

Evaluating social learning in UK flood risk management: an ‘individual-community interaction’ perspective

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Abstract

Stakeholder participation in environmental management has become widespread globally while the normative benefits of multi-stakeholder processes in governing natural resources are promoted by academics and policy makers. As projections indicate more frequent and intense flood events with future climate change, this article examines one stakeholder participation process within UK flood risk management to evaluate whether it contributes to enhancing effective engagement, through social learning. Evidence is derived from multiple interviews conducted within the UK’s Regional Flood and Coastal Committees (RFCCs), which were specifically introduced to better integrate local level interests in regional flood defence decision-making. In testing a modified ‘individual-community interaction’ learning framework, it is apparent that personal and group learning outcomes were evident to varying degrees, suggesting that stakeholder participation was relatively successful. However, our analysis suggests that flexibility exists within such structures, allowing reflexive reconstitution to further increase social learning. Recommendations for future stakeholder participation are proposed, providing lessons for both UK flood governance and similar flood risk management processes in other countries.

Key words: flood risk management; social learning; governance; stakeholder participation; regional scale.

1. Introduction

Stakeholder participation in ‘environmental management’ has become widespread globally (Benson *et al.* 2013). A defining feature of such participation is that ‘individuals, groups, and/or organizations choose to take an active role in decision making processes that affect them’ (Reed *et al.* 2010:1; and Reed 2008; Newig and Fritsch 2009) rather than merely providing a consultative role for decision-makers. Multi-stakeholder engagement of this type was first actively promoted in relation to adaptive resource management (Holling 1978) and is now visible in many countries (Sabatier *et al.* 2005; Mostert *et al.* 2007; Koontz 2014) and

in various environmental sectors (Wondolleck and Yaffee 2000; Koontz *et al.* 2004; Sabatier *et al.* 2005; Newig and Fritsch 2009), forming an evolving paradigmatic shift in environmental governance (Benson *et al.* 2013). While employed in many different environmental management contexts, these forms of social interaction are closely associated with integrated forms of water resource management at multiple scales (Benson *et al.* 2013; Gain *et al.* 2013; Newig and Koontz 2014; Newig *et al.* 2014). Multiple institutional forms facilitating stakeholder engagement are documented, ranging along a continuum from centralised agency bodies to more networked, local forms of ‘partnership’ (Moore and Koontz 2003; Sabatier *et al.* 2005; Margerum 2008; Benson *et al.* 2013). Despite this shift in governing and the rise of stakeholder participation as a governance approach, the actual benefits remain uncertain - thereby resulting in attempts at evaluating effectiveness (Benson *et al.* 2014).

Carr *et al.* (2012) helpfully distinguish ‘process’, ‘intermediary’ and ‘resource management outcome’ indicators of effective stakeholder participation. Hence, *resource management outcomes* can include measurable environmental or economic improvements. Calling for better evaluation, Koontz and Thomas (2006) show how research has measured such outcomes, for example enhancements to resource quality. Others have warned against focusing on environmental improvements, given the protracted nature of multi-stakeholder management processes (*ibid.*; Sabatier *et al.* 2005). Biddle and Koontz (2014) argue on the other hand that measuring outputs, such as setting pollution reduction goals, as ‘proxy’ indicators of effectiveness. What Carr *et al.* (2012) term *process* indicators are also widely employed. Özerol and Newig (2008), for example, focus on five critical indicators of successful public participation in water resources management: participation scope; public communication; capacity building; timing; and financial support. Rowe and Frewer (2000) employ both acceptance criteria (fairness and democratic legitimacy) and process criteria such as accessibility. Others identify indicators such as fairness, competence, accountability, cost-effectiveness, legitimacy and power (Carr *et al.* 2012: 3). Stakeholder participation may also enhance *intermediary* participant effects, such as social capital, trust, reciprocity and positive responses to actions (Lubell 2005; Leach and Sabatier *et al.* 2005) and shared knowledge and information gain.

