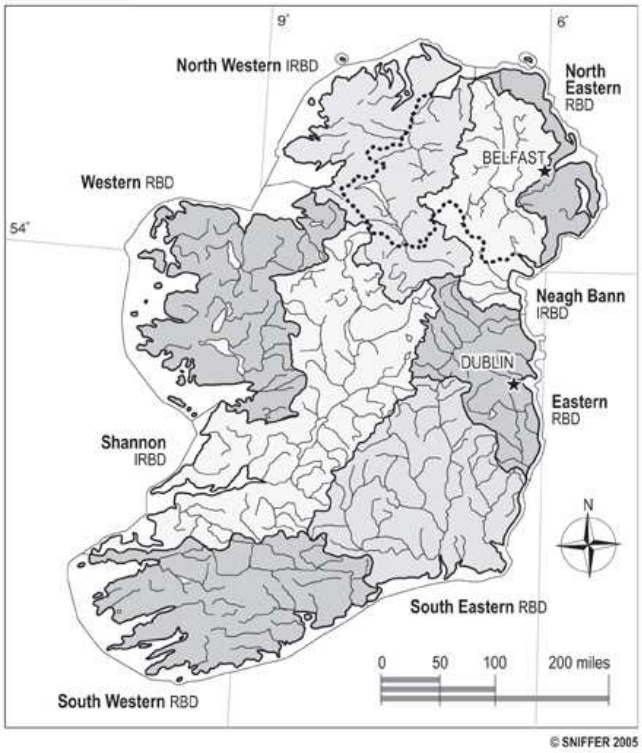

Figure 5-2: RBDs in Ireland

Both initiatives serve the purpose of involving a diverse set of stakeholders in the RBM planning process prescribed by the WFD, in Schleswig-Holstein at the catchment and in Ireland at the RBD level. However, they differ considerably in how these interactions are organised. The Working Groups, which started their work in 2003, are managed by the water and soil associations[27] which were required to merge the existing nearly 500

[26] No Advisory Council was established for the North-Eastern River Basin District since it lies entirely within Northern Ireland.

[27] Currently more than 12 000 associations are active in Germany, particularly in watercourse maintenance, flood protection, irrigation and drainage. Voting rights and contributions of the members normally are graded according to their individual benefits from the association's undertaking (Monsees 2004).

associations into 34 new associations. Water and soil associations continue to exist focussing on their traditional mandate of managing small rivers whilst the 34 newly established stakeholder groups exclusively focus on the implementation of the WFD within the remit of their respective work area. Depending on the specific tasks, Working Groups convene up to once a month but usually average five to six meetings a year (Ebell 2005).

Since their inception, these groups have contributed to the characterisation of rivers in Schleswig-Holstein and the development of monitoring programmes in preparation of the drafting of the RBM plans. Data and documents provided by the Environmental Ministry, which is not represented in the Working Groups, are examined and discussed by the group and if necessary corrected or completed. Any recommendations, concerns and suggestions are then communicated back to the Ministry by the group's chair, usually a representative of the water and soil associations, to be incorporated in the water management planning process (Rosenbaum 2004). Groups are expected to reach consensual decisions and to note any disagreements when forwarding their recommendations to the Ministry. A major aspect of their work is the development of the so called 'preliminary' measures many of which have already been implemented to ensure that the objectives of the WFD (a good ecological status or potential by 2015) can be met in a timely fashion. These local measures, mainly focussing on the revitalisation of rivers, require a consensus among all group members before detailed plans are drafted. Approved measures, which are funded by the Ministry, are usually implemented by the respective water and soil association. In a publication in 2006 the Ministry, speaking of the groups' characterisation of rivers, highlighted that apart from few exemptions, most decisions were based on a consensus among group members (Ministerium für Landwirtschaft, Umwelt und ländliche Räume des Landes Schleswig-Holstein 2006).

Advisory Councils are managed by those local authorities which were appointed by the Ministry for Environment, Heritage and local Government to coordinate the RBM planning process among the local authorities which are responsible for implementing the WFD in the RBDs. For each Council, the local authorities appointed two delegates who then co-opted additional members to represent community and sectoral interests.

The number of co-opted members equals at least 50% of the number of persons appointed by local authorities but never exceeds this number. The size of the councils therefore depends on the amount of local authorities within a RBD and the number of co-opted representatives[28], thus varying between 24 (SWRBD AC) and 48 members (ERBD AC) (Statutory Instrument No. 722 of 2003).

Under the European Communities (Water Policy) (Amendment) Regulations 2005, Councils are required to meet at least twice a year, and although there are some variations, most Councils convene on average four times a year. The main purpose of the Advisory Councils is to advise the relevant public authorities and make recommendations on the preparation of RBM plans. Since their inception in 2006, stakeholders have been mainly concerned with the development of the monitoring programme which was put in place after the initial characterisation of the RBDs as well as the identification of significant issues for water management in the respective RBDs. Table 4-1 summarises the main features of the two types of participatory initiatives surveyed.

Table 5-1: Characteristics of the cases investigated in the postal survey

Case	Working Groups (34) (Germany)	RBD Advisory Councils (3) (Ireland)
Scale	Small sub-basins	RBD
Actors involved	8 to 10 members: Local authorities, water user associations,, agriculture, fisheries, local and regional environmental NGOs, regional water authorities.	Varies between 24 to 48 members: local authorities, farming, environmental NGOs, business and industry, academia, recreational users/fishing, consumers.
Purpose	Working Groups support local implementation of WFD by examining & providing data; development of local measures.	Councils advise competent authority in the preparation and implementation of RBM plans.
Methods	Meetings are chaired by member of the local water & soil association; groups examine, discuss & eventually amend planning documents to be forwarded to the competent authority; collective development of local measures.	Meetings are chaired by staff of competent authority, presentations are followed by group discussions.
Timeline	Since 2003; bi-monthly or monthly meetings.	Since 2006; four meetings a year (on average).

[28] Information on the RBD Advisory Councils was collated from www.wfdireland.ie.

5.2 Results

A total of 174 survey instruments were returned, yielding a response rate of 40% (n=130) from the German Working Groups and 38% (n=44) from the Irish Advisory Councils. Responses from the German sample represented 32 Working Groups with responses varying between one and six per group. However, 23 respondents chose not to disclose their affiliation to a specific group. Therefore it is possible that response per group might be higher in some cases or that the sample includes responses from all groups. The response rate per Advisory Council varied between 18 (41%) from the Eastern, 13 (30%) from the South-Eastern and 8 (18%) from the South-Western RBD Advisory Council. Five (11%) respondents chose not to reveal their group membership (see Appendix 6). Because of this modest response rate, one should be careful in generalising results to all members participating in the groups under each respective initiative.

Broken out by interest group (Table 5-2), representatives of the local authorities, environment and nature conservation as well as the water authorities and user associations make up the majority of the German sample, together accounting for approximately 60% of respondents. Apart from the fishery (13.8%) and farming sectors (9.2%), responses by other interest groups were marginal. In the Advisory Council sample, the overwhelming majority of respondents represented the local authorities (46.5%), followed by delegates of the environmental sector (18.6%). Representatives of other interest groups only constitute a small share of the sample (see Table 5-2). Although response group characteristics seem somewhat unbalanced, it can be assumed that it is representative when we look at the membership structure of each type of initiative (see previous Section). In the case of the Working Groups, the underrepresented sectors are only participating in a number of Working Groups and in the Advisory Councils, the delegates of the local authorities constitute the largest proportion of Council members

Table 5-2: Frequency of responses by interest group

Interest represented	Working Groups	Advisory Councils
Local Authorities	18.5% (24)	46.5% (20)
Environment & nature conservation	24.6% (32)	18.6% (8)
Water supply & waste water treatment	5.3% (7)	--
Water authorities & user associations	20.2% (26)	--
Fisheries	13.8% (18)	4.7% (2)
Farming	9.2% (12)	7.0% (3)
Business & industry	2.3% (3)	4.7% (2)
Tourism & recreation	--	4.7% (2)
Other	3.8% (5)	14.0% (6)
No response	2.3% (3)	--
Total responses	**40% (130)**	**38% (44)**

At the time of survey implementation, the Working Groups had been operating for four years with meetings taking place up to once a month. Figure 5-3 illustrates the high level of attendance among Working Group respondents with 31.5% (41) having participated in all and 53.8% (70) in most of the meetings. The required time commitment was the most frequently addressed issue in the respondents' comments stated at the end of the questionnaire. Eight out of the fifteen comments made stressed that participants felt overburdened with the amount of time required to examine the voluminous data provided by the Environmental Ministry. It was indicated that particularly representatives outside of the water sector, often voluntary representatives, were challenged by the workload and the complexity of the subject matter.

Since Advisory Councils had only held between five and six meetings at the time of questioning, attendance is more easily quantifiable: 30% (13) of respondents attended five, the majority of respondents, namely 41% (16) attended between three and four and about 27% (10) took part in less than three meetings (Figure 5-3). Poor attendance was the issue respondents from the Advisory Councils addressed in their comments (10 out of 15). Whilst half of the commentators interpreted this as a lack of commitment, the remaining statements linked the frequent absence of certain interest groups to a lack of funding. It needs to be understood that the Advisory Councils cover RBDs which vary between 6,263 km^2 and 15,000 km^2. Therefore, depending on where meetings are held, attending these meetings incurs considerable travel costs for some of the members.

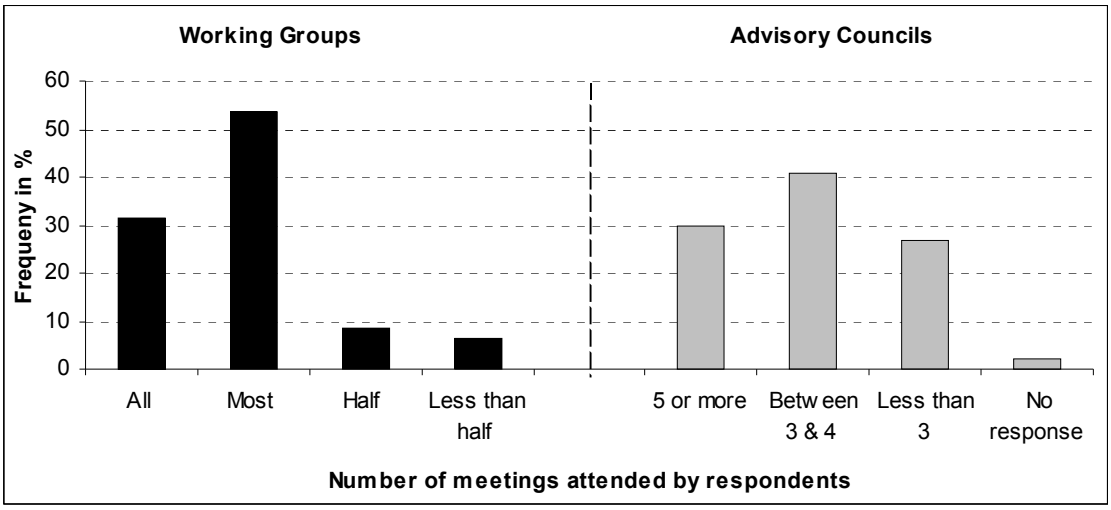

Figure 5-3: Level of attendance

Following the structure adopted in the previous chapter, reporting of results is organised along the components and dimensions investigated in this research: first, the two engagement initiatives are characterised based on the perceptual data elicited from the respondents. Second, communication characteristics are described and the evidence of relational and cognitive changes is presented. Finally, data on the level of agreement reached is illustrated. To recap, all questionnaire items were formulated as a series of Likert-type statements requesting responses on a four-point scale, indicating strong ('1') and mild ('2') agreement as well as mild ('3') and strong ('4') disagreement. Means for each questionnaire item as well as the frequency of responses in the two highest response categories (and thus signifying strong or mild agreement) are presented. Detailed frequency data can be found in Appendix 6. Where several items were used to measure the same criteria, composite measures were calculated based on the means of individual items. Reliability of each composite measures was determined by computing Cronbach's alpha (α) (applied to all respondents), with α between 0.69 and 0.80 (see Appendix 6). Although one of the coefficients lies with 0.69 marginally below the acceptable lower bound for scale reliability as indicated at 0.70 by Nunnaly (1978) a lower threshold of 0.60 is frequently used throughout the literature (see for example Germain *et al* 2001). Therefore, the scales constructed from the survey data are considered sufficiently reliable. Mann-Whitney-U-Tests were used to evaluate differences in the responses between Working Group and Advisory Council survey participants. Results were also broken down by interest groups and compared using

Kruskal-Wallis-Tests (see Chapter 3). The text refers to comments made by respondents where they help explain quantitative findings. Yet, it should be noted that only a few respondents made use of the opportunity to add further statements, 17 Working Group members and 15 Advisory Council participants, and therefore should be carefully interpreted. These qualitative statements were analysed through several rounds of content analysis.

5.2.1 Process characteristics

The brief description of the Working Groups and the Advisory Councils in Section 5.1 illustrated that although both approaches serve the same purpose, namely the engagement of stakeholders in the RBM planning process, and are equally diverse in their membership, Working Groups, due to their size, frequency of meetings and level of participation, can be assumed to warrant a higher degree of interaction than the Advisory Councils. Furthermore, Working groups are comparatively more autonomous, potentially allowing stakeholders more control over the process in the sense that the responsible Ministry is not represented but merely provides the necessary data and information, whereas the Advisory Council meetings are chaired and organised by the responsible local authorities. Yet, how different are they really? To obtain an accurate description of the two approaches we cannot simply rely on factual data but need to take into account the observations and experiences of the participants. The survey questionnaire assessed the following process characteristics which are assumed to be key to encouraging social learning among stakeholders: inclusiveness, extended engagement, opportunities for information exchange and interaction, and process control. Table 5-3 shows mean scores and significant differences between the two response groups for each item assessing the process format of the respective initiative.

Table 5-3: Respondents assessment of the process format of the Working Groups and Advisory Councils

Items[a]	Working Groups		Advisory Councils		p-values[b]
	N	Mean (SD)	N	Mean (SD)	
Inclusiveness					
Stakeholders fairly represent the sectors and interests which are affected by RBM planning.	129	1.57 (.57)	42	1.90 (.66)	.004
Extended engagement	129	1.37 (.53)	42	2.09 (.70)	.000
The length of the meetings is sufficient to enable participants to exchange opinions and to discuss their interests, goals and concerns	129	1.39 (.63)	42	2.07 (.87)	.000
The number of the meetings is sufficient to enable participants to exchange opinions and to discuss their interests, goals and concerns	130	1.37 (.57)	44	2.14 (.73)	.000
Information exchange					
The methods employed during the meetings provide the stakeholders with the opportunity to obtain and provide information.	130	1.49 (.61)	43	2.09 (.71	.000
Interaction					
The methods employed during the meetings provide the stakeholders with the opportunity to discuss their interests, goals and concerns.	130	1.62 (.72)	43	2.16 (.90)	.000
Process control	126	2.01 (.80)	41	2.51 (.68)	.001
I have influence on the selection of agenda items.	128	1.88 (.91)	42	2.45 (.77)	.000
I have influence on the way meetings are run and on the communication and interaction methods that are employed.	127	2.13 (.88)	41	2.56 (.78)	.008

[a] Response scale: '1' = strongly agree, '2' = tend to agree, '3' = tend to disagree, '4' = strongly disagree.
[b] Significant at $p<0.05$ level; p-values are from non-parametric Mann-Whitney-U-Tests.

Mann-Whitney-U-Tests show that the initiatives are significantly different in all of the evaluated features ($p< 0.05$). The majority of German respondents assess the Working Groups to be inclusive (96%), with responses almost evenly split between the two response categories indicating agreement with the questionnaire item (Mean 1.57, SD .57). In comparison, agreement, although accounting for 82% of responses is significantly ($p < 0.05$) lower among Advisory Council members (Mean 1.90, SD .66). This is somewhat surprising considering that Advisory Councils involve a diverse set of interest groups including farming, businesses, academia, environmental NGOs and consumers. The membership structure is therefore not fundamentally different from that of the Working Groups. However, considering the poor record of attendance in the surveyed councils, they might be perceived to be less inclusive than they actually are.

As expected, Advisory Council participants, who only meet every three months on average, rate the overall time frame as less favourable than the Working Group members with a mean score of 2.09 (SD .70). Nevertheless, 69% assessed the length of meetings and 76.7% the number of meetings as sufficient to facilitate information exchange and discussions among stakeholders. The data suggests that the overall timeframe of the Working Groups was successful in providing these opportunities with a mean assessment score of 1.37 (SD .53) for the scaled items. Disaggregated, over 90% of German respondents indicated agreement with the two component statements of the scale. However, whilst the overall timeframe of the Advisory Councils seems to provide significantly less time for engagement ($p < 0.05$) than the Working Groups, one should note that the overall assessment is still rather positive.

When we look at how respondents assess the opportunities for information exchange and interaction, we notice that, again, agreement with both items is significantly lower among respondents from the Advisory Council than the German respondents at the $p < 0.05$ level. German respondents feel that Working Groups provide them with the opportunity exchange information (94%) and to a slightly lesser degree to discuss their interests and concerns with other group members (89%). A similar response pattern can be seen when looking at the data from the Advisory Councils, where three quarters of respondents agree that Council meetings facilitate information exchange (77%) and 70% consider the Council meetings to allow for deliberation among participants.

Given the rather autonomous structure of the Working Groups, it is little surprising that the German respondents rated their ability to influence how stakeholders cooperate and determine the issues they address significantly higher (Mean 2.01, SD .80) than the Advisory Council members (Mean 2.51, SD .68) with $p < 0.05$. In comparison, Irish respondents consider themselves to be less influential with respect to agenda setting with around two thirds indicating agreement (64%) and just over half of respondents agreeing that they can influence the process design (48%). However, on close inspection it seems that Working Group members exercise less process control than expected: three quarters felt they had some influence on selecting agenda items (74%) and 64% thought they could influence the way meetings were run or the selection of methods. In a number of comments (6 out of 17), respondents alluded to the rather stringent

procedures groups are expected to adhere to by the Ministry and which ultimately constrain the stakeholders discussions and subsequent decisions. In this context, frequent mention is also made of the complexity and amount of data stakeholders are provided with to examine which respondents feel challenges many of the (non-water related) representatives, thus limiting in-depth discussions.

The process assessment was also analysed by interest group. To enable comparison, respondents from the Working Groups were classed into four sub-groups and the Advisory Council respondents into three. For the Working Groups, classes are as follows: water related interest groups (33) include regional water authorities and water and soil associations, representatives of environmental and nature conservation were classed into an 'environment' group (32), stakeholders from the fishing, agriculture, and business and industry sector together comprise an economic interest group (33). The final category includes all local authority delegates (24). As the numbers in brackets indicate, group sizes are well balanced. In the case of the Advisory Councils, respondents were sorted into three groups, environment (8), economic (10) and the local authorities (20), with the last group being considerably larger than the first two. It should be noted that the role of local authorities is different in the two investigated cases: in Ireland, local authorities are responsible for RBM planning whereas in Germany, the municipalities do not hold any key responsibilities in the implementation of the WFD. Given the prominent role of the local authorities in the RBM planning process in Ireland, they are comparable to the water group in the German sample. Figure 5-4 and Figure 5-5 respectively illustrate each group's mean assessment score for the surveyed process' characteristics.

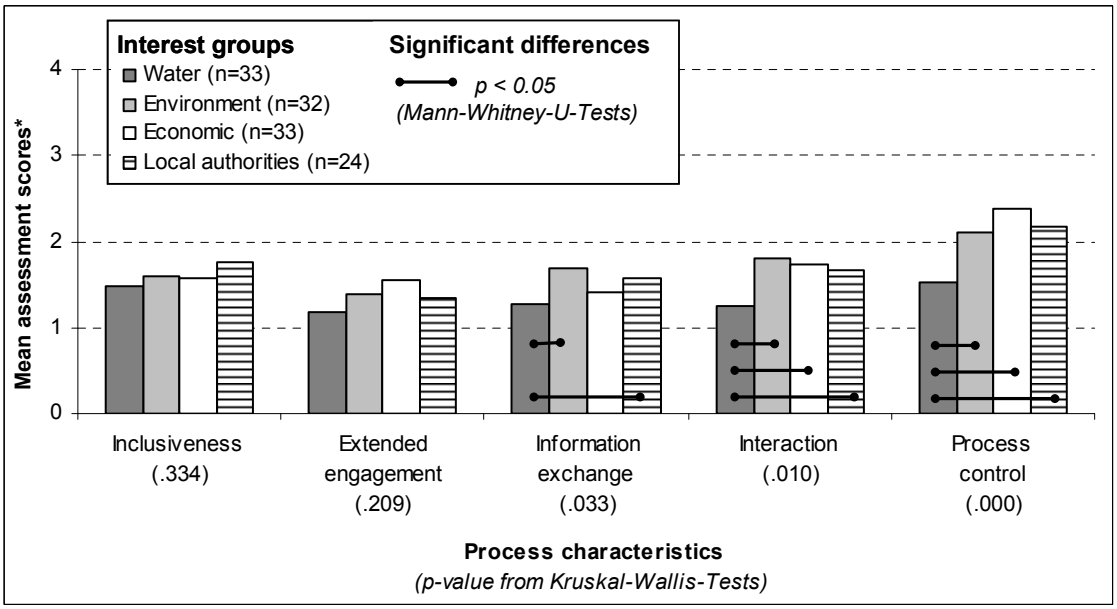

Figure 5-4: Assessment of process characteristics broken out by interest group (Working Groups)

* Response scale: '1' = strongly agree, '2' = tend to agree, '3' = tend to disagree, '4' = strongly disagree.

The water group is consistently more positive about the process than any of the other three groups. However, it should be noted that with the exception of 'process control', all scores are low, indicating a favourable assessment of the respective criteria. Kruskal-Wallis-Tests detected significant differences for the groups' assessments of information exchange, deliberation, and process control. Subsequent Mann-Whitney-U-Test showed that all differences occurred at the $p < 0.05$ level between the respondents representing the water management sector and the respondents in the remaining three groups. Considering that the majority of the water group comprises representatives of the water and soil associations who are responsible for managing the Working Groups, a more positive assessment of the process by these respondents might be expected. Against this background, it comes as no surprise that views most strongly differ between the water sector and the delegates of the environmental and economic sector as well as the local authorities when asked to evaluate their ability to influence the process (i.e. influence on agenda setting and working procedures).

An analysis of responses by interest groups involved in the Advisory Councils revealed that groups only differed on one criterion, namely interaction (see Figure 5-5). However, we can observe a trend similar to the group-wise analysis in the Working Groups, where the water sector's assessment of the process characteristics was

consistently more positive when compared to the other interest groups. Here, the local authorities display a more favourable evaluation of the features of the Advisory Councils. Again, this is the group responsible for RBM planning and, in the case of the coordinating authorities, responsible for the organisation of the involvement activity.

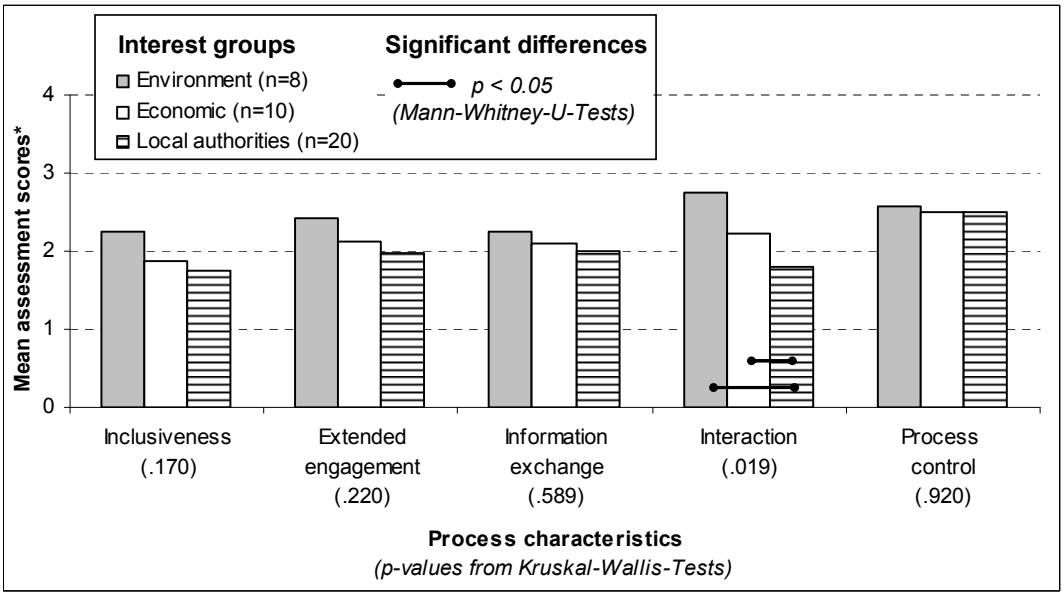

Figure 5-5: Assessment of process characteristics broken out by interest group (Advisory Councils)

*Response scale: '1' = strongly agree, '2' = tend to agree, '3' = tend to disagree, '4' = strongly disagree.

5.2.2 Communication characteristics

Further to the process format, stakeholder communication and interaction was assessed with respect to openness and process equity. As was explained in Chapter 3, openness and equity, in other words, an absence of power relationships are considered important contributors to social learning. Four items were used to assess openness of stakeholder interaction, including two statements measuring the extent to which the group members were perceived to willingly share their knowledge, interests and goals as well as two asking respondents to rate their own comfort level to express their views and opinions (Table 5-4). The composite measures suggest that stakeholder communication among Working Group members was characterised by a high degree of openness with a mean score at 1.42 (SD .42). In comparison, Advisory Council members are perceived to be significantly ($p < 0.05$) less willing to share knowledge and expose their views with a mean score of 1.82 (SD .54). When we disaggregate the individual component items, we note that respondents rate their own willingness to reveal views, even when they

contrast with other group members, considerably higher (Mean 1.26, SD.56 and Mean 1.23, SD .43) than they assess other participants' openness (Mean 1.59, SD .63 and mean 1.63, SD .64).

Table 5-4: Indicators of openness and process equity

Items[a]	Working Groups		Advisory Councils		p-values[b]
	N	Mean (SD)	N	Mean (SD)	
Openness	126	1.42 (.42)	39	1.82 (.54)	.000
I believe that participants openly share knowledge and information.	128	1.59 (.63)	42	2.02 (.78	.001
I believe that participants openly share their concerns, interests and goals.	127	1.63 (.64)	44	1.98 (.66)	.003
I feel comfortable expressing my opinion.	128	1.26 (.56)	41	1.66 (.62)	.000
I also express my ideas when they differ from the ones expressed by other participants.	128	1.23 (.43)	41	1.71 (.68)	.000
Process equity	127	1.59 (.55)	38	2.26 (.73)	.000
I am satisfied wit the amount of influence I have in the Advisory Council/Working Group meetings.	127	1.66 (.66)	39	2.38 (.85)	.000
My views and concerns are treated seriously by other participants.	128	1.52 (.57)	41	2.15 (.69)	.000

[a] Response scale: '1' = strongly agree, '2' = tend to agree, '3' = tend to disagree, '4' = strongly disagree.
[b] Significant at $p<0.05$ level; *p*-values are from non-parametric Mann-Whitney-U-Tests.

The frequency tables show that three quarters of respondents strongly agreed with statements related to their own willingness to state their views. In comparison responses to the other two component items are almost equally split between the two categories indicating agreement, together accounting for approximately 90% of responses. We observe a similar pattern when looking at the data from the Irish survey participants, where participants rate themselves to be slightly more forthcoming about their views and ideas (Mean 1.66, SD.62 and Mean 1.71, SD .68) than they perceive their peers to be (Mean 2.02, SD .78 and Mean 1.98, SD .66). The frequency tables show that although agreement with items addressing the latter account for 79.5% and 84% of responses, the majority of responses falls in the 'moderate' agreement category, compared to the first two items where responses are almost equally distributed between the two categories indicating agreement (86% and 82%). Mann-Whitney-U-Tests detected significant differences between the two survey groups' responses to all individual items ($p < 0.05$).

Process equity, the extent to which stakeholder communication and interaction was characterised by balanced influence by all participants was assessed using two items. Stakeholders were asked to evaluate how satisfied they were with their own influence on the groups' discussion as well as the extent to which other group members listened to their input. The data suggests that communication among Working Group members was well balanced with a mean score of 1.59 (SD .55). In comparison, Advisory Council members assessed stakeholder communication among the members to be significantly ($p < 0.05$) less equitable with a mean score of 2.26 (SD .73). Frequency tables show that 87% of German respondents are satisfied with their influence during Working Group meetings with responses equally distributed among the two affirmative response categories, and approximately 95% feel they are being listened to by other group members, with slightly more respondents indicating strong rather than moderate agreement with the statement. In the Irish sample, although the majority of responses falls within the first two response categories, with 56.8% and 68% indicating strong or moderate agreement, these items generated a relatively high percentage of disagreement compared to the survey items described so far.

Perceptions of the quality of communication and interaction among Advisory Council members are largely coherent between interests groups (Figure 5-6, Graph B). The data from the Working Groups respondents demonstrates that respondents representing the water sector are significantly more positive about the properties of the communication process than other groups, mirroring the response pattern found for the process assessment (Graph A).

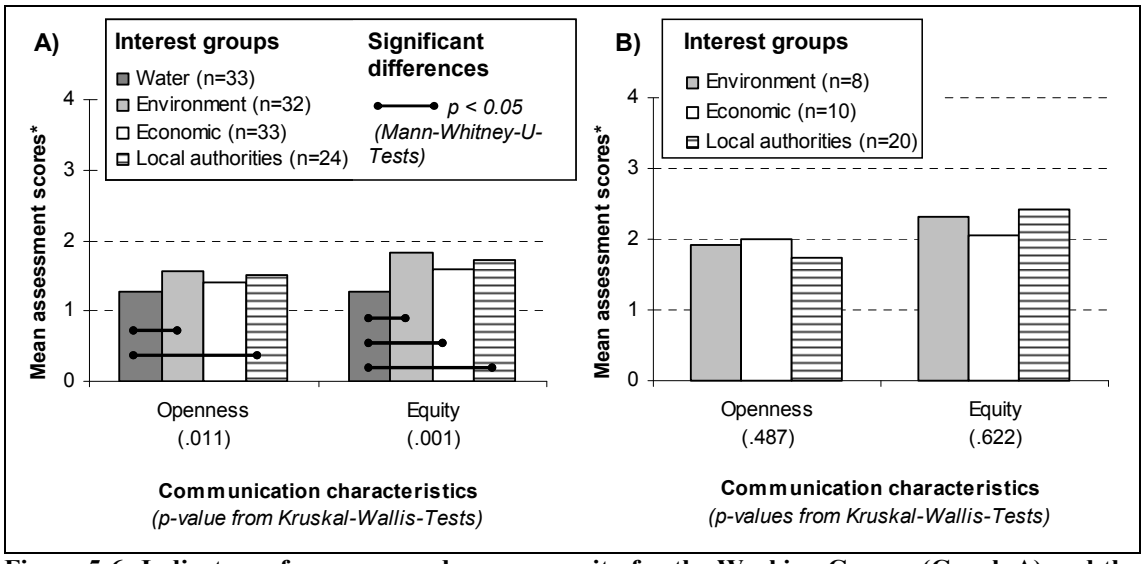

Figure 5-6: Indicators of openness and process equity for the Working Groups (Graph A) and the Advisory Councils (Graph B)

* Response scale: '1' = strongly agree, '2' = tend to agree, '3' = tend to disagree, '4' = strongly disagree.

Having presented the respondents' assessment of the characteristics of the experienced engagement initiative as well as the communication characteristics, the following section exposes the evidence for two categories of indicators associated with social learning processes: relational and cognitive change.

5.2.3 Relational and cognitive change

Table 5-5 shows mean scores and significant differences between the two response groups for each item assessing the indicators used to measure relational and cognitive change.

Table 5-5: Indicators of relational and cognitive change

Items[a]	Working Groups		Advisory Councils		p-values[b]
	N	Mean (SD)	N	Mean (SD)	
Relational change	120	1.55 (.48)	34	1.85 (.54)	.004
As a result of the involvement process I have better working relationships with the other participants.	123	1.68 (.70)	39	2.00 (.61)	.006
As a result of the involvement process I feel part of a group trying to solve a common problem.	129	1.60 (.72)	42	1.98 (.75)	.002
I would be happy to work again with the same participants in a similar involvement process.	129	1.54 (.69)	43	1.79 (0.74)	.036
Cognitive change	125	1.82 (.61)	43	1.86 (.60)	.671
As a result of the involvement process, I have a better understanding of water resources and RBM.	127	1.47 (.70)	44	1.48 (.63)	.736
As a result of the involvement process, I have a better understanding of the concerns and interests of other participants.	127	1.64 (.66)	44	1.66 (.64)	.799
As a result of the process, I altered my views about important issues and problems for water resources and RBM.	128	2.37 (.94)	43	2.49 (1.03)	.567

[a] Response scale: '1' = strongly agree, '2' = tend to agree, '3' = tend to disagree, '4' = strongly disagree.
[b] Significant at $p<0.05$ level; p-values are from non-parametric Mann-Whitney-U-Tests.

Three items were used to measure the extent to which the process contributed to improved relationships among participants[29]. The mean response score of the scaled items indicates that relationship-building was significantly stronger among Working Group members (Mean 1.59, SD .57), than respondents from the Advisory Councils (Mean 1.90, SD. 54). Of the German respondents, 83% reported to have improved working relationships, 88.5 % claimed to have developed a sense of community, and 89.3% stated they were happy to collaborate again with the same group of people.

[29] As explained in Chapter 3, two items included to measure trust among stakeholders were excluded from the analysis since they showed an inter-item correlation coefficient below .02.

Response frequencies for the Advisory Council members are 77%, 75% and 84% for the respective items. Significant differences were detected both for individual items as well as composite scores ($p < 0.05$).

Cognitive change was assessed with three items asking respondents whether the process had contributed to their factual knowledge, increased their understanding of the interests and concerns of other stakeholders and resulted in a change of their own views. Surprisingly, the reported cognitive changes are of similar magnitude when we compare responses across groups, with a mean response score of 1.82 (SD .61) for study participants from the Working Groups and 1.86 (SD .60) from Advisory Council members for the composite measure. When we look at the individual items, we see that mean scores for each component are in a similar range: 88% of Working Group respondents and 93% of Advisory Council respondents report to have developed a better understanding of water management issues and RBM through their involvement. The majority of respondents from both samples, namely 88% and 90.9% feel more knowledgeable about other participants interests and concerns. In comparison, fewer respondents from both groups altered their views about important issues and problems for water resources and RBM as a result of the stakeholder activities. In both groups, just over half of the respondents, namely 50.7% of Working Groups and 52.3% of Advisory Council respondents reported to have adapted their views. These are the only items were responses indicating agreement and disagreement are approximately balanced in both groups and where responses, when compared, are not significantly different.

5.2.4 Level of agreement

Agreement was assessed along two dimensions: the extent to which participants had developed a common view and the extent tow which they have achieved mutually agreed upon decisions.

Table 5-6: Indicators of agreement

Items[a]	Working Groups		Advisory Councils		p-values[b]
	N	Mean (SD)	N	Mean (SD)	
Level of agreement	122	1.63 (.54)	26	2.18 (.63)	.000
Common view					
The involvement process contributed to the development of a common view among the participants of the current status of the RBD as well as immediate problems and their causes.	126	1.75 (.73)	35	2.34 (.87)	.000
Consensus	125	1.55 (.52)	31	2.01 (.61)	.000
I think that the majority of the decisions taken by the stakeholder group ere consensual in nature.	127	1.35 (.54)	39	1.97 (.71)	.000
The contributions the stakeholder group has generated to support implementation of the WFD are fair.	127	1.60 (.62)	35	1.91 (.56)	.005
I am satisfied with the contributions the stakeholder group has generated to support implementation of the WFD.	130	1.76 (.75)	39	2.13 (.77)	.007

[a] Response scale: '1' = strongly agree, '2' = tend to agree, '3' = tend to disagree, '4' = strongly disagree.
[b] Significant at $p<0.05$ level; p-values are from non-parametric Mann-Whitney-U-Tests.

The majority of the Working Group members, namely 86.2% felt that the involvement activity had contributed to the development of a common view among the participants of the current status of the RBD as well as immediate problems and their causes. Only about half of the Advisory Council respondents (54.6%) and thus significantly fewer respondents than in the German sample report the development of a shared understanding. To determine whether decisions where based on agreement, respondents were asked to directly rate the extent to which decision-making was consensual, as well as evaluate decisions in terms of fairness and satisfaction. The composite consensus measure, based on the mean response scores for these items, indicates a significantly higher level of agreement in the Working Groups (Mean 1.55, SD .52) compared to the mean score of 2.01 (SD .61) of the Advisory Council member respondents. Agreement with the three individual statements was high among Working Group respondents, with 94.6% considering the group decision-making process to be characterised by consensus, 90.8%, feel that contributions generated by the group, i.e. specific decisions,

recommendations or other outputs supporting the RBM planning process, were fair, and 85.4% were satisfied with these contributions. Of the Advisory Council members, 72.8%, 70.4%, and 65.6% indicate agreement to the respective statements, all of which are, in terms of percentages, below and significantly different from the responses from the German sample ($p < 0.05$). Based on these two measures, the item testing for common view and the consensus scale, an agreement index was computed[30]. The mean index of 1.63 (SD .54) suggests that Working Groups achieved a high level of agreement whilst Advisory Councils were significantly less successful with an agreement index of 2.18 (SD .63).

Attention needs to be drawn to the relatively high number of missing values in the Irish data for a number of items under this component. Only 80% (n=35) of stakeholders completed the question related to the development of a common view, and resulting from a relatively high number of non-responses under individual items testing for consensus, the computation of the composite measure was based on 31 observations, accounting for only 70% of the sample. Given that Advisory Councils have so far only been dealing with more strategic or abstract issues, such as the identification of significant after management issues, there might be a perception that the Councils have not generated any specific decisions.

When comparing responses across interest groups, German respondents only differed in one component of the agreement index. Representatives of the water sector were significantly more positive about the level of consensus achieved ($p < 0.05$), implying that the perceived fairness of and satisfaction with group decisions was considerably higher than among the delegates of the environmental and economic sector as well the local authorities. Groups did not differ largely when looking at measures of socio-relational and cognitive change, although, again we observe a consistently lower score for the water sector meaning that they registered the strongest changes (Figure 5-7).

30 Indexes are similar to scales except indicators are combined without a concern about their intercorrelation. Indicators may be considered complementary whereas in scales, indicators represent alternative ways of measuring the same concept (Babbie 2001).

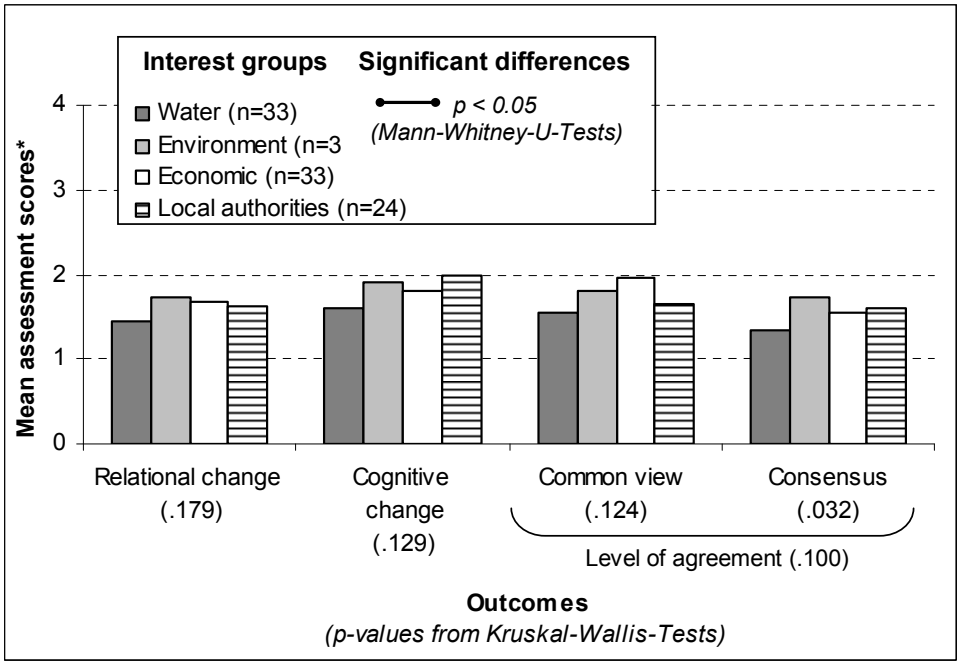

Figure 5-7: Indicators of learning outcomes and agreement broken out by interest group (Working Groups)

* Response scale: '1' = strongly agree, '2' = tend to agree, '3' = tend to disagree, '4' = strongly disagree.

No significant differences were observed when comparing responses across interest groups represented in the Advisory Council sample. However, it should be noted that due to missing values sample sizes in two instances were below the critical value for which asymptotic testing is permitted (Siegel & Castellan 1988). Therefore, the exact test statistic was compared to the table of critical values for Chi square. To be significant at the $p < 0.05$ level, the computed Chi square statistic needs to be equal or larger than the critical value for df = k-1, with k being the number of compared groups. For df 2, the critical value is 5.99 which none of the computed values exceeded. However, it needs to be stressed that it is generally difficult to detect significant differences with small samples and therefore results have to be interpreted carefully. Figure 5-8 illustrates that, similar to the results of the process assessment, local authority representatives are consistently more positive, thus registering the strongest relational and cognitive changes of all groups. Groups differed most strongly in their assessment of the level of agreement reached by the Advisory Councils, although these differences are not significant.

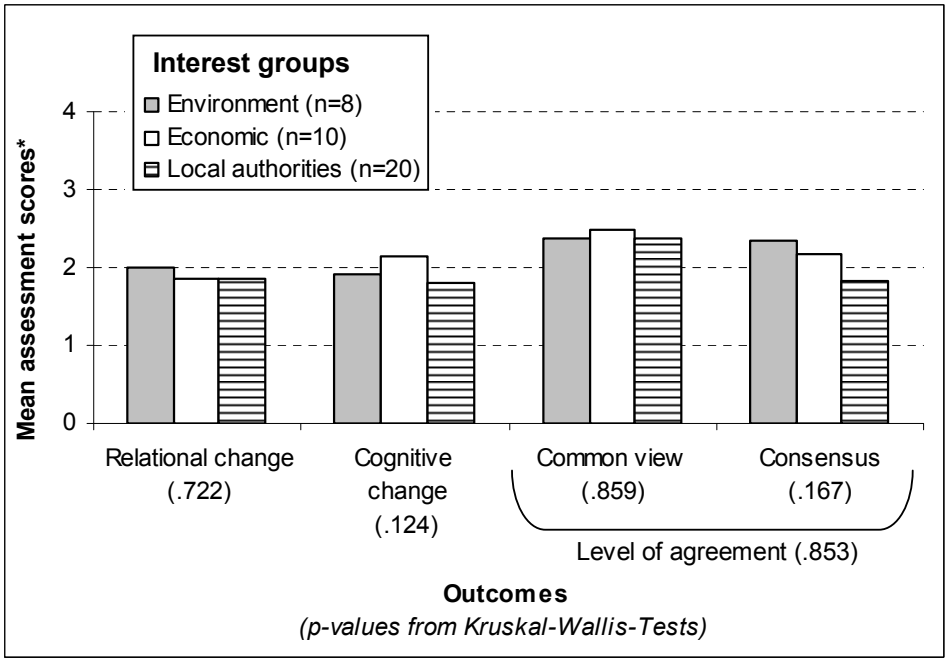

Figure 5-8: Indicators of learning outcomes and agreement broken out by interest groups (Advisory Councils)

Response scale: '1' = strongly agree, '2' = tend to agree, '3' = tend to disagree, '4' = strongly disagree.

Additional analysis revealed only weak associations between respondents' level of attendance and the outcome measures, with none of the coefficients above .30 which would indicate a moderate relationship (see Appendix 6). Nonetheless, all these correlations were significant at the $p < 0.05$ level in the case of the Working Groups. With correlations coefficients above .20, there seems to be a weak positive association between high levels of attendance and relational (τ-c -.212, $p = 0.001$) as well as cognitive change (τ-c -.246, $p = 0.000$). Correlation coefficients are negative due to reverse coding of attendance. A correlational analysis of the Advisory Council data resulted in even lower values of tau-c, with none of the associations approaching significance (see Appendix 6).

5.3 Summary

This Chapter presented the findings of a postal survey of stakeholder experiences in two participatory RBM initiatives which differed along several dimensions: the Irish RBD Advisory Councils focus on the whole RBD covering a much larger area than the small sub-basins addressed by the Working Groups in Schleswig-Holstein. Working Groups are also smaller in size, usually comprising eight to ten representatives of local users

and interest groups. In contrast, the Advisory Councils involve between 24 and 48 representatives of regional interest groups and local authorities. More importantly, they differ in how stakeholder interaction is organised. The three-monthly sessions of the Advisory Councils are chaired by the competent authority, where the group is usually provided with information, mainly in the form of presentations by staff of the authority, which they can then question, comment on and add to. In comparison, Working Groups are managed by the local water and soil associations who disseminate information to the group members which is then debated in their monthly meetings. The respondents' assessment of the process format shows that Working Groups not only provide significantly more opportunities for stakeholders to exchange information as well as debate their views and concerns but also the time necessary to engage in a continuous dialogue. Furthermore, activities were perceived to differ in their representativeness as well as the stakeholders' ability to influence agenda-setting and the definition of working procedures.

The purpose of surveying two types of stakeholder processes was to elucidate, by way of comparison, the following questions: To what extent are different types of participatory processes characterised by social learning. And which process format or features thereof encourage or hinder social learning? Working Group respondents' register significantly stronger relational changes and seem to have been more successful in achieving a high level of agreement than the Advisory Council members, both in terms of developing a shared understanding of the situation as well as engaging in consensual decision-making. Interestingly, cognitive change is equally strong in both groups, with both samples indicating strong processes of knowledge acquisition. Instances of changed perceptions are comparatively rarer.

Results highlight the consistently and significantly more positive assessment of the process characteristics of Working Groups, all of which are thought to be conducive to social learning, when compared to the Advisory Council responses. However, one should be careful to interpret these results as suggesting that the Advisory Council is not meeting any of the process criteria assessed. The data merely indicates that the Advisory Councils provide comparatively less opportunities for extended engagement, information exchange and interaction than the Working Groups. Conversely, we can

conclude, seeing that the Working Groups provide comparatively stronger evidence of social learning, that the organisational features of the Working Groups, small size, monthly meetings and a focus on group discussions, might be more appropriate in ensuring the communicative process assumed to facilitate social learning than the organisational shape of the Advisory Councils which are larger, convene less frequently and are characterised by a less dialogical style of interaction. However, to specify which characteristics are particularly conducive to social learning, a larger data set and a more sophisticated analysis would be required (see Chapter 7). Furthermore, the communication process requires further attention when trying to establish the factors potentially affecting social learning. Both processes seemed to be characterised by openness, meaning that participants willingly shared information and exposed their views. Although Working Group and Advisory Council responses significantly differ for this indicator, overall, mean scores indicate a favourable assessment. When we look at indicators of process equity, however, the data suggests that a considerable number of Advisory Council members identify the presence of power relationships which might explain why the Councils seem to have been less successful in achieving consensual decisions.

Additional analysis shows that response groups responsible or partly responsible for the involvement activity tend to evaluate the process characteristics more positively than other groups. There are no significant differences among groups when considering relational and cognitive change or the respondents' assessment of the level of agreement reached.

CHAPTER 6: DISCUSSION

Participation, although not new to NRM is increasingly viewed as a means for social transformation rather than a way of ensuring democratic representation. The current literature suggests that participatory approaches to water resources in particular and NRM in general may enable social learning, involving such changes as improved trust among various stakeholder groups, the acquisition of factual knowledge as well as a deeper understanding of the interests and concerns of other groups, eventually transforming and accommodating the perceptions of problems and appropriate solutions as a prerequisite for agreement and collective action. However, as Chapter 2 illustrated, whilst the arguments for a more learning-oriented approach are easy to grasp, empirical evidence which unambiguously substantiates the social learning model outlined in the literature as well as its attributed benefits are sparse.

This Chapter first synthesises (Section 6.1) and then examines the evidence collected in the case studies and survey to demonstrate the role and impact of social learning in these participatory initiatives. By revisiting the literature reviewed in Chapter 2 in the subsequent discussion of the insights gained from this research, it highlights this study's contributions to existing knowledge. The discussion focuses on four main themes arising from the study. The first centres on the evidence for social learning, relating to both relational as well as cognitive change (Section 6.2). The second theme evolves around the links between social learning, mutual understanding and agreement (Section 6.3). Third, the relationships between process format and learning will be elaborated (Section 6.4). The fourth theme discusses the relevance of power sharing for effective processes of social learning (Section 6.5).

6.1 Synthesis of findings

The discussion in this Chapter is based on the analysis of social learning in two case studies as well as a postal survey of stakeholder learning in two types of participation processes. Since each activity adopted a distinct approach to data collection and analysis as well as used slightly different data collection instruments, the information generated and thus their contribution to answering the research questions varies. The survey systematically evaluated two different types of participation processes and thus not only

provides evidence necessary to examine the presence of social learning but also, by comparing these results, allows certain conclusion related to the conditions for stakeholder learning to take place. In comparison, the in-depth analysis of the same processes in the cases studies provides a somewhat broader data set and thus allows for a more differentiated examination of the findings than survey research is capable of. Furthermore, it should be noted that data collection instruments covered the investigated components and dimensions of social learning to various degrees and, as a result, case study and survey data are not equally insightful for all the aspects investigated. For example, the in-depth investigation of the case study processes enabled a much more differentiated analysis of the different dimensions of relational changes. Table 6-1 summarises the evidence of four categories of indicators associated with social learning processes collected in this study: effective communication and interaction, changes in group relationships and cognitive changes as well as the level of agreement reached by the groups.

Table 6-1: Summary of indicators of social learning processes and outcomes

	Regional Water Council Emsbach-Mittlere Lahn (Germany)	Anglian RBD Stakeholder Liaison Panel (UK)	Working Groups Schleswig-Holstein (Germany)	RBD District Advisory Councils (IE)
Communication & interaction	Open; no evidence of power relationships.	Open; no evidence of power relationships.	Open; no evidence of power relationships.	Open; moderate power relationships.
Social learning outcomes				
Relational change	Relationship-building limited; individual accounts of deepened relationships with those representatives who pursued similar interests; manifestation of stereotypes. Slight increase in trust. Connectedness increases along the measured dimensions.	Relationship-building limited; individual accounts of deepened relationships with those representatives who pursued similar interests. High level of trust adapted to a moderate level. Connectedness increases along the measured dimensions.	Relationship-building strong.	Relationship-building moderate.
Cognitive change	Increase in factual knowledge & understanding other stakeholders' views; limited self reflection. Views more comprehensive but mostly unchanged.	Increase in factual knowledge & understanding of other stakeholders' views; self-reflection. Views more comprehensive but mostly unchanged.	Increase in factual knowledge & understanding other stakeholders' views. Transformation of views comparatively weaker than accumulation of knowledge.	Increase in factual knowledge & understanding other stakeholders' views. Transformation of views comparatively weaker than accumulation of knowledge.
Level of agreement				
	Limited development of common views. No group decision-making occurred.	Limited development of common views. Consensus uncertain; disagreement as to whether group made any decisions.	Common view of problems at hand seems to have developed. Decision-making consensual; outcomes are considered fair & satisfactory	Limited development of common views. Consensus uncertain; too many missing values.

To reflect on the findings, it is necessary to have a clear understanding of the similarities and differences between the four engagement activities surveyed (see Table 6-2). A common feature among all cases is, of course the context (RBM planning) and secondly, the diverse membership of the consultation groups. There are three characteristics on which the cases objectively differed: the scale at which they were established, the 'age' at which they were investigated as well as the size of each stakeholder group. First, both German processes operate at the sub-basin scale whereas the Irish Advisory Councils as well as the Liaison Panel investigated in the UK focus on RBDs.

Second, at the time of data collection, all cases but the Working Groups in Schleswig-Holstein, were operational for just over one year. The Regional Water Council had been disbanded at the time of the second data collection since the project it was linked to had been completed. Consequently, experiences reported by Working Group participants reflect a longer period of collaboration since they were already established in 2002, whereas study participants from other cases had experienced far fewer interactions, namely five on average. It is difficult to estimate the number of meetings Working Group members have participated in over the years but based on individual accounts (Ebell 2005), groups can be assumed to have met on a monthly or bi-monthly basis depending on the phase in the RBM planning process.

Table 6-2: Main characteristics of cases and approaches investigated in this study

Case	Regional Water Council Emsbach-Mittlere Lahn (Germany)	Anglian RBD Stakeholder Liaison Panel (UK)	Working Groups (34) (Schleswig-Holstein)	RBD Advisory Councils (3) (Ireland)
Scale	Water bodies	RBD	Small sub-basins	RBD
Actors involved	20 members representing agriculture, environment & nature conservation, business & industry, water supply, wastewater treatment, hydropower, angling, tourism, and the local authorities.	15 members representing the Environment Agency, Regional Assemblies, Regional Development Agencies, Local Authorities, Natural England, the Internal Drainage Boards, National Parks, water companies, environmental NGOs, farming, business & industry, ports, extraction & minerals, consumers, and angling.	8 to 10 members: Local authorities, water user associations,, agriculture, fisheries, local and regional environmental NGOs, regional water authorities.	Varies between 24 to 48 members: local authorities, farming, environmental NGOs, business and industry, academia, recreational users/fishing, consumers.
Purpose	Advisory Council to provide information, contribute to the selection of measures, provide a 'regional and local perspective' throughout the process.	Advisory panel to identify and gather data for effective RBM, assist in devising and implementing RBM plans, support conflict resolution.	Working Groups support local implementation of WFD by examining & providing data; development of local measures.	Councils advise competent authority in the preparation and implementation of RBM plans.
Methods	Chaired by staff of competent authority, no external facilitator, presentations are followed by group discussions.	Chaired by staff of competent authority, presentations are followed by group discussions.	Meetings are chaired by member of the local water & soil association; groups examine, discuss & eventually amend planning documents to be forwarded to the competent authority; collective development of local measures.	Meetings are chaired by staff of competent authority, presentations are followed by group discussions.
Timeline	Oct 2005 – April 2007; five meetings in total.	Jul 2006 – continuing; four meetings a year.	Since 2003; bi-monthly or monthly meetings.	Since 2006; four meetings a year (on average).

Third, the size of the stakeholder groups differ considerably, with the Working Groups averaging eight to ten members, the Liaison Panel comprising 15 stakeholders and the Regional Water Council 20. The membership of the Advisory Councils ranges from 24 to 48 members. Although there is little research so far addressing the interrelationship between group size and learning, one could anticipate that the ability to engage with one another decreases with increasing group size. However, as has been illustrated in the previous chapters both the Regional Water Council as well as the Advisory Councils' regular membership were reduced by poor attendance. As a result, the 'real' group sizes are more commensurate than the formal descriptions suggest.

On paper, the participation activities investigated in this thesis meet the requirements which are considered central to social learning in the literature. They involve a diverse set of stakeholders (inclusiveness), who frequently meet over a prolonged period of time (extended engagement) to obtain, provide and exchange information relevant to the planning effort (information exchange) and to discuss their needs, concerns and ambitions (interaction). Yet, the participants' assessment of the experienced stakeholder activities reveals some key differences. The group compositions were in all cases confirmed to be inclusive of all the relevant interest groups. Results suggest that processes seem to allow for extended engagement, although Working Groups convene more frequently than the other cases. Furthermore, all cases were characterised by open communication and equal opportunity to participate, indicating an absence of strong power relationships. Only the Advisory Council data indicated the presence of moderate power relationships. Key differences lie in the extent to which processes allowed for both information exchange as well as deliberation. Case study participants criticised an imbalance between exchanging information and discussing it, whilst Advisory Council participants assessed the same criteria significantly less favourable than the Working Group members. A similar observation can be made regarding how stakeholders rate their ability to influence how the meetings are run, with the responses of the Working Group members displaying a comparatively more positive evaluation.

To sum up, the data suggests that Working Groups were more interactive than other investigated initiatives, not only enabling stakeholders to engage with one another to a greater extent than stakeholders representing other cases but also more frequently, when

taking into consideration the frequency of meetings. Having briefly recapped the results of the data analysis presented in the previous two chapters and outlined the key characteristics, similarities and differences between the surveyed cases, these will now be discussed in the light of existing knowledge.

6.2 Evidence of social learning?

The value of learning as a normative goal and process is widely recognised. Yet whilst learning is theoretically debated and its encouragement called for, there are not only various perspectives on who, when, what and how learning occurs but also few studies which have so far empirically examined these processes. This study investigated changes in group relationships, more specifically relationship- and trust-building as well as the degree of connectedness among stakeholders and cognitive change to analyse processes of social learning.

Investigated by many other researchers, trust is reported to be one of the 'social goals' achievable through prolonged stakeholder interaction (Beierle & Konisky 1999), an observation that was also made in the case study of the Regional Water Council Emsbach- Mittlere Lahn. However, whilst there was a moderate increase in trust among German respondents, UK respondents tended to change previously high levels of trust to more moderate levels. Yet, these changes are not necessarily an indication of negative perceptions of other participants. Considering that trust was remarkably high among UK respondents, it is more likely that they adjusted their enthusiastic expectations to a more realistic, experience-based level of trust (McKnight *et al* 1998). This may also explain why the development of trust differed between individuals in both panels. Höppner *et al* (2007) who record similar changes in trust levels of stakeholders involved in a participatory landscape planning exercise, highlight that one should not consider these patterns as negative outcomes per se. They value a shift from initial to experience-based trust as crucial to the success of stakeholder engagement as it prevents unrealistic expectations and frustration. They continue that a loss of experience-based trust would have far more negative consequences for a collaborative effort and caution to differentiate what 'type' of trust is being examined when drawing conclusions.

Next to trust, relationship-building as well as an increased connectedness are considered key to transforming a group of individuals in a 'community of practice' to which an individual perceives membership and attributes loyalty and a sense of belonging (Webler *et al* 1995). Cheng & Daniels (2005) claim that individuals who perceive a common group identity are far more likely to take collective action. There is a rich empirical literature on the capacity of collaborative management to improve relationships (Leach *et al* 2002; Frame *et al* 2004; Schusler *et al* 2003), a phenomenon which was only partly observed in the case studies findings but was particularly strong in the surveyed Working Group members, an observation which might account for the role prolonged engagement plays in developing these relationships (see also Tippet *et al* 2005). Indeed, few case study respondents claim to have deepened relationships through the collaborative process. On the contrary, there are individual accounts of a perceived irreconcilability of views, especially in Germany, whilst UK respondents seemed to distinguish between representatives who worked for the common good of the group, or even the public in general, and those who only pursued their own interests. These findings point to a lack of trust among stakeholders, but they could also be interpreted as reflecting a limited acceptance of the legitimacy of other interests or viewpoints. Indeed, many proponents of deliberative democracy have voiced their fear, that rather than learning to accept the legitimacy of alternative viewpoints and the recognition of similarities or shared interests, dialogue might actually assert identities and differences (Dryzek & Braithwaite 2000). The manifestation of stereotypical views of participants of other interest groups seen in the case studies also reinforces findings reported by Cheng & Daniels (2005) who observed that participants of watershed groups tend to identify each other in terms of dominant reference groups like 'environmentalist' and 'farmer'.

Briefly summing up the evidence so far, we note that findings only partially substantiate the propositions found in the literature which articulates the social learning model. Whilst relationships might develop at the individual level, it is questionable whether these new connections can initiate the development of a community with shared perceptions, goals and values. After all, connectedness among panel members, both in the German and the UK cases, remained low. Pahl-Wostl *et al* (2008) ascertain that individuals hold different social roles and belong to more than one social or cultural

group. Given that stakeholders act as representatives of a group whose values and interests they ascribe to, one needs to ask whether stakeholders, given the time and the opportunity, can arrive at a point where they view others and themselves as members of a community. The case studies indicate that whilst the relational changes associated with social learning are in their initial stages, the process could develop in several directions.

Cognitive change as a social learning outcome subsumes both the acquisition of knowledge as well as a transformation of views and perceptions. Factual learning, in the form of informing and educating the public is probably the motivation behind early ventures into public participation (see Bulkeley & Mol 2003) and as such is well researched and ascertained as an outcome of public involvement (Beierle & Konisky 1999). The importance of not only acquiring new, factual knowledge, but also to develop a better understanding of the various existing views, perspectives and concerns of the involved parties as a prerequisite of perceptual change, only recently surfaced in the NRM literature and participation research. This might be related to a changing understanding of participation as well as practice, where stakeholder processes receive increasing attention and influence. Findings from all investigated cases suggest that participants indicated a strong increase in their general knowledge about water and RBM as well as about the interests and concerns of other stakeholders, corresponding well with the findings from other studies into social learning (e.g. Webler *et al* 2005; Schusler *et al* 2003) and participation in general (e.g. Leach *et al* 2002; Frame *et al* 2004). Yet, does the acquisition of knowledge and a more informed view of other perspectives (one case study respondent stated that through the involvement process other interests became 'more visible') automatically mean that stakeholders integrate this information into their own perspective resulting in a changed understanding of the environment? Mostert *et al* (2007), reporting the findings of an analysis of social learning in ten participatory water management initiatives across different European countries, provide anecdotal evidence of changed stakeholder perspectives which ultimately enabled the processes to move towards a shared problem vision. However, case study respondents from both Germany and the UK noted that whilst their involvement in the panel enriched their views, it did not alter them or change their perspective. The data clearly indicate that whilst stakeholders frequently accumulate

new knowledge, they are less likely to change their views, an observation, that was also made in the surveyed Working Groups and Advisory Councils. This pattern was coherent in all the investigated cases.

To return to one of the key research questions, we might ask what these findings tell us about the capacity of stakeholder platforms to transform relationships and stakeholder thinking, both key elements of the social learning model described by the literature. First, to fully understand relational phenomena, we have to acknowledge that they do not reside in a person, but rather in interactions between individuals and groups. Thus, they are inherently dynamic and time-dependent (Cooper & Skaggs Sheldon 2002). Rist *et al* (2006) conclude that different features of social learning processes tend to occur simultaneously; their prominence, though, varying dependent on the phase of the stakeholder activity. It is remarkable that, if we compare Working Groups with the other, considerably 'younger' three cases, relational changes are comparatively stronger than cognitive changes whereas the three younger cases record stronger changes in the cognitive realm. Whilst this confirms the notion that social learning evolves in stages, it also highlights that some things may be 'harder to learn' than others. Even participants in the Working Groups, despite having a considerably longer history, report to have gained many new insights but concede not to have altered their general views on the problem at hand.

Armitage *et al* (2008) highlight that "Learning at times can be quite superficial and less meaningful than expected" (p. 12). This is not to say that the learning experienced by the stakeholders surveyed is irrelevant but we need to acknowledge that there are different types of learning or change. Webler *et al* (1995), for instance, identify two components of social learning: cognitive enhancement, broadly referring to acquiring knowledge, skills and developing an understanding of other groups' interests and concerns, and moral development, which includes an increased sense of solidarity with other stakeholders, the integration of knowledge into one's own views and opinions and a growing interest in the common good rather than one's own interests. In other words, learning includes an element of acquisition or accumulation (of knowledge or skills) and transformation (of views, perceptions, and emotions). Results suggest, that the observed processes of social learning mainly involved the first, and, in fewer instances

the latter. Or to use the words of one of the case study respondents: "I have learned but I haven't changed". Does this mean that social learning might ultimately not result in the benefits described in the literature, and affect the development of common views, facilitate consensus-building and, eventually collective action?

6.3 Social learning as a motor for change and collective action?

Much emphasis has been placed on the importance of learning as a prerequisite of achieving social change and ultimately collective action under conditions of social-ecological change (see Chapters 1 and 2). Cheng & Daniels (2005), for instance, claim that individuals who perceive a common group identity, one of the effects of social learning, are more likely to collectively take action to avert resource shortages than those who do not. Cognitive changes, on the other hand, are crucial in building a shared understanding of the environment which allows stakeholders to develop agreed upon solutions. Currently, only a limited number of studies provide anecdotal evidence of cases where groups achieved agreement, both on the environmental situation as well solutions to address them or even took actions to mitigate these problems (Mostert *et al* 2007; Steyaert & Jiggins 2007).

It is difficult to make a confident statement about the level of consensus achieved in the investigated cases, for reasons explained in detail in the previous chapters. In short, apart from the Working Groups, little group decision-making seems to have taken place. However, the results provide us with an insight into the extent to which stakeholders accommodated their views based on the involvement experience. Unsurprisingly, considering that only few changes in stakeholders' perceptions were observed, at least in three of the four cases, views might have moved somewhat closer but we cannot speak of a 'shared cognition'. Given that the Working Groups are more 'successful' in this respect, the absence of shared views in the other cases could be attributed to lack of more intense deliberations or the fact that these collaborations were relatively 'young'.

Yet, there is an alternative explanation, namely the possibility of 'an irreducible plurality of standpoints' (van den Hove 2006). Van den Hove (ibid.) states that it might not always be easy to identify what common interests are; nothing guarantees that a generalisable interest can be found or that differing values and beliefs can be brought

together. Based on our findings, we cannot claim that viewpoints were irreconcilable in the investigated cases or indeed, that they prevented the emergence of a common understanding among panel members. However, it should be noted that the feeling of an irreconcilability of views was shared by stakeholders from the case studies and is likely to affect their beliefs and behaviours unless these assumptions are challenged through future collaborations.

In the Working Groups, where decisions were made in a collective process, outcomes seem to be characterised by a high level of consensus, both in terms of developing a shared understanding of the situation as well as engaging in consensual decision-making, an observation which is confirmed by reports from the Environmental Ministry (Ministerium für Landwirtschaft, Umwelt und ländliche Räume des Landes Schleswig-Holstein 2006). Considering that results suggest that perceptual change was limited among stakeholders, achieving such a high level of agreement is rather remarkable. Results raise the question of whether learning, or more specifically cognitive change, adequately predicts behaviour. Not all behavioural changes are brought about by learning and a change in beliefs, attitudes, and intentions does not necessarily lead to a change in behaviour. Indeed, Ajzen and Fishbein (1980) emphasise that certain behaviours are so dependant on the situational context that they become virtually unpredictable through attitudes. In its focus on processes and outcomes of social learning, this thesis largely ignores the possible effects of other factors, such as the nature of the issues addressed (e.g. Were they highly contested or were they too 'far removed' from the stakeholders' everyday life?) or the type of decisions made by the group (e.g. Were they binding? Did they concern specific actions or were they of a general nature?). Furthermore, it should be noted that results may be affected by a phenomenon Coglianese (2002) terms 'cognitive dissonance'. The author explains that any stakeholder evaluation faces the inherent danger of participants subconsciously overrating their group's success, in this case the level of agreement reached, to avoid the psychological discomfort experienced when realising discrepancies between their expectations, efforts and actual achievements.

6.4 Of the challenges of social learning

The value of participatory NRM is widely recognised, with claimed benefits ranging from increased public awareness to improved decision-making and, most recently, social learning. The WFD for instance, specifically calls for a 'learning approach' to RBM, placing stakeholder and public engagement at the heart of its implementation process. Remarkably though, there is only limited guidance towards mechanisms to support learning, neither in the text of the directive or its supporting documents (e.g. Working group 2.9 2002) nor in the wider debate calling for learning-oriented participation platforms. Armitage *et al* (2008) confirm that "the diversity of learning approaches or mechanisms suitable for complex natural resource management situations is a further source of uncertainty" (p. 6). Few authors point to distinct participation techniques, among them Rist *et al* (2007) describing 'Autodidactic Learning for Sustainability' workshops, Armitage *et al* (2008) illustrate a range of experimental approaches to learning in adaptive co-management and Schusler *et al* (2003) selected a search conference to engage stakeholders in planning for a wildlife management area "because of its intentional design to foster learning among participants" (p. 313). More commonly, though, lists of process characteristics representing barriers or enablers of social learning are assembled. The most extensive compilation of preconditions for social learning is provided by Mostert *et al* (2007), with many of the features corresponding to what is already considered 'good practice' in the participation literature, although experiences on which these judgments are based are limited.

Although the participation activities investigated in this thesis meet these criteria, the participants' assessment of the experienced stakeholder activities show that processes significantly differ in the degree of stakeholder interaction and dialogue they allow. Whilst the Regional Water Council, the Stakeholder Liaison Panel and the Advisory Councils are quite similar when we consider their organisational arrangements, Working Groups differ in their timeframe as well as the opportunity for interaction (see Table 6-2). Unsurprisingly, Working Group respondents record the strongest relational and cognitive changes out of the four cases. Why could interaction and prolonged engagement be key to social learning? Mostert *et al* (2007) explain that social learning requires the integration of different 'frames of perception' of stakeholders. These frames are defined by an actors' assumptions, interests, values and beliefs, and determine what

he sees as being in his interests, subsequently guiding the interpretation of information, and thereby shaping viewpoints and opinions (Schoen & Rein 1994). Case study respondents criticised an imbalance between information provision and information discussion. However, in order to explore similarities, differences and to reshape ways of thinking about the situation and other parties, information needs to be debated, judged and weighted as a basis for decision-making (Meppem & Gill 1997; Tippett *et al* 2005). The case study data suggests that both case studies failed to expose the participants' underlying beliefs, perceptions and assumptions.

Section 6.2 already alluded to the relevance of extended engagement, especially for trust- and relationship-building. Clearly, the well established Working Groups record stronger relational changes among stakeholders than any of the other investigated cases, reinforcing similar findings by previous studies (Tippet *et al* 2005; Leach *et al* 2002). Leach *et al* (ibid.), for instance, conclude from a survey of 44 watershed groups that effects on the social and human capital gradually increase as partnerships age, with partnerships older than six years resulting in significantly stronger relational changes than partnerships younger than two years.

The investigation revealed further potential limitations to social learning processes in the investigated cases. Apart from the Working Groups, all cases were poorly attended presenting a potential barrier to intense social learning processes. Yet, the analysis showed that the stakeholders' level of attendance was only in the Working Groups associated with individual learning outcomes. This confirms Larson & Lach's (in press) findings which show that minimal attendance seems to be more critical than the extent of participation. However, it is possible that a high level of attendance might only take effect with prolonged engagement where differences in stakeholder thinking surface more prominently and therefore, measures to ensure long-term stakeholder commitment might be crucial in the quest to facilitate social learning. Whilst the low attendance in the Regional Water Council might be related to the fact that it was a pilot project, the inconsistent attendance observed in the Liaison Panel and the Advisory Councils' poor attendance are most likely a function of the scale at which they are established. The prominent role of the Liaison Panel in the WFD implementation in the Anglian RBD means that stakeholders are frequently very senior representatives of their sector who

simply do not have the capacity to attend all meetings. The large area covered by each RBD Advisory Councils in Ireland, on the other hand, incurs considerable travel costs for council members which specifically burden the budgets of the NGO delegates. The feeling of being overburdened, both in terms of time commitment as well as the complexity of the information was common in all cases but was most strongly expressed by Working Group participants. Rist *et al* (2007) caution that the workload may result in participants withdrawing, an observation though, that cannot be confirmed in the investigated cases.

In the light of these findings, can we conclude that different types of participation processes are characterised by various degrees of social learning? And which process characteristics are conducive to stakeholder learning? Results indicate that the Working Groups as an interactive approach to participation are comparatively more 'successful' in facilitating social learning than the Regional Water Council, the Liaison Panel and the RBD Advisory Councils. However, one should be cautious in attributing this success solely to the prevailing mode of communication. Since the investigated cases differed on several characteristics, such as timeframe, scale, group size, it is difficult to identify with all certainty those process characteristics which are most conducive for stakeholder learning. However, findings do illustrate and confirm the relationship between organisational arrangement and learning, thus corroborating results of previous studies (Schusler *et al* 2003; Mostert *et al* 2007). Beyond participation techniques and organisational arrangements, a lack of process control surfaced as a barrier to stakeholder learning, raising the question whether there is a need to reassess our view of participation and specifically, how powers are shared in between stakeholders and the authorities.

6.5 Do we need to jump off Arnstein's ladder?

Authors concerned with participation as means to facilitate social learning argue that a collective learning process is an alternative approach to NRM (alternative to technology approaches and marked regulations) which adequately recognises its inherent complexity and uncertainty (Collins & Ison 2006). As such, it transcends established views of participation as a means to involve non-state actors in policy making and frames NRM as matter of coordination among all actors, policy-makers, resource

managers and the public. Ison *et al* (2007) concede that these processes will depend on the ability of the involved parties (among other aspects) to negotiate, adhere to and follow rules, develop solidarity and most importantly, share power. However, does this imply that we have to completely reassess how we view and organise participation? What kind of power sharing is necessary or better, which powers need to be shared?

Results suggest that the institutional and regulatory frameworks played a significant role for stakeholder communication and interaction: first, a perceived bias in the regulatory framework, be it due to an individual's own interpretation or to how it is interpreted and communicated by the competent authority, seems to have affected stakeholders' willingness to collaborate in the case studies. Second, stakeholders, from the case studies and the Working Groups, criticised the, in their view, narrow definition of goals and procedures of the experienced process. The translation of the WFD into objectives, procedures and methods by the competent authorities was considered to dictate the focus of stakeholder activities, thereby limiting the possibility to explore the challenges posed by the RBM planning process as a group. Respondents describe a situation which Quaghebeur *et al* (2004) termed the 'paradox of participation' and which they consider to be an expression of power imbalances between the authorities and the public. They explain that on the one hand, agencies and authorities invite the public to participate in planning and decision-making and on the other hand they dictate the problems that need to be addressed and the ways by which the public can become involved.

Participation is frequently conceptualised along a decision-making continuum (Arnstein 1969, see Chapter 2), perceiving the public involvement as a struggle for decision-making power. Research indicates that stakeholders doubting their ability to make a noticeable impact in the planning process proves detrimental to their motivation to participate and engage in deliberation, and thus to social learning (Mostert *et al* 2007). However, this only shows that stakeholders need to be assured of their roles and competencies, it does not automatically mean the delegation of decision-making powers (see also Höppner *et al* 2007). Results of this research, though, demonstrate that power over the substance as well as the working procedures might have a significant impact on social learning. As it was illustrated earlier, stakeholders from the case studies as well as the Working Groups criticised their limited ability to address issues of importance to

them or influence the work process, leaving little room for exposing their views, preferences or even conflict. In this sense, public engagement seems to require a certain degree of power sharing between competent authorities and the participating public if we want to encourage actors to reveal and discuss their perceptions, identify agreement and disagreement between these and eventually arrive at a shared understanding of the problems at hand. Parkins & Mitchell (2005) emphasise that one should be concerned with the cultivation and maintenance of public deliberation irrespective of who finally makes the decisions. Therefore, creating opportunities for social learning not necessarily requires us 'to jump off Arnstein's ladder' in the sense that is necessary to assigning decision-making powers to stakeholders but the quality of deliberation and the control over this process are necessary prerequisites.

CHAPTER 7: CONCLUSIONS

This growing understanding of participatory activities as learning platforms can be seen as a direct response to shifts in how NRM is framed, namely as uncertain, non-linear, interlinked with the human dimensions and thus, essentially a social rather than a technical process. Röling (2002, p. 26) postulates that "sustainable society […] emerges from interaction". It is widely agreed that the transformation into a sustainable society must be collectively elaborated and learned (e.g. Pretty 1995; Marleveld & Danbégnon 2002; Steyaert & Jiggins 2007).

The practical implications of acknowledging the potential role of social learning for natural resource management is to promote and intensify their application by establishing participatory learning platforms, where individuals can meet, interact, learn collaboratively and take collective decisions (e.g. Keen *et al* 2005). After all, social learning processes are a natural occurring phenomenon whenever stakeholders come together to deal with their differences but require the nurturing of learning opportunities. Nevertheless, although an increasing but still limited body of work provides examples of social learning outcomes which correspond with findings from research into participatory and deliberative processes, the mixed success of participatory processes provokes some questions into the limitations of and challenges to promoting social learning though participatory processes and its potential contribution to sustainable resource management. There still remains much to learn about the more fundamental questions in relation to social learning, namely whether participatory processes lead to a shared understanding of the circumstances on which agreement and action can be based, which process features foster or inhibit this change and how it contributes to process outcomes.

To this end, this study aimed to satisfy the following research objectives and queries:

Table 7-1: Overview of research objectives and questions

Research objectives	Research questions
A. To assess whether participatory processes are characterised by processes of social learning, or power relationships.	1. To what extent are participatory processes characterised by processes of social learning or power relationships?
B. To assess the extent to which social learning or power relationships influence the substantive outcomes.	2. Does social learning facilitate mutual understanding and agreement? 3. If not, are other factors such as power relationships more influential with respect to communal debate, sense making, and decision-making?
C. To assess whether process characteristics influence the creation of learning situations in a participatory process.	4. To what extent are different types of participatory processes characterised by social learning? 5. Which process formats or features thereof encourage or hinder social learning?

This final Chapter begins by examining the results in the light of the research questions and objectives guiding this study (Section 7.1). The implications and practical recommendations which arise from this study are presented in Sections 7.2 and respectively 7.3. The final Section highlights the limitations of this study (Section 7.4).

7.1 Key findings

Based on this study, we can draw four lessons for the current theoretical debate on social learning in participatory water resources management:

Social learning is a multi-dimensional and dynamic process

This research aimed to establish whether participatory processes are indeed characterised by social learning. Findings show that whilst stakeholders readily acquire knowledge and improve relationships, the transformation of views and the development of a shared group identity are outcomes that are harder to achieve. Even more advanced engagement processes seem to be limited in their ability to arrive at what the literature describes as shared cognitions. Whilst many authors acknowledge that the changes attributed to social learning affect a number of different dimensions (e.g. Webler *et al* 1995; Schusler *et al* 2007) only few recognise that these changes might occur at

different stages of a stakeholder learning process (Rist *et al* 2006). This study clearly indicates that social learning is a multi-dimensional and dynamic process and as such evolves in stages and, more importantly, to various degrees.

A high level of agreement is possible even if social learning is limited

Relational and cognitive changes are considered crucial in building a shared understanding of the environment and allowing stakeholders to develop agreed upon solutions as well as taking collective action. Interestingly, the Working Groups, which seem to have been more successful than the other cases in achieving a high level of agreement, both in terms of developing a shared understanding of the situation as well as engaging in consensual decision-making, showed little transformational learning. This supports the notion that learning does not necessarily predict a change in behaviour and vice versa (Ajzen & Fishbein 1980). However, more research needs to be conducted to develop a better understanding of the intricate relationship between stakeholder learning, more specifically its different dimensions, other contextual variables and the substantive outcomes of stakeholder processes.

Sharing power over the process is more important than sharing decision-making power

Remarkably, the investigated cases provided little evidence of power relationships. However, an absence of power does not negate its potential affect on social learning processes, a concern raised by one of the research questions, namely whether power relationships are more influential (than processes of social learning) with respect to communal debate, sense making, and decision-making. Stakeholders seem to be very aware of the potential of other groups to build alliances and there is a tendency to identify themselves and others in terms of reference groups or organisational affiliations. As long as these perceptions remain unchallenged over the course of the interaction and the groups fails to transform into a group with a distinct identity, potential for power play and conflict will remain inherent. More importantly, the study highlights that the power relationships between the responsible authority and the stakeholders can be a major process influence. The participation literature has long conceptualised and debated public involvement as a power struggle between authorities and society as well as investigated how power sharing affects stakeholder interaction. Mostert *et al* (2007), for instance show that a lack of belief in power sharing affects

stakeholder motivation and commitment. However, the interrelationship between power over the process and the quality of the learning process has so far been widely overlooked. This study clearly shows that a lack of process control directly affects the quality of stakeholder communication and inhibits stakeholders from exploring and debating their interests and concerns as well as identifying areas of agreement or even disagreement.

Opportunity for interaction is key to social learning

Stakeholder processes are shaped and affected by a multitude of factors that encourage or constrain the occurrence of learning processes. The fact that the intensity of stakeholder learning differed in the two investigated initiatives reinforces the role organisational arrangements play in encouraging the type of communicative process necessary for stakeholder learning. Corresponding to prior research findings, more interactive and dialogical types of processes seem to be more promising in facilitating social learning than engagement activities only allowing for two-way communication between stakeholders and responsible authorities. However, one should be cautious in attributing this success solely to the organisational arrangements. Since the investigated cases differed on several features, for instance their timeframe, it is difficult to attribute the extent to which participants learned solely to the level of interaction they engaged in - after all a multitude of variables are at work in a situation where different interests and personalities meet over often highly contested issues - but we can conclude with some certainty, and thus concur with the literature (e.g. Mostert *et al* 2007), that it is a fundamental prerequisite for social learning.

The study further highlights a number of practical problems and challenges facing the ambition to encourage social learning among stakeholders:

– Participatory processes need to strike a balance between information exchange and deliberation between stakeholders in order to expose participants' views, interests and goals.

- The time commitment and social energy a collective learning process requires places significant demands on the resources of both the participants and the authorities in charge.

- Narrowly defined problems, issues and even procedures might influence the quality of the communicative learning process by preventing stakeholders from exploring and identifying issues of common concern.

- Competent authorities can diminish cooperative attitudes by prioritising problems and defining ways of dealing with them without consulting participating stakeholders.

7.2 Implications for future research

This study's findings highlight a number topics for future research most of all the need to provide further insights into the dynamics of social learning to contribute to social learning theory which can be founded on evidence rather than derived from theoretical concepts. This study utilised repeated evaluations of collaborative initiatives to understand the multi-dimensionality and complexity of social learning among stakeholders, admittedly only providing a snapshot of social dynamics which are expected to change and evolve over time in the investigated cases. Researchers are encouraged to further develop this research design and monitor stakeholder activities over a prolonged period of time to develop a better understanding of the temporal structure of learning processes. Furthermore, researchers are advised to develop and apply a fine-tuned approach to investigate both the changes in different social learning dimensions as well as the extent to which these changes occur.

A second important line of inquiry is to investigate how influential and relevant social learning processes are for achieving mutual understanding and agreement. This study has shown that (at least in one case) stakeholders managed to achieve a high level of agreement even through only limited cognitive changes were reported. Hence, empirical research should address the question as to how social learning, the development of a shared understanding of the environmental situation and the level of agreement reached

are connected. Within this context, researchers might ask whether some dimensions are more important than others when it comes to achieving agreement.

Third, investigations need to include more explaining variables to expose the intricate relationships between type of stakeholder process and learning outcomes since there is little experience to date to guide practitioners and authorities in the design of learning-oriented participation activities. An important task for the future is to critically assess and experiment with novel and well established engagement formats to derive key lessons to inform and design models for participation practice. In this context, the question should be addressed as to how process control influences the quality of stakeholder interaction and social learning outcomes.

Finally, although the findings presented here suggest that learning processes are largely influenced by opportunities of interaction, there remains a real possibility that differing values and beliefs cannot adequately be reconciled (van den Hove 2006). Therefore, in some situations, other strategies, such as penalties or incentives might prove more appropriate tools to initiate a change of practices and social interests (see also Leeuwis 2000). Research needs to investigate both situations where engagement activities are likely to result in the anticipated benefits of social learning but should also address how learning oriented approaches can be combined with more 'traditional' NRM efforts. This would offer competent authorities much needed practical guidance in their efforts to initiate social learning among stakeholders and give an indication of the resources and efforts needed.

7.3 Implications for participation practice

For the authorities and individuals responsible for organising and managing participatory processes, five direct implications can be derived from the study results: First, findings highlight the need for interactive methods and good process facilitation to encourage dialogue and collective introspection rather than just information exchange. Although we acknowledge the importance of creating a common knowledge-base amongst participants, authorities should allow enough time for discussion rather than just feed information to stakeholders. Further to constraining opportunities for in-depth stakeholder interaction, the investigated cases show that presenting large volumes of complex data bears the threat of overwhelming and demotivating participants.

Second, competent authorities should be aware that it requires considerable resources in terms of financial and human resources as well as time. Learning-oriented engagement initiatives need to nurture a dialogue among stakeholders and authorities, requiring the skills of trained facilitators or even the training of authority staff to design, organise and manage stakeholder activities. Furthermore, conveners should be aware that learning requires time, potentially years. Against this background, careful consideration should be given to the question of which issues are critically in need of a learning approach. In some cases, where urgent solutions are required or issues are highly contested, an intense and prolonged engagement initiative might not be feasible or appropriate.

Third, this study clearly shows that participants often struggle with the time and work commitment necessary to effectively and continuously participate in extended involvement processes. It was already mentioned that competent authorities should strive for a balance between providing data and encouraging discussion; data volumes can be further reduced by preparing easily-readable summaries or thematic reports. Where possible, travel costs, especially those of representatives of volunteer groups, should be reimbursed. Within this context, process organisers need to be especially aware that the scale at which an initiative is established directly influences both the travel costs and the time participants need to invest in order to attend stakeholder meetings.

Fourth, a social learning approach should not be reduced to a set of structural process features. Beyond participation techniques, allowing stakeholders the necessary room for manoeuvre might be key to fostering social learning among participants (Höppner *et al* 2007; see also Mostert *et al* 2007 on ‘clear mandate’). Narrowly defined problems, issues and even procedures, might not only prevent stakeholders from exploring and identifying issues of common concern, competent authorities can equally diminish cooperative attitudes by prioritising problems and defining ways of dealing with them without consulting participating stakeholders. In this sense, authorities are required to share power and collectively discuss and negotiate the ‘framework’ of a participation activity.

This conclusion points towards the fifth and final lesson we draw from this study, namely the participation of decision-makers, resource managers, or institutions in

general, in the learning process. The central argument underpinning the increased attention on collaborative NRM as a means to foster social learning is the need for change: at strategic level, we need to change how we respond to complexity and uncertainty of contemporary resource challenges. In this sense, collective learning helps to alleviate our limitations to fully understand and capture the natural environment. And at an operational or personal level, learning might affect behavioural change, resulting in more effective management practices. The social learning discourse so far centres on stakeholder learning, often leaving those in charge of NRM out of the equation. Yet, the aforementioned changes have to take place both at the level of stakeholders as well as institutions. Again, this does not automatically imply that authorities are required to share decision-making powers or responsibilities but for social learning to have a real impact on NRM, policy makers and resource managers need to be willing to become part of the collective learning process.

7.4 Study limitations

This research took two approaches to exploring social learning in participatory water resources management and as such, the limitations of both approaches have to be taken into account when evaluating the findings of this study. It must be noted that the cases studies, like any case study, are limited in their ability to generalise to a larger set of participatory water management initiatives. In order to verify interpretations, tentative findings were presented to study participants for review, feedback and clarification. Furthermore, by using multiple sources of data, it was possible to check results from one set of data analysis against analyses of the other data sources.

A second limitation in this research is related to the research strategies and methods used throughout this study. In the cases of the Regional Water Council Emsbach-Lahn and the Anglian RBD Stakeholder Liaison Panel, a very limited period in the 'life' of two stakeholder groups was studied. Whether this study period was adequate is impossible to judge but results should be seen in this context. Secondly, a re-test approach to social learning relies on the respondents' continuous commitment to the study. Fortunately, in each case study, only one respondent failed to complete the second questionnaire after having answered the first. It should be noted though, that both case study processes suffered from irregular levels of attendance, which might

have impeded processes of social learning but certainly limited the number of potential case study participants. The implementation of this research generally struggled with the lack of suitable study objects. A still evolving field of participation in RBM, along with the language limitations of the researcher and the difficulty of obtaining access to ongoing engagement processes, reduced the number of potential participation initiatives for inclusion in this study in both phases of field work.

This last limitation significantly constrained this thesis's ability to demonstrate the comparative benefits of different types of participation processes for social learning and more specifically, to identify process characteristics which are conducive to stakeholder learning. The survey analysis compared results across types of engagement initiative, rather than individual cases, thus only allowing to draw very general conclusions about the relationships between process type and social learning outcomes. Ideally, a larger number of individual cases should be investigated to enable the disaggregation of results by case to identify factors which explain differences in outcomes.

Furthermore, it should be noted that, although all cases were about the WFD, specific problems or even cultural contexts were not taken into consideration. Contexts may differ, for instance, with regard to the experience with participatory processes, and the public awareness of the urgency of the water management issue. Furthermore, this study focused on specific components of social learning and its preconditions. One could argue that not only the arrangement but also the substance of the process, particularly the degree of conflict or tension between parties plays a role. Although all cases were set in a specific context, the WFD, the landscape of problems and issues to be addressed might vary. Given the complexity of the phenomenon under investigation, it needs to be acknowledged that the insights generated in this study can only provide a partial account of the multifaceted process of social learning. However, by adopting a flexible, sequential approach, this study allowed to expand, complement and confirm research findings, resulting in a comprehensive account of processes of stakeholder learning in contemporary participation efforts.

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Maps

Map of the German River Basin Districts

URL: http://osiris.uba.de:8081/gisu/dienste/Blondzik/atlantis/start.html

Map of the Pilotproject Emsbach-Mittlere Lahn

URL: http://interweb1.hmulv.hessen.de/umwelt/wasser/wrrl/umsetzung/pilotprojekte/

Map of the River Basin Districts in the UK and Ireland

URL: http://www.wfduk.org/implementation/RBDmapfiles/RBDMaps-tif/view

Map of the Working Areas in Schleswig-Holstein

URL: http://www.wasser.sh/de/fachinformation/umsetzung/bearbeitungsgebiete.html

Websites

Information on the WFD, guidance documents and national reports

URL: http://circa.europa.eu/Public/irc/env/wfd/information

Implementation of the WFD in Germany

URL: http://www.bmu.de/gewaesserschutz (German and English)

URL: http://www.wasserblick.net (German only)

URL: http://www.wrrl-info.de (German only)

URL: http://www.wasser.sh/ (Implementation of the WFD in Schleswig-Holstein, German only)

Implementation of the WFD in Ireland

URL: http://www.wfdireland.ie

Implementation of the WFD in England and Wales

URL: http://www.environment-agency.gov.uk/subjects/waterquality/

APPENDIX 1: REFERENCES FOR QUESTIONNAIRE ITEMS

A) Pre-test questionnaire

Question	Reference
1	Novel question; response categories derived from list of participants
2	Novel question
3	Novel question
4	Novel question; response categories derived from Leach *et al* (2002)
5	Novel question
6	Novel question
7	Novel question; response categories derived from Auhagen & von Salisch (1996)
8	Adapted from Frame *et al* (2004)
9	Novel question
10	Adapted from Schulz *et al* (2003)
11	Novel question
12	Novel question
13	Adapted from Schulz *et al* (2003)
14	Novel question
15	Probe
16	Adapted from Schulz *et al* (2003)
17	Adapted from Frame *et al* (2004)
18	Probe
19	Novel question
20	Adapted from Schulz *et al* (2003)
21	Adapted from Schulz *et al* (2003)
22	Novel question
23	Adapted from Schulz *et al* (2003)

B) Post-test questionnaire

Question	References
1	Adapted from Schulz *et al* (2003)
2	Adapted from Schulz *et al* (2003)
3	Novel question
4	Novel question
5	Novel question
6	Novel question
7	Novel question
8	Adapted from Schulz *et al* (2003)
9	Novel question
10	Adapted from Frame *et al* (2004)
11	Novel question; Response categories compiled from Arnstein (1969), Berkes (1994), (IPA 2007)
12	Novel question
13	Novel question
14	Adapted from Schulz *et al* (2003)
15	Adapted from Schulz *et al* (2003)
16	Adapted from Schulz *et al* (2003)
17	Novel question
18	Adapted from Schulz *et al* (2003)
19	Novel question
20	Adapted from Schulz *et al* (2003)
21	Adapted from Schulz *et al* (2003)
22	Novel question
23	Novel question
24	Novel question
25	Adapted from Frame *et al* (2004)
26	Adapted from Schusler *et al* (2003)
27	Adapted from Frame *et al* (2004)
28	Novel question
29	Novel question; response categories derived from Auhagen & von Salisch (1996)
30	Novel question; response categories derived from Auhagen & von Salisch (1996)
31	Novel question
32	Adapted from Schulz *et al* (2003)
33	Adapted from Frame *et al* (2004)
34	Novel question
35	Adapted from Frame *et al* (2004)
36	Adapted from Frame *et al* (2004)
37	Novel question
38	Adapted from Schusler *et al* (2003)

C) Survey questionnaire

Question	References
1	Novel question
2	Novel question; response categories derived from list of participants
3	Adapted from Schulz *et al* (2003)
4	Novel question
5	Novel question
6	Novel question
7	Novel question
8	Novel question
9	Adapted from Frame *et al* (2004)
10	Novel question; Response categories compiled from Arnstein (1969); Berkes (1994), IPA (2007)
11	Adapted from Schulz *et al* (2003)
12	Novel question
13	Novel question
14	Novel question
15	Adapted from Schulz *et al* (2003)
16	Adapted from Schulz *et al* (2003)
17	Adapted from Schulz *et al* (2003)
18	Adapted from Schulz *et al* (2003)
19	Adapted from Halvorsen (2001)
20	Novel question
21	Novel question
22	Novel question
23	Adapted from Frame *et al* (2004)
24	Adapted from Schusler *et al* (2003)
25	Adapted from Frame *et al* (2004)
26	Adapted from Frame *et al* (2004)
27	Adapted from Schulz *et al* (2003)
28	Adapted from Frame *et al* (2004)
29	Novel question
30	Adapted from Frame *et al* (2004)
31	Adapted from Frame *et al* (2004)
32	Adapted from Schusler *et al* (2003)

APPENDIX 2: CASE STUDY QUESTIONNAIRES

Part A of this Appendix presents the pre-test and part B the post-test questionnaire utilised for data collection in the Anglian case study. Part C provides an example of the visual response format applied in both questionnaires. For data collection with the stakeholders involved in the Regional Water Council Emsbach-Mittlere Lahn, questionnaires were translated and cross-checked by a native speaker to ensure meaning rather than words are consistent. Copies are available on request.

A. Pre-test questionnaire

THE ROLE OF SOCIAL LEARNING IN PARTICIPATORY PLANNING AND MANAGEMENT OF WATER RESOURCES
ANGLIAN RBD STAKEHOLDER LIAISON PANEL

QUESTIONNAIRE I

Name	
Date	

INTRODUCTION

This questionnaire is part of an evaluation of the Anglian RBD Stakeholder Liaison Panel which you are participating in. The objective of this questionnaire is to find out more about your aspirations, interests and your impressions of the panel and its members.

Answering this questionnaire should take no longer than 30 minutes. All your responses will be confidential. You will find that you will be asked some questions about other participants and your relationship with them. However, nothing you say will be linked to your name but may be referred to as, "Participant x said […]."

SECTION A. GOALS AND ASPIRATIONS

First of all, I would like to ask you some questions about your participation in the process and your motivation for getting involved.

Q1 SHOWCARD A
Which or whose interests do you formally represent on the Panel?

Environment Agency 1
Regional Assemblies 2
Regional Development Agencies 3
Local Authorities 4
Natural England 5
Water Companies 6
Environmental Non-Governmental Organisations 7
Farming 8
Business and Industry 9
Other, please specify 10
.....
.....

Q2 Have you previously been involved in formal participation or consultation process, e.g. through a committee, panel or advisory group?

Yes ..... 1→Q3
No ..... 2→Q4

Q3 Which other committees, panels or advisory groups have you participated in?

.....
.....
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.....
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.....

Q4 SHOWCARD B
Which three reasons shown on this card were most influential in your decision or the decision of the institution or the group you are representing to participate in the Panel?

The Environment Agency requested my organisation's participation 1
Establish and develop good working relationships with other participants 2
Maintain our good working relationship with the Environment Agency 3
Ensure that the interests I represent are taken into consideration 4
The issues the Panel addresses are significant to the organisations and interests I represent 5
Improve the state of the river basin 6
Educate myself about river basin management 7
A collaborate effort is the best way to implement the WFD 8
Report back to my organization about what the Environment Agency is doing 9
Prevent that the Panel reaches decisions that impact the interests I represent 10
Other, please specify 11
.....
.....

Q5 The Panel will work on the identification of the most important issues for river basin management in the Anglian region. From the perspective you represent, what are the three most important issues that you would like to see addressed by the Panel.

SECTION B. RELATIONSHIPS & PERCEPTIONS OF OTHER PARTICIPANTS

The next set of questions focuses on your impressions of the stakeholder panel and the relationships among the panel members. I would like to remind you that all your responses will be confidential in the sense that the source of any comments will not be traceable to you.

First of all, I would like to ask you some questions concerning your relationships with the other Panel members.

Q6 SHOWCARD C

First, can you first tell me, how many of the other Panel members you have met and spoken to before joining the Stakeholder Panel?

All panel members..... 1→Q7
Most panel members ..... 2→Q7
Some panel members..... 3→Q7
None of the panel members ..... 4→Q8
No answer..... 5→Q8
Comments.....
.....
.....
.....

Q7 RESPONSE CARD Q7

How would you characterise the relationships with these Panel members?

Other, please specify .....
.....
.....
No answer ..... ☐
Comments.....
.....
.....

Next, I would like to ask some questions about the level of commitment of the other Panel members and their interest in the common good of all the stakeholder groups represented on the Panel.

Q8 RESPONSE CARD Q8

In your opinion, to what extent are the other Panel members committed to making this process work, meaning that they are prepared to contribute their time and expertise and are willing to collaborate with the other Panel members to achieve results?

No answer ..... ☐
Comments.....
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.....

Q9 RESPONSE CARD Q9

In your opinion, to what extent are the other Panel members working for the common good, meaning that they try to achieve a result that is in the best interest of all the groups represented on the Panel?

No answer ..... ☐
Comments.....
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.....

With the following questions, I would like to find out how open you think the communication process is and the other Panel members are about their goals and interests.

Q10 RESPONSE CARD Q10

In your opinion, to what extent are the other Panel members willing to openly discuss their concerns, interests and goals during the meetings of the Stakeholder Panel?

No answer ..... ☐
Comments.....
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.....
.....

Q11 RESPONSE CARD Q11

In your opinion, to what extent are the other Panel members willing to share their knowledge and information during the meetings of the Stakeholder Panel?

No answer ..... ☐
Comments.....
.....
.....
.....
.....

Q12 RESPONSE CARD Q12

In your opinion, to what extent are the other Panel members interested in learning about your concerns?

No answer ..... ☐
Comments.....
.....
.....
.....

Q13 SHOWCARD D

In your opinion, to what extent are the discussions during the meetings of the Stakeholder Panel characterised by trust and openness?

To a great extent 1
To a moderate extent 2
To a slight extent 3
Not at all 4
No answer 5
Comments.....
.....
.....

This next set of questions focuses on how you see the ability of the Panel members to work together and which possible conflicts you might expect.

Q14 SHOWCARD D
To what extent do you have confidence in the ability of the Panel members to work together?

To a great extent ..... 1→Q16
To a moderate extent ..... 2→Q16
To a slight extent ..... 3→Q15
Not at all ..... 4→Q15
No answer ..... 5→Q16
Comments .....
.....
.....

Q15 Would you please explain why you are not confident or only to a slight extent that participants are able to work together?

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.....
.....
.....

Q16 What could be major points of conflict or disagreement among the Panel members?

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SECTION C. SELF-EVALUATION

Finally, I would like to ask you a few more questions regarding your participation in the stakeholder panel.

Q17 SHOWCARD D

To what extent would you say you are committed to making this a successful process in terms of achieving results which all groups represented on the Panel are satisfied with and which are achieved through an open and fair communication process?

To a great extent ..... 1→Q19
To a moderate extent ..... 2→Q19
To a slight extent ..... 3→Q18
Not at all ..... 4→Q18
No answer ..... 5→Q19
Comments .....
.....
.....

Q18 Would you please explain why you are not or are only slightly committed to making the process work?

.....
.....
.....
.....

Q19 SHOWCARD D

To what extent would you say you are working for the common good, meaning that you consider the best interest of all groups represented on the Panel in your decisions?

To a great extent 1
To a moderate extent 2
To a slight extent 3
Not at all 4
No answer 5
Comments .....
.....
.....

Q20 SHOWCARD D

To what extent do you think you will be able to ensure that the interests you represent are taken into consideration in the discussions and when decisions are made?

To a great extent ..... 1→Q21
To a moderate extent ..... 2→Q21
To a slight extent ..... 3→Q23
Not at all ..... 4→Q23
No answer ..... →Q23
Comments.....
.....
.....

Q21 RESPONSE CARD Q21

In your opinion, to what extent are the other Panel members in a better position than you to influence the decisions of the Stakeholder Panel and to influence what is being discussed during the meetings of the Panel?

No answer ..... ☐
Comments.....
.....
.....

Q22 SHOWCARD E

Why are other participants in a better position to influence the decisions of the Stakeholder Panel and the discussions during the meetings of the Panel?
O*ne or more answers possible.*

Better access to information 1
Better understanding of scientific information..... 2
Better able to express themselves..... 3
Wider knowledge of water management issues 4
Organisational affiliation 5
Able to build alliances with actors with similar interests 6
Able to build alliances with influential actors 7
Other, please specify 8
.....
.....

Q23 SHOWCARD D

To what extent do you feel that you are part of a group trying to work together to solve a common problem?

To a great extent 1
To a moderate extent 2
To a slight extent 3
Not at all 4
No answer 5
Comments.....
.....
.....

CONCLUSION

Thank you very much for your time. You will be asked to complete a second questionnaire at the end of this process. A summary report from the process evaluation will then be compiled for all the participants of the process and the organisers. If you have any questions in the interim, please feel free to contact me at any time.

NOTE: Upon request by the responsible authorities, the pre-test questionnaires included further questions related to the organisation of the specific stakeholder activity. These were not included in the analysis.

B. Post-test questionnaire

THE ROLE OF SOCIAL LEARNING IN PARTICIPATORY PLANNING AND MANAGEMENT OF WATER RESOURCES
ANGLIAN RBD STAKEHOLDER LIAISON PANEL

QUESTIONNAIRE II

Name	
Date	

INTRODUCTION

- *Questionnaire is second part of the evaluation of the Anglian Stakeholder Liaison Panel.*
- *Final analysis will be based on the data collected though this questionnaire and the first questionnaire you completed.*
- *Approx. 45 minutes to complete; some more questions afterwards for clarification.*
- *All your responses are confidential.*

SECTION A. GENERAL INFORMATION

First, I would like to ask some general question about your involvement in the Panel.

1. The Anglian Stakeholder Liaison Panel was set up in July 2006. Did you take part in the first meeting?

Yes	1
No	2 → If no, at what meeting did you first join the stakeholder group?

2. Since you joined the Panel, how many of the meetings have you been able to attend yourself? Just to remind you, the Panel has met 5 times so far.

1	2	3	4	5	na
1	2	3	4	5	0
Comments					

SECTION B. PROCESS FORMAT

I would like to ask your opinion about the format of the involvement process.
Next, I will read some statements and would ask you to tell me to what extent you agree with the respective statement.

SHOWCARD A

3. The stakeholders on the Panel fairly represent the sectors and interests which are affected by river basin management planning.

I strongly agree	I tend to agree	I tend to disagree	I strongly disagree	na
1	2	3	4	5
Comments				

4. The length of the Panel meetings is sufficient to enable participants to exchange opinions and to discuss their interests, goals and concerns.

I strongly agree	I tend to agree	I tend to disagree	I strongly disagree	na
1	2	3	4	5
Comments				

5. The number of Panel meetings is sufficient to enable participants to exchange opinions and to discuss their interests, goals and concerns.

I strongly agree	I tend to agree	I tend to disagree	I strongly disagree	na
1	2	3	4	5
Comments				

6. The methods employed during the Panels meetings provides the stakeholders with the opportunity to obtain and provide information.

By methods we mean the techniques employed during the Panel meetings to interact with the stakeholders and the tools to support this interaction, e.g. round table discussions, small group work, brainstorming, meta-plan techniques, role playing games etc.

I strongly agree	I tend to agree	I tend to disagree	I strongly disagree	na
1	2	3	4	5
Comments				

7. The methods employed during the Panel meetings provided the stakeholders with the opportunity to discuss their interests, goals and concerns.

I strongly agree	I tend to agree	I tend to disagree	I strongly disagree	na
1	2	3	4	5
Comments				

8. I have influence on the selection of agenda items for Panel meetings.

I strongly agree	I tend to agree	I tend to disagree	I strongly disagree	na
1	2	3	4	5
Comments				

9. I have influence on the way Panel meetings are run and on the communication and interaction methods that are employed.

I strongly agree	I tend to agree	I tend to disagree	I strongly disagree	na
1	2	3	4	5
Comments				

Now, I would like to ask some questions about the role of the Stakeholder Panel.

SHOWCARD B

10. To what extent are objectives, tasks and scope of the Panel well defined?

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

SHOWCARD C

11. The following list describes five levels of stakeholder involvement in water resources planning and management. Which of the following levels best describes the degree of stakeholder participation provided through the stakeholder Panel?

Stakeholders are provided with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and solutions.	1
Two-way information exchange to obtain public feedback or analysis, alternatives and/or decisions.	2
Stakeholders are involved throughout the planning process to ensure that public concerns and aspirations are consistently understood and considered. Stakeholders have an advisory role and may influence the decisions by making recommendations; decisions are non-binding.	3
Stakeholders are given the opportunity to participate in each aspect of the planning and decision-making process including the development of alternatives and the identification of the preferred solution. The stakeholders' input plays more than just an advisory role by helping to determine decisions.	4
Final decision-making power is (partly) placed in the hands of the stakeholders. An equal partnership is formed between the authorities and the stakeholders as equals and joint decision-making is formalised	5
Other	6
Comments	

SHOWCARD B

12. To what extent are information, ideas and inputs contributed by you or other Panel members taken into consideration by the agency staff?

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

13. To what extent are your resources (information, time and money) sufficient to effectively represent your or your constituents' interests on the Panel?

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

-

14. To what extent are you satisfied with the work of the agency staff?

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

SECTION B. INTERACTION AND COMMUNICATION

The following questions focus on the communication process between the Panel members (not between members and the agency staff).

SHOWCARD B

15. To what extent do you feel comfortable about expressing your opinion in Panel meetings?

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

16. To what extent do you express your ideas even when they differ from the ones expressed by other participants?

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

RESPONSE CARD 17

17. In your opinion, to what extent are the other Panel members willing to share their knowledge and information during the meetings of the Stakeholder Panel?

No answer ..... ☐
Comments.....
.....
.....
.....
.....

RESPONSE CARD 18

18. In your opinion, to what extent are the other Panel members willing to openly discuss their concerns, interests and goals during the meetings of the Stakeholder Panel?

No answer ..... ☐
Comments.....
.....
.....
.....
.....

RESPONSE CARD 19

19. In your opinion, to what extent are the other Panel members interested in learning about your concerns?

No answer ..... ☐
Comments.....
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.....
.....

SHOWCARD B

20. To what extent do you think you are able to ensure that the interests you represent are taken into consideration in the Panel's discussions and decisions?

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

RESPONSE CARD 21

21. In your opinion, to what extent are other Panel members in a better position than you to influence the decisions of the Stakeholder Panel and to influence what is being discussed during the meetings of the Panel?

No answer ..... ☐
Comments.....
.....
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.....

SHOWCARD D

22. Why are other Panel members in a better position to influence the decisions of the Stakeholder Panel and the discussions during the meetings of the Panel?

Better access to information 1
Better understanding of scientific information..... 2
Better able to express themselves..... 3
Wider knowledge of water management issues 4
Organisational affiliation 5
Able to build alliances with actors with similar interests 6
Able to build alliances with influential actors 7
Other, please specify 8
.....
.....

SECTION C. OUTCOMES

The next set of questions focuses on the outcomes of the involvement process so far. This includes both the decisions and tangible outputs as well as 'social effects' such as things you might have learned by participating.

SHOWCARD B

23. To what extent do you agree that the majority of the decisions the Panel has taken so far were consensual in nature?

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

24. To what extent do you agree that the contributions the Panel has generated to support WFD implementation are fair? By fair we mean that they are reasonable within the planning context and give equal consideration to the affected interests in the best possible way.

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

25. To what extent are you satisfied with the contributions the Panel has generated to support the implementation of the WFD?

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

26. To what extent did the involvement process contribute to the development of a common view among the participants of the current status of the river basin district as well as immediate problems and their causes?

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

Next, I would like to ask some questions about your perceptions of the other Panel members and your relationships with them.

RESPONSE CARD 27

27. In your opinion, to what are the other Panel members committed to making this process work, meaning that they are prepared to contribute their time and expertise and were willing to collaborate with the other Panel members to achieve results?

No answer ..... ☐
Comments.....
.....
.....

RESPONSE CARD 28

28. In your opinion, to what extent are the other Panel members working for the common good, meaning that they try to achieve a result that is in the best interest of all the groups represented on the Panel?

No answer ..... ☐
Comments.....
.....
.....

RESPONSE CARD 29

29. Some of the Panel members you had met and spoken to before the start of the involvement process. How would you characterise the relationships with these Panel members, now that you have worked together on the Panel?

Other, please specify ..... ☐
.....
No answer ..... ☐
Comments.....
.....
.....
.....

RESPONSE CARD 30

30. You met some/all of the Panel members for the first time when you joined the Panel. How would you characterise the relationships with these Panel members, now that you have worked together on the Panel?

Other, please specify ..... ☐
.....
No answer ..... ☐
Comments.....
.....
.....
.....

SHOWCARD B

31. To what extent do you have confidence in the ability of the Panel members to continue working together?

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

32. To what extent do you feel that you are part of a group trying to work together to solve a common problem?

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

33. To what extent would you are committed to making this a successful process?

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

34. To what extent would you say you are working for the common good, meaning that you are considering the best interest of all groups represented on the Panel in your decisions?

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

Finally, I would like to ask you about thinks you might have learned by participating in the Panel.

35. To what extent do you have a better understanding of water resources and river basin management as a result of the involvement process?

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

36. To what extent do you have a better understanding of the concerns and interests of other participants as a result of the involvement process?

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

37. To what extent do you have a better understanding of your own interests and concerns for water resources and river basin management in this basin, as a result of the involvement process?

To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

38. To what extent did you alter your views about important issues and problems for water resources and river basin management in this basin, as a result of the involvement process?

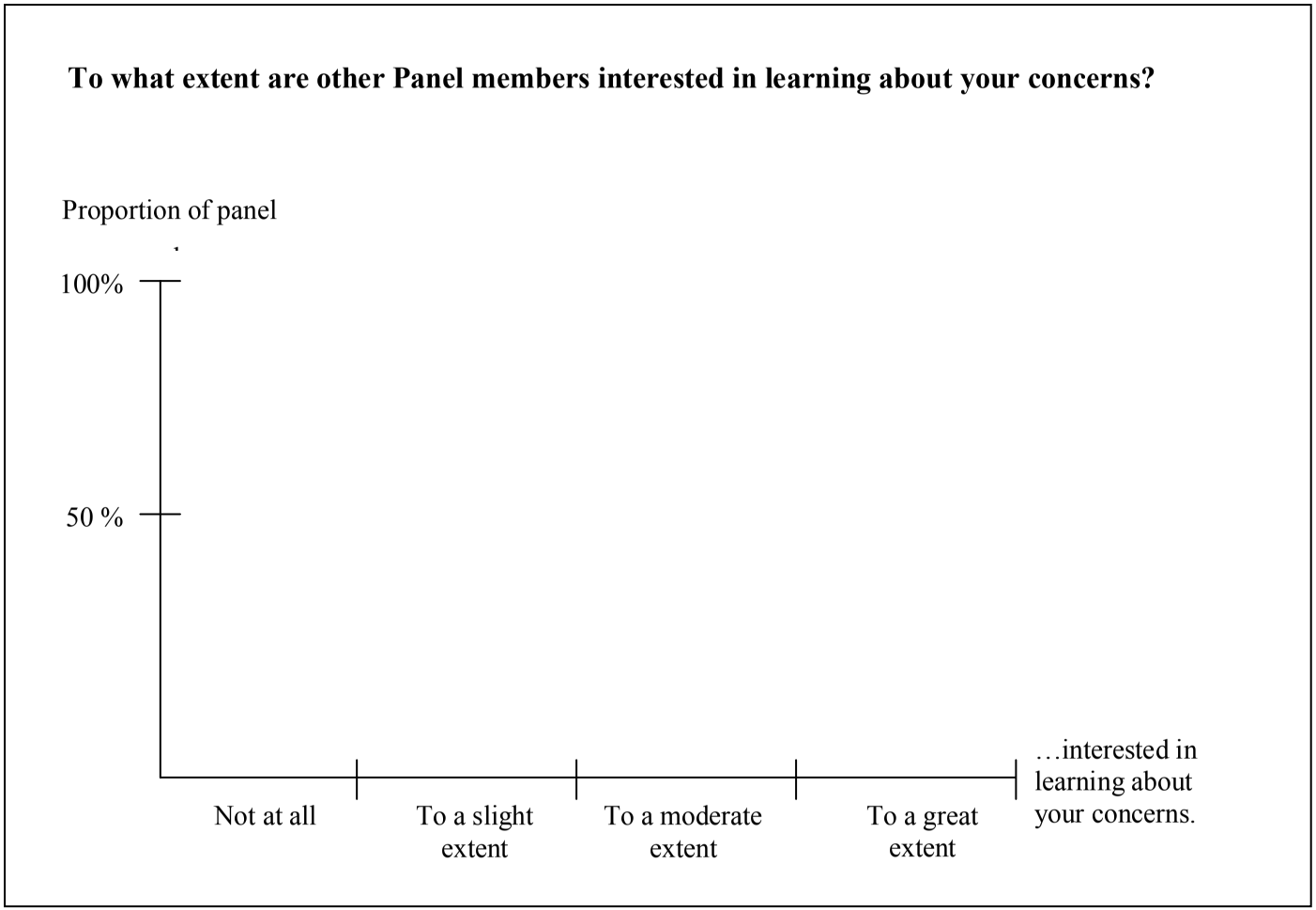
To a great extent	To a moderate extent	To a slight extent	Not at all	na
1	2	3	4	5
Comments				

CONCLUSION

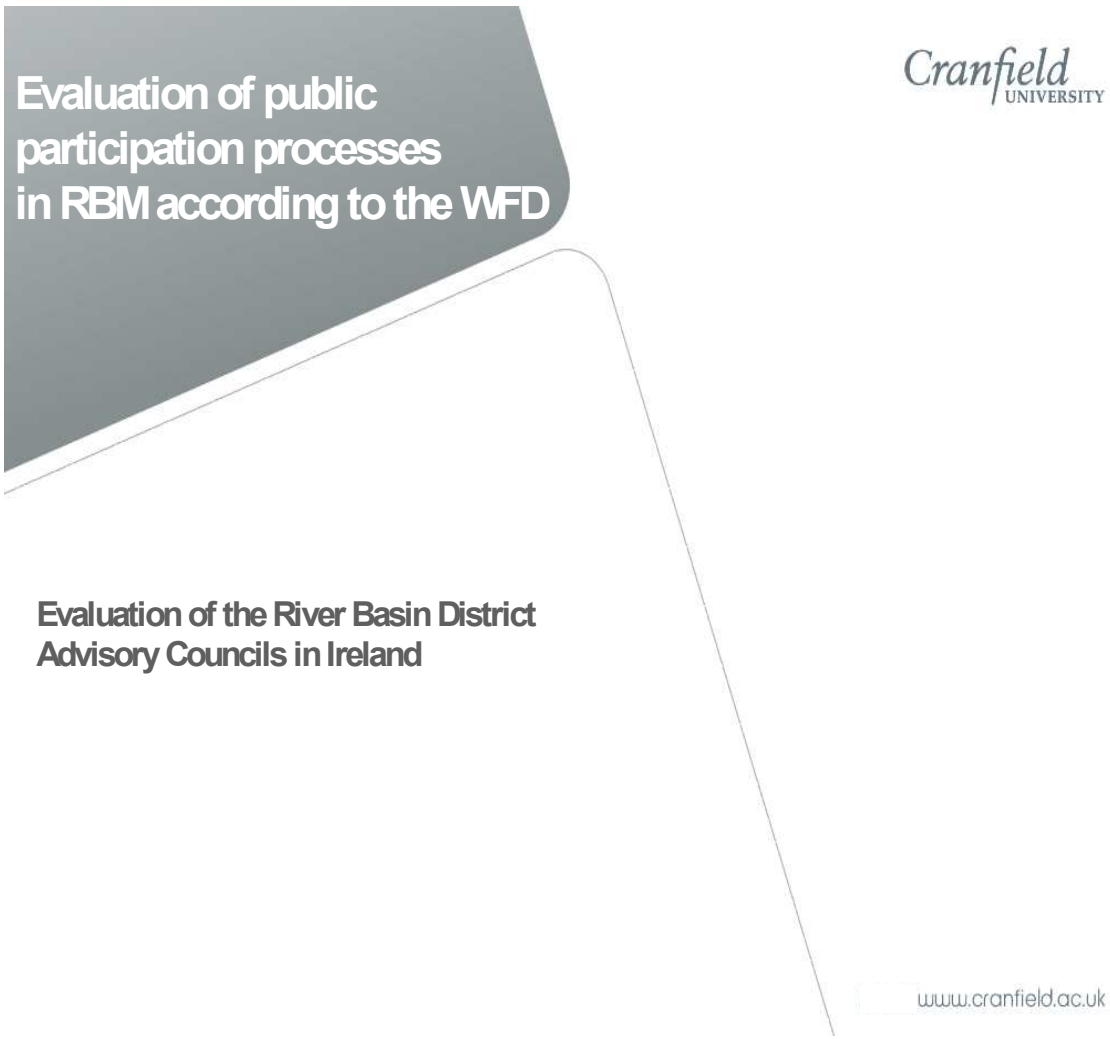
Thank you very much for your time so far. A summary report from the evaluation will be compiled for all the participants of the process and the organisers.

C. Visual response format used in the case study questionnaires

Question 19, Post-test questionnaire (Example); size reduced from A4.



APPENDIX 3: SURVEY QUESTIONNAIRE



Please return your completed questionnaire in the enclosed envelope to:

MELANIE MURO
CRANFIELD UNIVERSITY
CENTRE FOR WATER SCIENCE
BUILDING 39
CRANFIELD
MK43 0AL
UK

Dear respondent,

the majority of the following questions simply require you to mark (X) your answer. Should you which to provide any further comments, critique and ideas regarding the Advisory Councils or this evaluation, please use the available space at the end of the questionnaire. Your answers are completely confidential and will be released only as summaries in which no individual's answers can be identified. As your participation is voluntary, you are free to refrain from answering any questions you feel you do not wish to answer.

Thank you for your cooperation!

SECTION A: General information

1 **Which River Basin District Advisory Council are you involved in? Please write your answer in the space provided.**

2 **Which or whose interests do you formally represent on the Advisory Council? Please only mark (X) one answer.**

Local Authorities ..... ☐
Environment and nature conservation ..... ☐
Water supply ..... ☐
Waste water treatment & disposal ..... ☐
Fisheries ..... ☐
Energy ..... ☐
Farming ..... ☐
Business & industry ..... ☐
Tourism & recreation ..... ☐
Other ➔ CHECK BOX AND SPECIFY in the space below ..... ☐ ↓

3 **The Advisory Councils first convened in 2006 and by 1 June 2007 they have held between 5 and 6 meetings on average. How many meetings have you been able to attend? Please only mark (X) one answer.**

Less than 3 meetings ☐
Between 3 and 4 meetings ☐
5 or more meetings ☐
I don't know ☐

SECTION B: Participation format

4 **To what extent to you agree or disagree with the following statement: "The stakeholders participating in this Advisory Council fairly represent the sectors and interests which are affected by river basin management planning". Please only mark (X) one answer.**

I strongly agree ☐
I tend to agree ☐
I tend to disagree ☐
I strongly disagree ☐
I don't know ☐

5 **To what extent to you agree or disagree with the following statement: "The <u>length</u> of the Advisory Council meetings is sufficient to enable participants to exchange opinions and to discuss their interests, goals and concerns". Please only mark (X) one answer.**

I strongly agree ☐
I tend to agree ☐
I tend to disagree ☐
I strongly disagree ☐
I don't know ☐

6 **To what extent to you agree or disagree with the following statement: "The number of Advisory Council meetings is sufficient to enable participants to exchange opinions and to discuss their interests, goals and concerns". Please only mark (X) one answer.**

I strongly agree ☐
I tend to agree ☐
I tend to disagree ☐
I strongly disagree ☐
I don't know ☐

7 **To what extent to you agree or disagree with the following statement: "The methods (e.g. presentations, round table discussions, field trips, etc.) employed during the Advisory Council meetings provide the stakeholders with the opportunity to obtain and provide information". Please only mark (X) one answer.**

I strongly agree ☐
I tend to agree ☐
I tend to disagree ☐
I strongly disagree ☐
I don't know ☐

8 **To what extent to you agree or disagree with the following statement: "The methods employed during the Advisory Council meetings provide the participants with the opportunity to discuss their interests, goals and concerns". Please only mark (X) one answer.**

I strongly agree ☐
I tend to agree ☐
I tend to disagree ☐
I strongly disagree ☐
I don't know ☐

9 **To what extent to you agree or disagree with the following statement: "The objectives, tasks and scope of the Advisory Council are well defined". Please only mark (X) one answer.**

I strongly agree ..... ☐
I tend to agree ..... ☐
I tend to disagree ..... ☐
I strongly disagree ..... ☐
I don't know ..... ☐

10 **The following list describes five levels of stakeholder involvement in water resources planning and management. Which of the levels <u>best</u> describes the degree of stakeholder participation provided through the Advisory Council? Please only mark (X) one answer.**

Stakeholders are provided with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and solutions.	☐
Two-way information exchange to obtain public feedback or analysis, alternatives and/or decisions.	☐
Stakeholders are involved throughout the planning process to ensure that public concerns and aspirations are consistently understood and considered. Stakeholders have an advisory role and may influence the decisions by making recommendations; decisions are non-binding.	☐
Stakeholders are given the opportunity to participate in each aspect of the planning and decision-making process including the development of alternatives and the identification of the preferred solution. Stakeholders play more than just an advisory role by helping to determine decisions.	☐
Final decision-making power is (partly) placed in the hands of the stakeholders. An equal partnership is formed between the authorities and the stakeholders and joint decision-making is formalised.	☐
I don't know	☐

For any additional comments, please use this space

11 **To what extent to you agree or disagree with the following statement: "I have influence on the selection of agenda items for Advisory Council meetings". Please only mark (X) one answer.**

I strongly agree ..... ☐
I tend to agree ..... ☐
I tend to disagree ..... ☐
I strongly disagree ..... ☐
I don't know ..... ☐

12 **To what extent to you agree or disagree with the following statement: "I have an influence on the way Advisory Council meetings are run and on the communication and interaction methods that are employed". Please only mark (X) one answer.**

I strongly agree ..... ☐
I tend to agree ..... ☐
I tend to disagree ..... ☐
I strongly disagree ..... ☐
I don't know ..... ☐

13 **To what extent to you agree or disagree with the following statement: "I have sufficient resources (information, time and money) to effectively represent my or my constituents' interests' on the Advisory Council". Please only mark (X) one answer.**

I strongly agree ..... ☐
I tend to agree ..... ☐
I tend to disagree ..... ☐
I strongly disagree ..... ☐
I don't know ..... ☐

SECTION C: Communication & interaction

14 **To what extent to you agree or disagree with the following statement: "I believe that participants openly share <u>knowledge and information</u> during the Advisory Council meetings". Please only mark (X) one answer.**

I strongly agree ..... ☐
I tend to agree ..... ☐
I tend to disagree ..... ☐
I strongly disagree ..... ☐
I don't know ..... ☐

15 **To what extent to you agree or disagree with the following statement: "I believe that participants openly share their <u>concerns, interests and goals</u> during the Advisory Council meetings". Please only mark (X) one answer.**

I strongly agree ..... ☐
I tend to agree ..... ☐
I tend to disagree ..... ☐
I strongly disagree ..... ☐
I don't know ..... ☐

16 **To what extent to you agree or disagree with the following statement: "I feel comfortable expressing my opinion during the Advisory Council meetings". Please only mark (X) one answer.**

I strongly agree ..... ☐
I tend to agree ..... ☐
I tend to disagree ..... ☐
I strongly disagree ..... ☐
I don't know ..... ☐

17 **To what extent to you agree or disagree with the following statement: "I also express my ideas when they differ from the ones expressed by other participants". Please only mark (X) one answer.**

I strongly agree ..... ☐
I tend to agree ..... ☐
I tend to disagree ..... ☐
I strongly disagree ..... ☐
I don't know ..... ☐

18 **To what extent to you agree or disagree with the following statement: "I am satisfied with the amount of influence I have in the Advisory Council meetings". Please only mark (X) one answer.**

I strongly agree ..... ☐
I tend to agree ..... ☐
I tend to disagree ..... ☐
I strongly disagree ..... ☐
I don't know ..... ☐

19 **To what extent to you agree or disagree with the following statement: "My views and concerns are treated seriously by <u>other participants"</u>. Please only mark (X) one answer.**

I strongly agree ..... ☐
I tend to agree ..... ☐
I tend to disagree ..... ☐
I strongly disagree ..... ☐
I don't know ..... ☐

20 **To what extent to you agree or disagree with the following statement: "Information, ideas and inputs contributed by myself or other Advisory Council members are taken into consideration by the <u>project management"</u>. Please only mark (X) one answer.**

I strongly agree ..... ☐
I tend to agree ..... ☐
I tend to disagree ..... ☐
I strongly disagree ..... ☐
I don't know ..... ☐

SECTION D: Outcomes

21 **To what extent to you agree or disagree with the following statement: "I think that the majority of the decisions the Advisory Council has taken so far were consensual in nature". Please only mark (X) one answer.**

I strongly agree ☐
I tend to agree ☐
I tend to disagree ☐
I strongly disagree ☐
I don't know ☐

22 **To what extent to you agree or disagree with the following statement: "The contributions the Advisory Council has generated to support implementation of the WFD are fair". By fair we mean that they are reasonable within the planning context and give equal consideration to the affected interests in the best possible way. Please only mark (X) one answer.**

I strongly agree ☐
I tend to agree ☐
I tend to disagree ☐
I strongly disagree ☐
I don't know ☐

23 **To what extent to you agree or disagree with the following statement: "I am satisfied with the contributions the Advisory Council has generated to support implementation of the WFD". Please only mark (X) one answer.**

I strongly agree ☐
I tend to agree ☐
I tend to disagree ☐
I strongly disagree ☐
I don't know ☐

24 **To what extent to you agree or disagree with the following statement: "The involvement process contributed to the development of a common view among the participants of the current status of the river basin district as well as immediate problems and their causes". Please only mark (X) one answer.**

I strongly agree ☐
I tend to agree ☐
I tend to disagree ☐
I strongly disagree ☐
I don't know ☐

25 **To what extent to you agree or disagree with the following statement: "As a result of the involvement process, I have better working relationships with the other participants". Please only mark (X) one answer.**

I strongly agree ☐
I tend to agree ☐
I tend to disagree ☐
I strongly disagree ☐
I don't know ☐

26 **To what extent to you agree or disagree with the following statement: "I would be happy to work again with the same participants in a similar involvement process". Please only mark (X) one answer.**

I strongly agree ☐
I tend to agree ☐
I tend to disagree ☐
I strongly disagree ☐
I don't know ☐

27 **To what extent to you agree or disagree with the following statement: "As a result of the involvement process, I feel part of a group trying to work together to solve a common problem". Please only mark (X) one answer.**

I strongly agree ☐
I tend to agree ☐
I tend to disagree ☐
I strongly disagree ☐
I don't know ☐

28 **To what extent to you agree or disagree with the following statement: "I believe that all participants are committed to making this involvement process work, meaning that they are prepared to contribute their time and expertise". Please only mark (X) one answer.**

I strongly agree ☐
I tend to agree ☐
I tend to disagree ☐
I strongly disagree ☐
I don't know ☐

29 **To what extent to you agree or disagree with the following statement: "I believe that all participants are fair". By fair we mean that they trying to be reasonable and treat everybody's interest equally throughout the involvement process. Please only mark (X) one answer.**

I strongly agree ☐
I tend to agree ☐
I tend to disagree ☐
I strongly disagree ☐
I don't know ☐

30 **To what extent to you agree or disagree with the following statement: "As a result of the involvement process, I have a better understanding of water resources and river basin management". Please only mark (X) one answer.**

I strongly agree ☐
I tend to agree ☐
I tend to disagree ☐
I strongly disagree ☐
I don't know ☐

31 **To what extent to you agree or disagree with the following statement: "As a result of the involvement process, I have a better understanding of the concerns and interests of other participants". Please only mark (X) one answer.**

I strongly agree ☐
I tend to agree ☐
I tend to disagree ☐
I strongly disagree ☐
I don't know ☐

32 **To what extent to you agree or disagree with the following statement: "As a result of the involvement process, I altered my views about important issues and problems for water resources and river basin management in this river basin district". Please only mark (X) one answer.**

I strongly agree ☐
I tend to agree ☐
I tend to disagree ☐
I strongly disagree ☐
I don't know ☐

Thank you for taking the time to complete this questionnaire!

Your assistance in the evaluation of the River Basin District Advisory Councils is very much appreciated. If you would like to provide any further comments about the Advisory Councils, please do so in the space provided below.

Please return your completed questionnaire in the envelope provided to:

Melanie Muro

Cranfield University, Centre for Water Science, Building 39

Cranfield, MK43 0AL, UK

NOTE: This questionnaire was disseminated to members of the Advisory Councils in Ireland. A German-language version was disseminated to Working Group members. Copies are available on request.

APPENDIX 4: INFORMATION SHEETS AND CONSENT FORMS

This Appendix in includes information sheets and consent forms employed in

- the pilot (A),
- the case studies (B), and
- the postal survey (C).

Information sheets and consent form were translated into German for study participants from the Regional Water Council Emsbach-Mittlere Lahn and the Working Groups in Schleswig-Holstein respectively. Copies are available on request.

A. Pilot

Melanie Muro
School of Water Sciences
Cranfield University
Cranfield
Bedfordshire
MK 43 0AL

Tel : +44 (0)1234 753334
Fax +44 (0)1234 751671Email:
m.muro@cranfield.ac.uk

June 2006

STUDY INTO GROUP DECISION-MAKING PROCESSES

INFORMATION SHEET

What is the purpose of this study?

This study is part of a PhD research project on participatory decision-making processes in water management, and more specifically on the role of learning. Given the limited knowledge about processes of learning and their contribution to participatory decision-making, the research is designed to better understand how learning shapes the process and its outcomes. We hope that our findings will contribute to the conceptual basis of public participation and will help to improve the design of participatory methods and procedures.

We are looking for volunteers to participate in the pilot fieldwork exercise of the study. The objectives of the pilot are (1) to test the instruments and the process for data collection; and (2) to test the instruments and process of data analysis. The results of the pilot will contribute to improving the instruments and processes for data collection and analysis, before the start of the fieldwork.

What am I expected to do?

If you decide to participate in the pilot, you will be assigned to a group with three other participants. The research team will provide each group with £50 and they will need to

decide how they would like to invest it. Specifically, you will be asked to choose a game or bet which is available at Ladbrokes (www.ladbrokes.com).

The procedures and the individual steps of the process will be explained to you in detail by the research team, who will also explain to you the choices you have for making your investment.

As we would like to learn about the decision-making process, we will ask you to complete two questionnaires about you perceptions of the process and to participate in two debrief interviews about these questionnaires.

We would like to point out, that regardless of your agreement to take part in this study, your participation is voluntary and you are free to withdraw from the study at any time or to refrain from answering any questions you feel you do not wish to answer.

How much time will I need to invest?

You are expected to attend three group meetings, each lasting approximately 1.5 hours. Furthermore, you will be required to complete two questionnaires, which will be administered to you by the research team and which will be followed by debrief interviews. These data collection activities will take between 1.0 and 1.5 hours. The total time commitment is not expected to be longer than 8.5 hours over the course of approximately two weeks. All meetings are scheduled to take place between 19 June and 14 July. A final debrief meeting is planned for the beginning of October, where we will report back to you the results of the study.

Will I receive any financial rewards?

Each group will receive £50, which they are required to use to place a bet or play a game. The bet will be placed by the research team and if your group's investment is successful, you will receive an equal share of the winnings from the research team. There is no financial risk to you as a participant in this study.

Am I suitable to participate in the study?

As this pilot involves gambling and betting, you need to be over the age of 18. Apart from this formal prerequisite, you need to fulfil the following requirements:

- **Availability:** the pilot is scheduled to take place between 19 June and 14 July. It is necessary that you are available throughout this period. In order to work out a preliminary schedule for group meetings and individual questionnaire sessions, we would like to ask you to indicate your availability in the attached file. The schedule will be finalised with you during the information meeting.
- **Basic understanding of betting and gambling:** we do not expect you to be a specialist in gambling and betting. However, it is necessary that you have a basic understanding of the topic. During the information meeting, the research team will ask you to complete a brief questionnaire to assess your knowledge on gambling and betting. The results of the test will be used to determine the set-up of the groups.

- **Past or current gambling problems:** Gambling is a form of entertainment for many people, but in some cases gambling can become an addiction which can negatively impact any aspects of an addict's life. Before participating in this research, you will need to confirm in a signed statement that you have no experiences with compulsive gambling. Therefore, we urge you to reflect on your experiences with and attitudes towards gambling, before agreeing to participate in this study. In case you have a problem with compulsive gambling or have had one in the past, we ask you to refrain from taking part in this study.

What will happen to the information I provide in the questionnaires and interviews?

Your responses will not be identified with you personally and you will not be identified by name in my thesis, or in any report or publication resulting from this study. The results will be made available to all the participants through a short report and presentation in the final debrief session.

What do I need to do when I am interested in participating?

We would like to invite you to attend an information meeting where you will receive a general introduction to the research and the process will be explained to you in more details. You will also be asked to complete a brief questionnaire which will test your knowledge of gambling and betting. This questionnaire will help us to determine the composition of the groups.

INFORMATION MEETING

'Study into group decision-making processes'

Thursday 22 June, 12.30 – 14.00

Hancock Room, Building 62

It is necessary that you are present in the information meeting if you want to take part in the study. Places are limited and are allocated on a first come, first served basis. However, you are free to choose not to get involved after you have attended the meeting.

Please let Melanie Muro (T: 01234 750111 extn 3334; E: m.muro@cranfield.ac.uk) know by **21 June, 14:00** whether you are able to attend the meeting. If you have any more questions about the study, please contact Melanie Muro by phone or by email.

Consent form

'Study into group decision-making processes'

1. I have read the information provided in the information sheet and have attended the information meeting.
2. I agree/do not agree to participate in the 'Study into group decision-making processes' by completing questionnaires at different stages in the process. (Please circle your choice)

I understand that:

3. I am free to withdraw from the study at any time and am free to decline to answer particular questions.
4. While the information gained in this study may be published, I will not be identified, and individual information will remain confidential.

The study involves gambling and betting which can become an addiction that can disrupt lives physically, mentally, socially or emotionally. Gambling addiction is officially defined as 'a loss of control over gambling and a driving need for the "rush" gambling provides. Compulsive gambling is indicated by

- constantly thinking about and preparing for gambling sessions;
- gambling more often and playing higher stakes to "win back" lost money;
- gambling during work or when you are expected at home;
- gambling to escape from stress and pressure;
- getting into debt from gambling and lying to borrow money to gamble;
- using illegal means to finance gambling.

5. I have read the above description of compulsive gambling and understand the dangers involved in gambling.
6. I confirm that I am not experiencing or have experienced problems in the past with gambling and betting.
7. I am aware that this would be a reason for exclusion from this study.

Participant's Name: _____(Please print)

Participant's Signature: _____

Date: _____

My telephone number is: day _____ / evening _____

My email address is:

My address is: _____ (STREET)

_____

(CITY/TOWN/POSTCODE)

A copy of this consent form will be returned to you for future reference.

B. Case studies

Melanie Muro
School of Water Sciences
Cranfield University
Cranfield
Bedfordshire
MK 43 0AL

Tel : +44 (0)1234 753334
Fax +44 (0)1234 751671
Email: m.muro@cranfield.ac.uk

To the participants of the Anglian Stakeholder Liaison Panel

June 2006

Dear participant,

You are involved in the river basin management planning process in the Anglian river basin as a stakeholder on the Stakeholder Liaison Panel. The Environment Agency has kindly suggested the Anglian Stakeholder Liaison Panel as a case study for my doctoral dissertation through the School of Water Sciences, Cranfield University which is being supervised by Dr. Paul Jeffrey**.**

My doctoral thesis focuses on participatory decision-making processes, and more specifically on the role of learning. Given the limited knowledge about processes of learning and their contribution to participatory decision-making, this study is designed to better understand how learning shapes the process and its outcomes. We hope that our findings will contribute to the conceptual basis of public participation and will help to improve the design of participatory methods and procedures.

To investigate these issues, we ask for your assistance by giving your consent to use the sessions of the Stakeholder Liaison Panel as a case study and by participating in this research. Your participation will involve the completion of two questionnaires at different stages in the process; the total time commitment is not expected to be longer than 1.5 hours over the course of approximately one year.

As your participation is voluntary, you are free to choose not to participate, to withdraw from the study at any time or to refrain from answering any questions you feel you do not wish to answer. I am not aware of any potential risks to you and the organisation

you are representing, should you decide to participate. Your responses will not be identified with you personally and you will not be identified by name in my thesis, or in any report or publication resulting from this study. The results will be made available to all the participants and the Environment Agency through a short report which will hopefully provide some valuable feedback regarding the process.

If you have any questions about the study, please contact me by phone at 01234 753334 or by email at m.muro@cranfield.ac.uk. Questions of a more general nature may be addressed to my supervisor, Dr. Paul Jeffrey by phone at 01234 754814 or by email at p.j.jeffrey@cranfield.ac.uk.

Thank you, in advance, for your consideration of this request. Please indicate on the attached page your willingness to participate. Thank you.

Yours sincerely,

Melanie Muro
PhD Candidate

Consent form

'Evaluation of the Anglian Stakeholder Liaison Panel'

1. I have read the information provided in the accompanying letter.
2. I agree/do not agree to use the Anglian Stakeholder Liaison Panel as a case study for this research. (Please circle your choice)
3. I agree/do not agree to participate in this study by completing questionnaires at different stages in the process. (Please circle your choice)

I understand that:

4. I am free to withdraw from the project at any time and am free to decline to answer particular questions.
5. While the information gained in this study will be published, I will not be identified, and individual information will remain confidential.

Participant's Name: _____(Please print)

Participant's Signature: _____

Date: _____

Please return this consent form by mail, fax or email to

Melanie Muro

School of Water Sciences

Building 39

Cranfield University

Cranfield

Bedfordshire

MK 43 0AL

Fax +44 (0)1234 751671

Email: m.muro@cranfield.ac.uk

We advise you to retain a copy of the information letter and consent form for future reference.

C. Survey

Cranfield UNIVERSITY

Centre for Water Science

Melanie Muro
Building 39
Cranfield, Mk43 0AL, UK
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4 June 2007

Dear member of the Advisory Council,

I am writing to you to ask for your participation in the evaluation of the River Basin District Advisory Councils which have been established to involve interested parties in the implementation of the Water Framework Directive (WFD) in Ireland. This evaluation, which forms part of a doctoral dissertation through the Centre for Water Science at Cranfield University (UK), contributes to a study of approaches to public participation in the WFD's river basin planning and management process in Germany, England and Ireland. The aim is to learn from these recent experiences in order to improve and further develop involvement practices.

Presently, we are asking all members of the Advisory Councils which we have been allowed access to by the respective River Basin District project managers to complete an evaluation questionnaire. The objectives are to find out how you assess the organisation of the Advisory Council and the interaction with the stakeholders and the project management. Also, we would like to find out whether you feel there are any broader positive effects resulting from your participation in the Council. For instance, you might have learned something new about water management or your working relationships with other participants might have improved.

The WFD states that public participation is a prerequisite for successful river basin management and should be a way of learning about each others perspectives, views and knowledge to find the best way to implement the Directive. This evaluation will provide a first feedback about your involvement in the implementation of the WFD through the Advisory Council and will help the responsible authorities to improve the current participation practice and to design appropriate involvement activities in the future.

With this letter, you receive a copy of the evaluation questionnaire. Its completion should take no longer than 30 minutes. Please complete and return the questionnaire by

15 July 2007. The questionnaire can also be filled in and submitted online at the following internet address: http://public.cranfield.ac.uk/sims/c082621/.

We would like to assure you that your answers are completely confidential and will be released only as summaries in which no individual's answers can be identified. Your participation is voluntary. However, by taking a few minutes to share your experiences with the Advisory Council you are participating in, you can make a valuable contribution to further the engagement of the public in river basin management in Ireland. The research outcomes will be made available to the River Basin District project managers at the end of the year.

If you have any questions about the study, please contact me by phone at +44 (0)1234 750111 - 3334 or by email at m.muro@cranfield.ac.uk.

Thank you very much for your cooperation.
Sincerely,

Melanie Muro

APPENDIX 5: CASE STUDY DATA & ANALYSIS

This Appendix presents raw case study data referred to in Chapter 4. Tables and graphs are organised along the components and (sub-)dimensions investigated with the pre-test and post-test questionnaires. For orientation, the following table details the (sub-) dimensions investigated under each component and references related questionnaire items.

Components & (sub-) dimensions assessed	Question numbers[a]	
	Pre-test	Post-test
Process format		
Inclusiveness		3
Extended engagement		4, 5
Information exchange		6
Opportunity for interaction		7
Process control		8, 9
Communication		
Openness	13, 10[b], 11[b]	17[b], 18[b], 15, 16
Process equity	20[b], 21[b], 22[b]	20[b], 21[b], 22[b]
Social learning outcomes		
Relational change		
Relationship-building	6, 7[b], 14[b], (15)[c]	29[b], 30, 31[b]
Trust	8[b] , 9[b], 12[b]	27[b], 28[b], 19[b]
Connectedness	17[b] (18)[c], 19[b], 23[b]	32[b], 34[b], 33[b]
Cognitive change		
Knowledge acquisition		35, 36, 37
Altered views		38
Level of agreement		
Common views	5, 16	26
Consensus		23, 24, 25

[a] *The following questions were included because the information was of particular interest to the competent authorities: Pre-test: Questions 24 - 34 (all related to process format & management) in the Questionnaire administered to the respondents of the Regional Water Council Emsbach-Mittlere Lahn; Questions 24 - 28 (all related to process format & management) in the Questionnaire administered to the respondents of the Anglian RBD Stakeholder Liaison Panel. Pre-test: Questions 10 (clarity of mandate), 11 (level of participation), 12 (consideration of stakeholder input by competent authority), 13 (stakeholder resources), and 14 (satisfaction with process management). Data generated by these questions is not included in this thesis.*

[b] *Questions were identical in pre-test and post test-questionnaires;*

[c] *Some questionnaire items were followed by probing questions (questions indicated in brackets). Probing questions were not specifically formulated in the post-test questionnaire but were posed depending on the situation.*

Question wording is taken from questionnaires administered to the Liaison Panel. Quantitative data is displayed using tables as well as clustered stacked charts. As it was explained in Chapter 3, a specific response format was used to elicit stakeholders' perceptions of the group which enabled them to locate various portions of the group in one response category rather than forcing them to generalise to the whole group. Responses to questions using this response format are plotted as clustered stacked bar charts, presenting pre-test and post-test responses for each respondent. The majority of questions employed a four-point Likert type response scale providing two responses to indicate strong and weak affirmation ('to a great extent' and 'to a moderate extent') and strong and weak disaffirmation respectively ('not at all' and 'to a slight extent'). To better illustrate response patterns, percentages in the response categories indicating affirmation are plotted above the x-axis, whereas responses indicating disaffirmation below the x-axis.

Respondent description

Information elicited	Question numbers	Location of data
Interest represented	Pre-test: Question 1	Chapter 4
Previous participation experience	Pre-test: Question 2 & 3	Not included; data available on request.
Reason for participation	Pre-test: Question 4	Not included; data available on request.
Level of attendance	Post-test: Question 1 & 2	Chapter 4

Process format

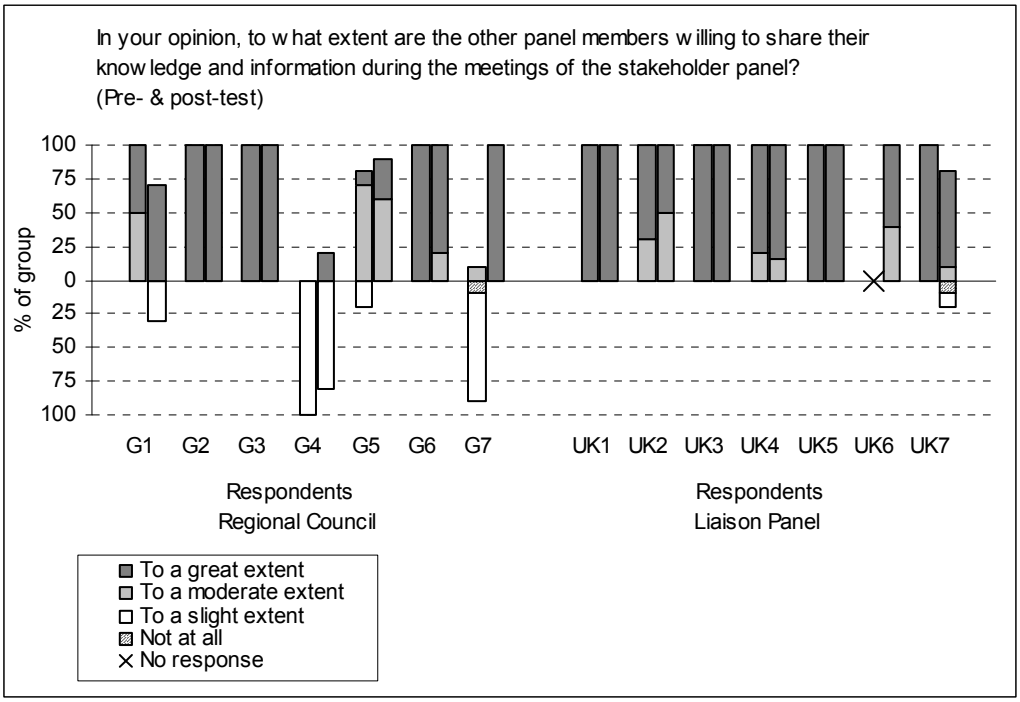
(Sub-) dimensions & related indicators	Question numbers	Location of data
Inclusiveness		
– Inclusiveness of membership	Post-test: Question 3	Chapter 4.
Extended engagement		
– Length of meetings allows for interaction	Post-test: Question 4	Chapter 4
– Number of meetings allows for interaction	Post-test: Question 5	Chapter 4
Information exchange		
– Methods facilitate information exchange	Post-test: Question 6	Chapter 4
Interaction		
– Methods facilitate interaction	Post-test: Question 7	Chapter 4
Process control		
– Influence on agenda-setting	Post-test: Question 8	Chapter 4
– Influence on procedures	Post-test: Question 9	Chapter 4

Communication

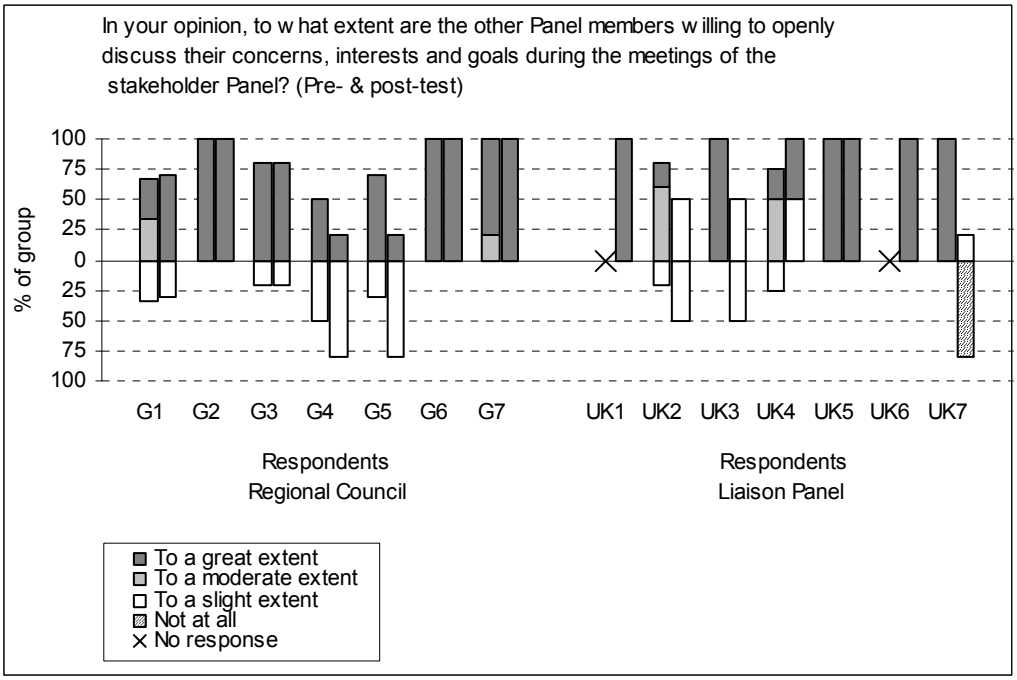
Openness

Indicators	Question numbers	Location of data
Openness		
– Perceived willingness to share information & knowledge	Pre-test: Question 11; Post-test: Question 17	Aggregate data in Chapter 4; raw data below [A]
– Perceived willingness to openly discuss interests, goals & concerns	Pre-test: Question 10; Post-test: Question 18	Aggregate data in Chapter 4; raw data below [B]
– Comfort level to express views	Post-test: Question 15	Raw data below [C]
– Comfort level to express disagreement	Post-test: Question 16	Raw data below [C]
– Meetings are characterised by trust & openness	Pre-test: Question 13	Not included; data available on request.

A)



B)



C)

Respondents	To what extent do you… …feel comfortable about expressing your opinion in Panel meetings?	…express your ideas even when they differ from the ones expressed by other participants?
Regional Water Council		
G1	4	4
G2	4	1
G3	4	4
G4	4	4
G5	4	3
G6	4	4
G7	4	4
Liaison Panel		
UK1	4	4
UK2	3	3
UK3	4	4
UK4	4	4
UK5	4	4
UK6	4	4
UK7	3	2

Response scale: ‘1’ = not at all, ‘2’ = to a slight extent, ‘3’ = to moderate extent, ‘4’ = to a great extent.

Communication

Process equity

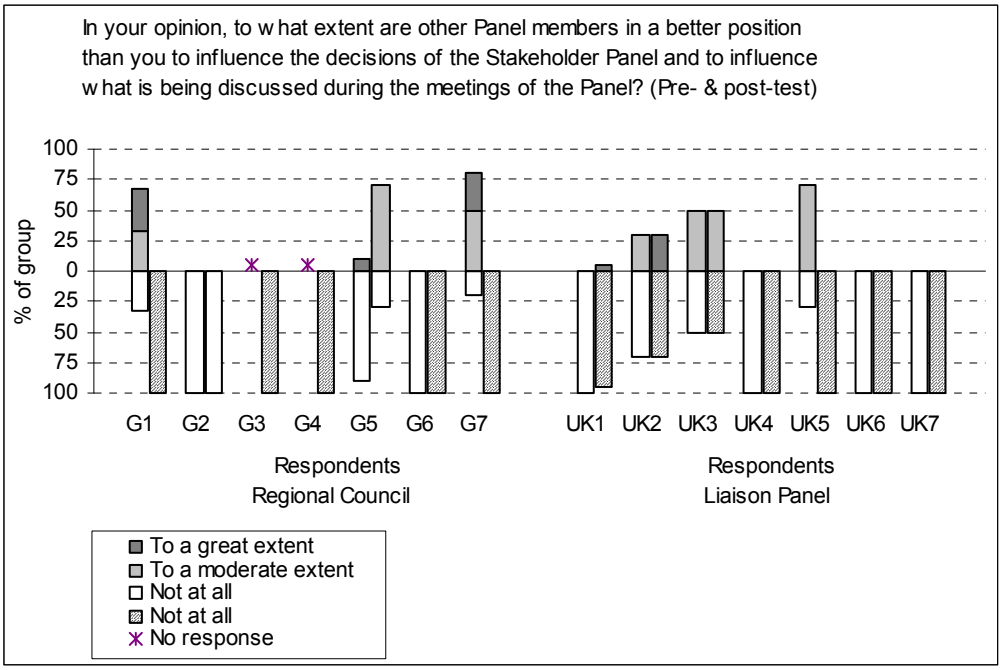
Indicators	Question numbers	Location of data
– Own ability to influence group decisions and discussions	Pre-test: Question 20; Post-test: Question 20	Aggregate data in Chapter 4; raw data below [A]
– Perceived ability of other stakeholders to influence group decisions and discussions	Pre-test: Question 22; Post-test: Question 21	Aggregate data in Chapter 4; raw data below [B]
– Reasons for other stakeholders' comparatively better position to influence group decisions and discussions	Pre-test: Question 22; Post-test: Question 22	Raw data below [C]

A)

Respondents	To what extent do you think you will be able to ensure that the interests you represent are taken into consideration in the discussions and when decisions are made?	
Regional Water Council	**Pre-test**	**Post-test**
G1	2	4
G2	3	3
G3	3	2
G4	2	4
G5	3	3
G6	4	4
G7	4	2
Liaison Panel		
UK1	1	4
UK2	3	3
UK3	3	3
UK4	3	3
UK5	3	3
UK6	4	4
UK7	3	3

Response scale: '1' = not at all, '2' = to a slight extent, '3' = to moderate extent, '4' = to a great extent.

B)



C)

Why are other participants in a better position to influence the decisions of the Panel and the discussions during the Panel meetings?

Regional Water Council	**Pre-test**			**Post-test**
	G1	**G5**	**G7**	**G5**
Better access to information		**X**	**X**	
Better understanding of scientific information				**X**
Better able to express themselves				
Confidence				**X**
Wider knowledge of water management issues				
Organisational affiliation	**X**	**X**	**X**	**X**
Able to build alliances with actors with similar interests	**X**			
Able to build alliances with influential actors			**X**	

Liaison Panel	**Pre-test**				**Post-test**	
	UK2	**UK3**	**UK5**	**UK1**	**UK2**	**UK3**
Better access to information	**X**				**X**	**X**
Better understanding of scientific information	**X**					
Better able to express themselves				**X**		
Confidence						
Wider knowledge of water management issues		**X**		**X**		
Organisational affiliation						**X**
Able to build alliances with actors with similar interests		**X**	**X**			**X**
Able to build alliances with influential actors						

Social learning outcomes

Relational change: Relationships

Indicators	Question numbers	Location of data
– Characterisation of existing relationships	Pre-test: Question 5 & 6; Post-test: Question 29	Chapter 4
– Characterisation of new relationships	Post-test: Question 30	Chapter 4
– Future collaboration	Pre-test: Question 14 & 15; Post test: Question 31	Raw data below [A]

A)

Respondents	To what extent do you have confidence in the ability of the Panel members to work together?	
Regional Water Council	**Pre-test**	**Post-test**
G1	3	4
G2	1	3
G3	1	3
G4	2	3
G5	3	3
G6	4	3
G7	3	4
Liaison Panel		
UK1	3	4
UK2	3	4
UK3	3	3
UK4	3	3
UK5	3	3
UK6	4	3
UK7	3	4

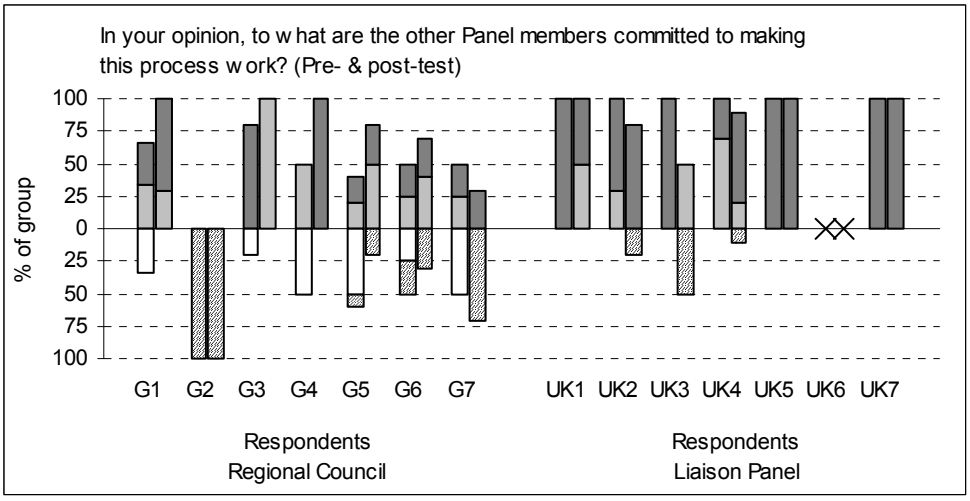
Response scale: '1' = not at all, '2' = to a slight extent, '3' = to moderate extent, '4' = to a great extent.

Social learning outcomes

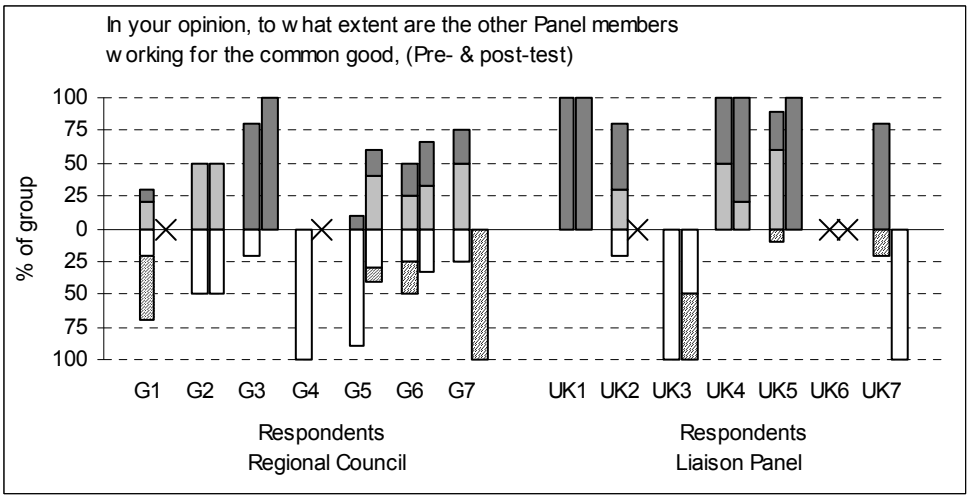
Relational change: Trust

Indicators	Question numbers	Location of data
– Perceived level of commitment	Pre-test: Question 8; Post-test: Question 27	Aggregate data in Chapter 4; raw data below [A].
– Perceived level of interest in the common good	Pre-test: Question 9; Post-test: Question 28	Aggregate data in Chapter 4; raw data below [B].
– Perceived interest in learning about other stakeholders' concerns	Pre-test: Question 12; Post-test: Question 19	Aggregate data in Chapter 4; raw data below [C].

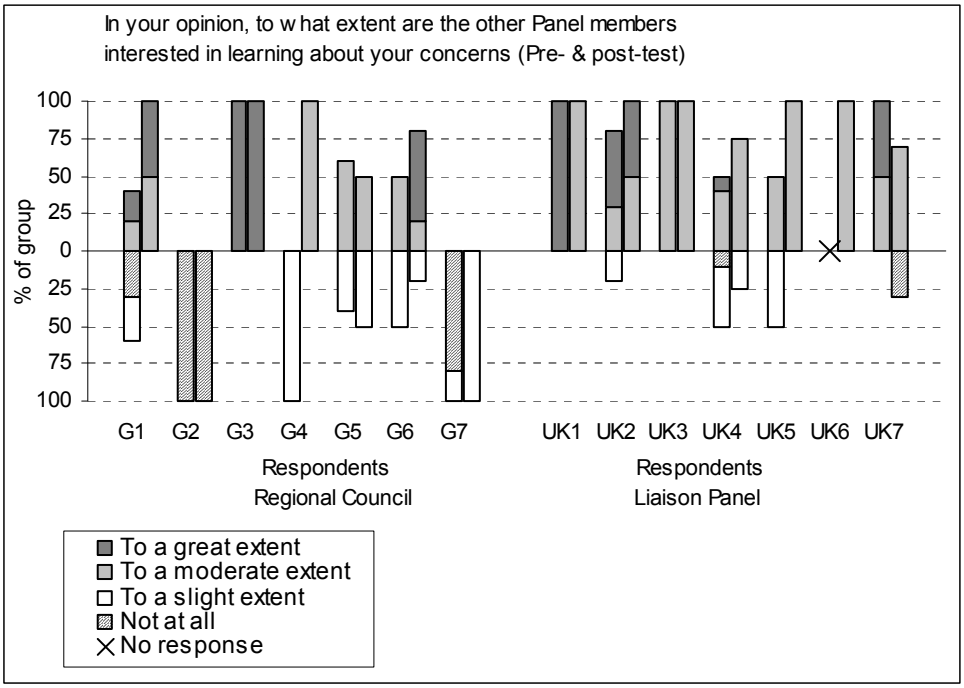
A)



B)



C)


In your opinion, to what extent are the other Panel members interested in learning about your concerns (Pre- & post-test)
% of group
100
75
50
25
0
25
50
75
100
G1 G2 G3 G4 G5 G6 G7
Respondents
Regional Council
UK1 UK2 UK3 UK4 UK5 UK6 UK7
Respondents
Liaison Panel
To a great extent
To a moderate extent
To a slight extent
Not at all
No response

Social learning outcomes

Relational change: Connectedness

Indicators	Question numbers	Location of data
– Own level of commitment	Pre-test: Question 17 & 18; Post-test: Question 33	Aggregate data in Chapter 4; raw data below[A]
– Own level of interest in the common good	Pre-test: Question 19; Post-test: Question 34	Aggregate data in Chapter 4; raw data below [B]
– Sense of community	Pre-test: Question 23; Post-test: Question 32	Aggregate data in Chapter 4; raw data below [C]

A)

Respondents	To what extent would you are committed to making this a successful process?	
Regional Water Council	**Pre-test**	**Post-test**
G1	3	4
G2	3	3
G3	4	3
G4	4	4
G5	3	3
G6	4	3
G7	2	2
Liaison Panel		
UK1	4	4
UK2	3	3
UK3	3	3
UK4	3	3
UK5	4	4
UK6	4	3
UK7	4	4

Response scale: ‘1’ = not at all, ‘2’ = to a slight extent, ‘3’ = to moderate extent, ‘4’ = to a great extent.

B)

Respondents	To what extent would you say you are working for the common good, meaning that you are considering the best interest of all groups represented on the Panel in your decisions?	
Regional Water Council	**Pre-test**	**Post-test**
G1	4	4
G2	2	2
G3	4	3
G4	4	4
G5	4	3
G6	3	3
G7	2	2
Liaison Panel		
UK1	4	3
UK2	4	3
UK3	3	2
UK4	4	3
UK5	4	4
UK6	3	3
UK7	4	4

Response scale: '1' = not at all, '2' = to a slight extent, '3' = to moderate extent, '4' = to a great extent.

C)

Respondents	To what extent do you feel that you are part of a group trying to work together to solve a common problem?	
Regional Water Council	**Pre-test**	**Post-test**
G1	4	3
G2	1	3
G3	4	3
G4	1	3
G5	2	3
G6	3	3
G7	3	2
Liaison Panel		
UK1	1	3
UK2	3	3
UK3	1	1
UK4	1	3
UK5	1	4
UK6		3
UK7	2	3

Response scale: '1' = not at all, '2' = to a slight extent, '3' = to moderate extent, '4' = to a great extent.

Social learning outcomes

Cognitive change

Indicators	Question numbers	Location of data
Knowledge acquisition		
– Factual knowledge gained	Post-test: Question 35	Aggregate data in Chapter 4; raw data below [A]
– Increased understanding of interests & concerns of other stakeholders	Post-test: Question 36	Aggregate data in Chapter 4; raw data below [B]
– Increased understanding of own interests & concerns	Post-test: Question 37	Aggregate data in Chapter 4; raw data below[C]
Altered views		
– Changed perceptions of water management issues, immediate problems & causes	Post-test: Question 38	Aggregate data in Chapter 4; raw data below [D]

	To what extent …			
Respondents	**…do you have a better understanding of water resources and RBM as a result of the involvement process? [A]**	**…do you have a better understanding of the concerns and interests of other participants as a result of the involvement process? [B]**	**…do you have a better understanding of your own interests and concerns for water resources and RBM in this basin, as a result of the involvement process? [C]**	**…did you alter your views about important issues and problems for water resources and RBM in this basin, as a result of the involvement process? [D]**
Regional Water Council				
G1	4	4	1	3
G2	3	3	3	2
G3	3	2	1	1
G4	3	3	3	3
G5	3	3	2	2
G6	3	3	3	2
G7	3	3	4	3
Liaison Panel				
UK1	4	3	3	1
UK2	3	4	3	3
UK3	4	3	2	2
UK4	3	3	3	1
UK5	3	4	4	3
UK6	2	4	3	1
UK7	2	3	3	1

Response scale: ‘1’ = not at all, ‘2’ = to a slight extent, ‘3’ = to moderate extent, ‘4’ = to a great extent.

Level of agreement

Indicators	Question numbers	Location of data
Common views		
– Most important water management issues to be addressed by the panel	Pre-test: Question 5	Not included; data available on request.
– Potential points of conflict	Pre-test: Question 16	Not included; data available on request.
– Development of common view	Post-test: Question 26	Raw data below [A]
Consensus		
– Consensual decision-making	Post-test: Question 23	Aggregate data in Chapter 4; raw data below [B]
– Fairness of group decisions	Post-test: Question 24	Aggregate data in Chapter 4; raw data below [C]
– Satisfaction with group decisions	Post-test: Question 25	Aggregate data in Chapter 4; raw data below [D]

	To what extent …			
Respondents	**… did the involvement process contribute to the development of a common view among the participants of the current status of the river basin district as well as immediate problems and their causes? [A]**	**… do you agree that the majority of the decisions the Panel has taken so far were consensual in nature? [B]**	**do you agree that the contributions the Panel has generated to support WFD implementation are fair? [C]**	**are you satisfied with the contributions the Panel has generated to support the implementation of the WFD? [D]**
Regional Water Council				
G1	2	No response	No response	3
G2	1	No response	No response	2
G3	2	No response	No response	3
G4	2	No response	No response	3
G5	3	No response	3	3
G6	3	No response	3	3
G7	3	No response	4	2

	To what extent …			
Respondents	**… did the involvement process contribute to the development of a common view among the participants of the current status of the river basin district as well as immediate problems and their causes? [A]**	**… do you agree that the majority of the decisions the Panel has taken so far were consensual in nature? [B]**	**do you agree that the contributions the Panel has generated to support WFD implementation are fair? [C]**	**are you satisfied with the contributions the Panel has generated to support the implementation of the WFD? [D]**
Liaison Panel				
UK1	3	No response	3	3
UK2	1	3	3	3
UK3	No response	4	4	3
UK4	2	No response	3	3
UK5	1	No response	4	3
UK6	2	4	3	3
UK7	1	3	4	3

Response scale: ‘1’ = not at all, ‘2’ = to a slight extent, ‘3’ = to moderate extent, ‘4’ = to a great extent.

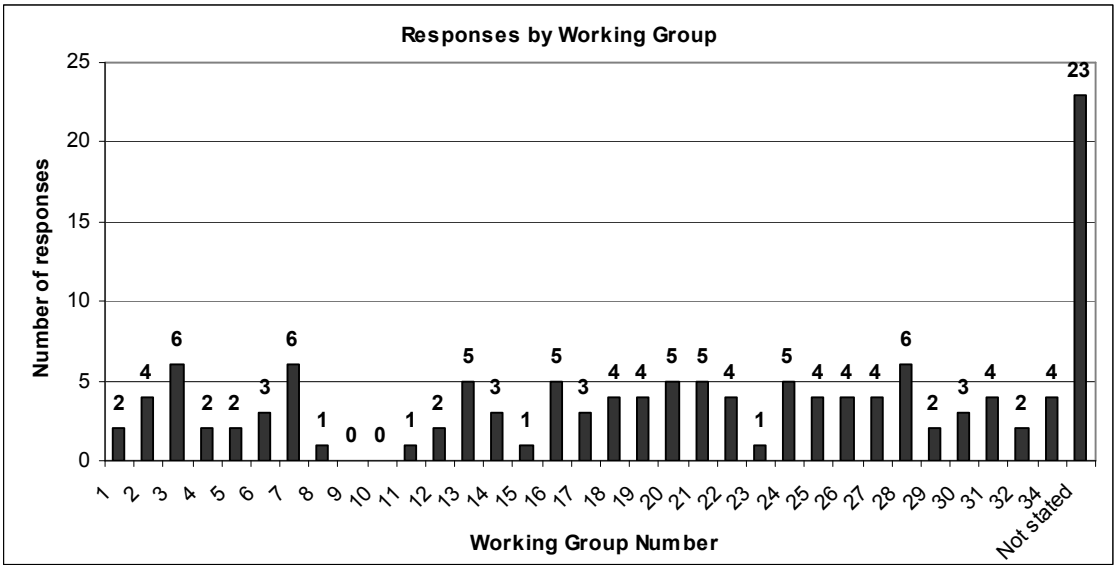
APPENDIX 6: SURVEY DATA & ANALYSIS

This Appendix contains the following survey data and analyses:

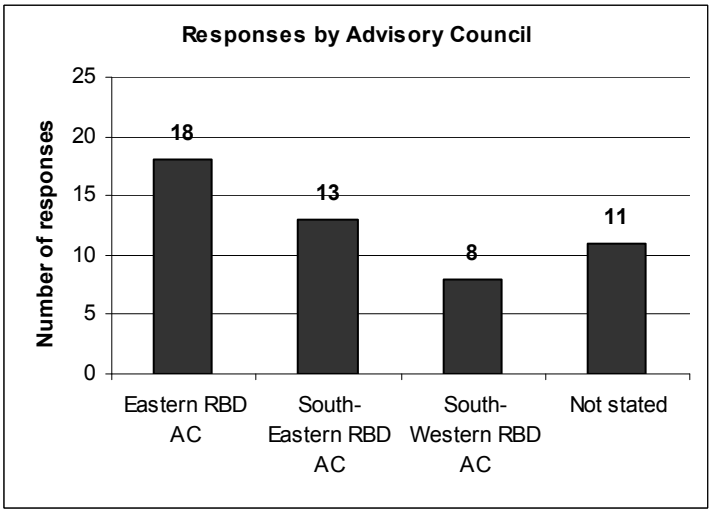
- Response rate per individual Working Group and Advisory Council (A);
- Reliability of scales constructed from individual survey items (B);
- Frequency of responses in percent (C);
- Mann-Whitney-U-Tests (D);
- Responses by interest group (E);
- Kendall's tau-C correlation coefficient for selected variables (F).

A. Responses by case

Working Groups



Advisory Councils



B. Reliability analysis of scaled items

Scale	Cronbach's alpha
Extended engagement	.78
Process control	.77
Openness	.77
Process equity	.80
Relational change	.75
Cognitive change	.69

C. Frequency of responses in percent

	Working Groups					Advisory Councils				
Items	**N**	**SA**	**TA**	**TDA**	**SDA**	**N**	**SA**	**TA**	**TDA**	**SDA**
Process format										
Inclusiveness										
Stakeholders fairly represent the sectors and interests which are affected by RBM planning.	129	46.2 (60)	49.2 (64)	3.8 (5)	--	42	25.0 (11)	54.5 (24)	15.9 (7)	--
Extended engagement										
The length of the meetings is sufficient to enable participants to exchange opinions and to discuss their interests, goals and concerns	129	67.7 (88)	25.4 (33)	5.4 (7)	0.8 (1)	42	27.3 (12)	38.6 (17)	25.0 (11)	4.5 (2)
The number of the meetings is sufficient to enable participants to exchange opinions and to discuss their interests, goals and concerns	130	66.9 (87)	30 (39)	2.3 (3)	0.8 (1)	44	15.9 (7)	59.1 (26)	20.5 (9)	4.5 (2)
Information exchange										
The methods employed during the meetings provide the stakeholders with the opportunity to obtain and provide information.	130	56.9 (74)	36.9 (48)	6.2 (8)	--	43	18.2 (8)	56.8 (25)	22.7 (10)	2.3 (1)
Interaction										
The methods employed during the meetings provide the stakeholders with the opportunity to discuss their interests, goals and concerns.	130	50.8 (66)	37.7 (49)	10 (13)	1.5 (2)	43	22.7 (10)	45.5 (45)	20.5 (9)	9.3 (4)
Process control										
I have influence on the selection of agenda items.	128	41.5 (54)	32.3 (42)	19.2 (25)	5.4 (7)	42	2.3 (1)	61.4 (27)	18.2 (8)	13.6 (6)
I have influence on the way meetings are run and on the communication and interaction methods that are employed.	127	26.2 (34)	37.7 (49)	28.5 (37)	5.4 (7)	41	4.5 (2)	43.2 (19)	34.1 (15)	11.4 (5)

SA = Strongly agree, TA = Tend to agree, TDA = Tend to disagree, SDA = Strongly disagree

Items	Working Groups					Advisory Councils				
	N	SA	TA	TDA	SDA	N	SA	TA	TDA	SDA
Communication										
Openness										
I believe that participants openly share knowledge and information.	128	47.7 (62)	43.1 (56)	7.7 (10)	--	42	25.0 (11)	45.5 (20)	22.7 (20)	2.3 (1)
I believe that participants openly share their concerns, interests and goals.	127	44.6 (58)	44.6 (58)	8.5 (11)	--	44	20.5 (9)	63.6 (28)	13.6 (6)	2.3 (1)
I feel comfortable expressing my opinion.	128	77.7 (101)	17.7 (23)	1.5 (2)	1.5 (2)	41	38.6 (17)	47.7 (21)	6.8 (3)	--
I also express my ideas when they differ from the ones expressed by other participants.	128	76.9 (100)	20.8 (27)	0.8 (1)	--	41	38.6 (17)	43.2 (19)	11.4 (5)	--
Process equity										
I am satisfied with the amount of influence I have in the Working Group /Advisory Council meetings.	127	43.8 (57)	43.1 (56)	10.8 (14)	--	39	9.1 (4)	47.7 (21)	20.5 (9)	11.4 (5)
My views and concerns are treated seriously by other participants.	128	50.8 (66)	43.8 (57)	3.8 (5)	--	41	13.6 (6)	54.5 (24)	22.7 (10)	2.3 (1)
Social learning outcomes										
Relational change										
As a result of the involvement process I have better working relationships with the other participants.	123	42.3 (55)	40.8 (53)	10.8 (14)	0.8 (1)	39	13.6 (6)	63.6 (28)	9.1 (4)	2.3 (1)
As a result of the involvement process I feel part of a group trying to solve a common problem.	129	52.3 (68)	36.2 (47)	9.2 (12)	1.5 (2)	42	25.0 (11)	50.0 (22)	18.2 (8)	2.3 (1)
I would be happy to work again with the same participants in a similar involvement process.	129	56.2 (73)	33.1 (43)	9.2 (1)	0.8 (1)	43	36.4 (16)	47.7 (21)	11.4 (5)	2.3 (1)

SA = Strongly agree, TA = Tend to agree, TDA = Tend to disagree, SDA = Strongly disagree

Items	Working Groups					Advisory Councils				
	N	SA	TA	TDA	SDA	N	SA	TA	TDA	SDA
Cognitive change										
As a result of the involvement process, I have a better understanding of water resources and RBM.	127	62.3 (81)	25.4 (33)	9.2 (12)	0.8 (1)	44	59.1 (26)	34.1 (15)	6.8 (3)	--
As a result of the involvement process, I have a better understanding of the concerns and interests of other participants.	127	45.4 (59)	42.3 (55)	10.0 (13)	--	44	43.2 (19)	47.7 (21)	9.1 (4)	--
As a result of the process, I altered my views about important issues and problems for water resources and RBM.	128	21.5 (28)	29.2 (38)	37.7 (49)	10.0 (13)	43	18.2 (8)	34.1 (15)	25.0 (11)	20.5 (9)
Level of agreement										
Common views										
The involvement process contributed to the development of a common view among the participants of the current status of the RBD as well as immediate problems and their causes.	126	37.7 (49)	48.5 (63)	7.7 (10)	3.1 (4)	35	9.1 (4)	45.5 (20)	13.6 (6)	11.4 (5)
Consensus										
I think that the majority of the decisions taken by the stakeholder group ere consensual in nature.	127	66.9 (87)	27.7 (36)	3.1 (4)	--	39	20.5 (9)	52.3 (23)	13.6 (6)	2.3 (1)
The contributions the stakeholder group has generated to support implementation of the WFD are fair.	127	46.2 (60)	44.6 (58)	6.9 (9)	--	35	15.9 (7)	54.5 (24)	9.1 (4)	--
I am satisfied with the contributions the stakeholder group has generated to support implementation of the WFD.	130	40.8 (53)	44.6 (58)	12.3 (16)	2.3 (3)	39	15.9 (7)	50.0 (22)	18.2 (8)	4.5 (2)

SA = Strongly agree, TA = Tend to agree, TDA = Tend to disagree, SDA = Strongly disagree

D. Mann-Whitney-U-Tests

The literature is contradictory with respect to the effects of unequal sample sizes on Mann-Whitney-U-Tests. As explained in Chapter 3, Mann-Whitney-U-Tests were performed with the complete data sets (Test 1) and two randomly drawn sub-samples of the larger data set (Test 2 and 3). Results reported in Chapter 4 (Case studies) are based on test series 1.

Results of Mann-Whitney-U-Tests for individual items

Items	Test	Mann-Whitney-U	Wilkoxon-W	Z	Asymptotic significance (2-tailed)
Inclusiveness					
Stakeholders fairly represent the sectors and interests which are affected by RBM planning.	1	1994.500	10379.500	-2.881	.004
	2	841.000	2381.000	-2.558	.011
	3	937.500	2590.500	-2.064	.039
Extended engagement					
The length of the meetings is sufficient to enable participants to exchange opinions and to discuss their interests, goals and concerns.	1	1487.000	9872.000	-4.985	.000
	2	633.000	2173.000	-4.166	.000
	3	630.500	2283.500	-4.425	.000
The number of the meetings is sufficient to enable participants to exchange opinions and to discuss their interests, goals and concerns.	1	1240.000	9755.000	-6.311	.000
	2	565.500	2161.500	-5.087	.000
	3	514.000	2167.000	-5.572	.000
Information exchange					
The methods employed during the meetings provide the stakeholders with the opportunity to obtain and provide information.	1	1584.000	10099.00	-4.878	.000
	2	606.500	2202.500	-4.743	.000
	3	676.500	2329.500	-4.324	.000
Interaction					
The methods employed during the meetings provide the stakeholders with the opportunity to discuss their interests, goals and concerns.	1	1840.500	10355.500	-3.637	.000
	2	740.500	2336.500	-3.526	.000
	3	813.500	2466.500	-3.088	.002
	2	936.000	2476.000	-1.889	.059
	3	904.000	2500.000	-2.269	.023

Results of Mann-Whitney-U-Tests for individual items (continued)

Items	Test	Mann-Whitney-U	Wilkoxon-W	Z	Asymptotic significance (2-tailed)
Process control					
I have influence on the selection of agenda items.	1	1709.000	9965.00	-3.746	.000
	2	661.000	2201.000	-3.809	.000
	3	682.500	2278.500	-3.777	.000
I have influence on the way meetings are run and on the communication and interaction methods that are employed.	1	1921.500	10049.500	-2.664	.008
	2	807.000	2347.000	-2.508	.012
	3	789.500	2329.500	-2.638	.008
Openness					
I believe that participants openly share knowledge and information.	1	1877.000	10133.000	-3.216	.001
	2	802.500	2398.500	-2.932	.003
	3	760.500	2413.500	-3.357	.001
I believe that participants openly share their concerns, interests and goals.	1	2035.000	10163	-2.977	.003
	2	801.000	2397.000	-3.316	.001
	3	804.000	2457.000	-3.394	.001
I feel comfortable expressing my opinion.	1	1652.000	9908.000	-4.449	.000
	2	728.000	2324.000	-3.618	.000
	3	719.000	2379.000	-3.854	.000
I also express my ideas when they differ from the ones expressed by other participants.	1	1604.000	9860.000	-4.647	.000
	2	722.000	2318.000	-3.640	000
	3	736.500	2389.500	-3.636	.000
Process equity					
I am satisfied with the amount of influence I have in the Advisory Council/Working Group meetings.	1	1339.000	9467.000	-4.705	.000
	2	509.500	2105.500	-4.763	.000
	3	537.000	2133.000	-4.530	.000
My views and concerns are treated seriously by other participants.	1	1399.000	9655.000	-4.986	.000
	2	654.000	2250.000	-3.981	.000
	3	597.000	2250.000	-4.501	.000

Results of Mann-Whitney-U-Tests for individual items (continued)

Items	Test	Mann-Whitney-U	Wilkoxon-W	Z	Asymptotic significance (2-tailed)
Relational change					
As a result of the involvement process I have better working relationships with the other participants.	1	1767.500	9393.500	-2.729	.006
	2	694.500	2072.500	-2.807	.005
	3	842.000	2495.000	-2.221	.026
As a result of the involvement process I feel part of a group trying to solve a common problem.	1	1935.500	10320.000	-3.041	.002
	2	728.000	2378.000	-3.078	.002
	3	852.000	2505.000	-2.650	.008
I would be happy to work again with the same participants in a similar involvement process.	1	2240.000	10625.000	-2.097	.036
	2	914.500	2510.500	-2.265	.023
	3	970.500	2623.500	-1.967	.049
Cognitive change					
As a result of the involvement process I have a better understanding of water resources and RBM.	1	2712.500	10840.500	-0.337	.736
	2	1189.500	2179.500	-0.166	.868
	3	1093.500	2746.500	-1.334	.182
As a result of the involvement process I have a better understanding of the concerns and interests of other participants.	1	2729.000	10857.00	-0.254	.799
	2	1145.000	2685.000	-0.508	.611
	3	1167.000	2763.000	-0.500	.617
As a result of the involvement process I altered my views about important issues and problems for water resources and RBM in this RBD.	1	2598.000	10854.000	-0.573	.567
	2	1069.500	2692.500	-0.796	.426
	3	1126.500	2779.500	-0.720	.472
Common views					
The involvement process contributed to the development of a common view among the participants of the current status of the RBD as well as immediate problems and their causes.	1	1380.000	9381.000	-3.720	.000
	2	577.500	2173.500	-3.600	.000
	3	589.500	2185.500	-3.557	.000
Consensus					
I think that the majority of the decisions taken by the stakeholder group were consensual in nature.	1	1269.500	9379.500	-5.268	.000
	2	548.500	2088.500	-4.472	.000
	3	637.500	2290.500	-3.921	.00.
The contributions the stakeholder group has generated to support implementation of the WFD are fair.	1	1609.000	9737.000	-2.793	.005
	2	654.500	2194.500	-2.897	.004
	3	722.000	2375.000	-2.520	.012
I am satisfied with the contributions the stakeholder group has generated to support implementation of the WFD.	1	1871.500	10386.500	-2.691	.007
	2	784.000	2380.000	-2.568	.010
	3	769.500	2422.500	-2.756	.006

Results of Mann-Whitney-U-Tests for scaled items

Scale	Test	Mann-Whitney-U	Wilkoxon-W	Z	Asymptotic significance (2-tailed)
Extended engagement	1	1088.000	9473.000	-6.165	.000
	2	479.500	2019.500	-5.101	.000
	3	446.000	2099.000	-5.522	.000
Process control	1	1673.000	9674.000	-3.452	.001
	2	669.000	2209.000-	-3.464	.001
	3	694.000	2234.000	-3.286	.001
Openness	1	1413.000	9414.000	-4.089	.000
	2	598.000	2194.000	-3.808	.000
	3	591.500	2244.500	-3.955	.000
Process equity	1	1158.5000	9286.500	-5.018	.000
	2	475.000	2071.000	-4.684	.000
	3	458.500	2054.500	-4.793	.000
Relational change	1	1521.000	9024.000	-3.061	.002
	2	611.000	1989.000	-2.979	.003
	3	715.000	2368.000	-2.679	.007
Cognitive change	1	2572.500	10447.500	-.425	.671
	2	1119.500	2659.500	-.460	.645
	3	1075.500	2671.500	-.926	.354
Level of agreement	1	754.000	8257.000	-4.223	.000
	2	323.500	1863.500	-3.994	.000
	3	342.500	1938.500	-3.872	.000

E. Responses by group

Working Groups

Indicators	Water (n=33)		Environment (n=32)		Economic (n=33)		Local authorities (n=24)	
	N	Mean	N	Mean	N	Mean	N	Mean
Process format								
Inclusiveness	33	1.48 (.57)	32	1.59 (.56)	33	1.58 (.61)	24	1.75 (.53)
Extended engagement	33	1.19 (.30)	32	1.39 (.60)	33	1.54 (.70)	24	1.35 (.40)
Information exchange	33	1.27 (.52)	32	1.69 (.69)	33	1.42 (.61)	24	1.58 (.58)
Interaction	33	1.24 (.44)	32	1.81 (.90)	33	1.73 (.76)	24	1.67 (.64)
Process control	32	1.53 (.72)	32	2.10 (.60)	31	2.38 (.81)	23	2.17 (.84)
Communication								
Openness	32	1.26 (.30)	32	1.55 (.50)	31	1.40 (.41)	23	1.51 (.39)
Process equity	33	1.28 (.35)	32	1.84 (.62)	32	1.59 (.54)	23	1.72 (.50)
Social learning outcomes								
Relational change	33	1.45 (.56)	30	1.72 (.61)	30	1.67 (.63)	22	1.62 (.46)
Cognitive change	33	1.61 (.54)	32	1.90 (.65)	31	1.80 (.64)	22	1.98 (.63)
Level of agreement	32	1.43 (.44)	31	1.76 (.68)	31	1.66 (.51)	21	1.61 (.47)
Common views	32	1.56 (.67)	32	1.81 (.90)	32	1.97 (.74)	23	1.65 (.57)
Consensus	33	1.34 (.41)	31	1.73 (.57)	32	1.55 (.54)	21	1.61 (.54)

Response scale: '1' = strongly agree, '2' = tend to agree, '3' = tend to disagree, '4' = strongly disagree.

Advisory Councils

Indicators	Environment (n=8)		Economic (n=10)		Local authorities (n=20)	
	N	Mean	N	Mean	N	Mean
Process format						
Inclusiveness	8	2.25 (.71)	8	1.88 (.35)	20	1.75 (.64)
Timeframe	8	2.43 (.56)	8	2.12 (.69)	20	1.97 (.78)
Extended engagement	8	2.25 (.46)	10	2.10 (.74)	20	2.00 (.83)
Interaction	8	2.75 (.71)	9	2.22 (.83)	20	1.80 (.83)
Process control	7	2.57 (.60)	9	2.50 (.75)	19	1.50 (.74)
Communication						
Openness	6	1.91 (2.12)	8	2.00 (8.32)	20	1.75 (.61)
Equity	8	2.31 (.59)	9	2.05 (.58)	17	2.41 (.92)
Social learning outcomes						
Relational change	8	2.00 (.53)	8	1.87 (.39)	18	1.85 (.62)
Cognitive change	8	1.91 (.68)	9	2.14 (.41)	20	1.80 (.65)
Level of agreement	4	2.16 (.70)	8	2.35 (.58)	12	2.19 (.64)
Common views	8	2.38 (.92)	8	2.50 (.76)	16	2.38 (.96)
Consensus	4	2.33 (.66)	9	2.18 (.47)	14	1.83 (.65)

Response scale: '1' = strongly agree, '2' = tend to agree, '3' = tend to disagree, '4' = strongly disagree.

F. Correlation matrix

Number of valid cases in brackets

	Working Groups		Advisory Councils	
	Kendall-tau-c	**p-value**	**Kendall-tau-c**	**p-value**
Relational change * Attendance	-.212 (122)	.001	-.229 (36)	.135
Cognitive change * Attendance	-.246 (125)	.000	.097 (42)	.482
Level of agreement * Attendance	-.203 (122)	.001	-.048 (25)	.759
Common views * Attendance	-.179 (126)	.002	.010 (34)	.933
Consensus * Attendance	.-161 (125)	.007	-.130 (30)	.379