Stakeholder participation resulting in social learning is ‘increasingly becoming a normative goal in natural resources management’ (Reed *et al.* 2010: 1; see also Muro and Jeffrey 2008), while also a measurable outcome of such processes. Such learning is considered desirable for several reasons. For example, Koontz (2014: 1573) suggests that, through ‘deliberation [careful consideration], stakeholders with different perspectives and information can learn from each other as they develop a shared vision and plan’. Stakeholder participation is now promoted in order to enhance decision-making (e.g. Thorne 2014) and it is argued that stakeholder involvement can also provide mechanisms for continual learning on implementing adaptive management cycles that address complexity and uncertainty through incremental adjustment (Pahl-Wostl *et al.* 2007). Several studies have cited the role of social learning in climate adaptation, with Collins and Ison (2009:359) calling it a ‘new policy and practice paradigm’. Allied issues to social learning might also include the legitimacy or ‘buy-in’ of governance solutions, for example increasing trust and reciprocity between stakeholders, particularly local non-state actors (Smith *et al.* 2015). However, as Reed *et al.* (2010) argue, there is not necessarily a causal link between process and outcomes, for there are:

‘... numerous examples of supposed social learning projects that simply facilitated stakeholder participation; there is rarely any evidence that social learning occurred or any explicit attempt to measure social learning ...’ (*ibid.*: 2)

Although some studies have since sought to redress this deficit (see Koontz 2014), a critical empirical research question for stakeholder participation in environmental management is still *to what extent do such processes actually lead to social learning?*

We focus on social learning as an indicator of stakeholder participation effectiveness in one critical area of environmental governance, namely Flood Risk Management (FRM). As in many European countries, UK flood control has become increasingly politically, economically and socially significant; particularly in response to successive devastating floods since 2007 (for example, Thorne 2014; Lorenzoni *et al.* 2015). Conflicts have emerged over how flood defence investments are decided and the extent to which they reflect local preferences. Under the UK Government’s Localism Act 2011, lead local flood authorities such as local governments must ‘review and scrutinise the exercise by risk management authorities of both flood risk management functions and coastal erosion risk management

functions which may affect the local authority's area' (UK Government 2011). One government response has been to promote more local level participation in central flood protection investment decision-making in England and Wales via Regional Flood and Coastal Committees (RFCCs) (Lorenzoni *et al.* 2015). The RFCCs were introduced in 2011; their remit mandates the involvement of governmental and non-governmental actors, including elected public representatives, in determining funding decisions. Of interest, therefore, is the extent to which social learning occurs as a relative measure of the effectiveness of participation in Committees within wider national FRM.

Section 2 outlines approaches to defining and evaluating social learning, and developing an analytical framework that underpins our analysis. Stakeholder participation approaches in the RFCCs are examined in Section 3 to provide a national overview. A brief historical context on the evolution of the Committees is then provided, in addition to an outline of current developments. Section 4 outlines the research methods, with a focus on in-depth case study investigations from the South West and Anglian (Eastern) RFCCs. Results are presented in Section 5 and discussed in relation to stakeholder participation effectiveness. Recommendations on improving current practice to enhance social learning and areas of future research are then proposed.

2. Defining social learning

A significant impediment to comparative political analysis is the constant expansion of concepts ('conceptual stretching') such 'that our gains in extensional coverage tend to be matched by losses in connotative precision', thereby preventing the cross-national 'travelling' of theory (Sartori 1970: 1034-5). Sartori hence prescribes more rigorous application of tightly defined concepts that guide empirical and theoretical investigations, allowing effective comparative theory application (*ibid.*). It is apparent that the literature on social learning is far from achieving this aim.

Individual or social change through the gaining of new knowledge is critical to social learning and two broad 'schools' of thought can be distinguished (Reed *et al.* 2010; Koontz 2014). For some, social learning can be equated more with *individual* level change (Bandura 1977), although separating out individual cognitive processes from wider social influences is

methodologically problematic (Reed *et al.* 2010). Individual level learning can be viewed in different ways, with for example Muro and Jeffrey (2012: 3) referring to relational, cognitive and technical competence ‘learning outcomes’ in participants via participatory approaches. Other contributions have stressed inter-personal learning within wider social-ecological contexts, including learning in organizations, i.e. *collective* level change. For example, Pahl-Wostl (2009) draws on the organizational management literature (Argyris and Schön 1978) to argue that social learning in adaptive environmental management can be understood via ‘loop’ learning allowing collective reflection and revised management actions through knowledge gained. Others (Gerlak and Heikkila 2011: 3) refer to ‘collective learning’ that occurs when ‘learning across members of a group is translated into social or institutional transformation at the group level’. Muro and Jeffrey (2012: 3) thus also refer to social learning as group ‘cognitive changes [that] ideally initiate a shift from multiple to collective cognitions’. Here, they describe how participatory processes can aggregate ‘multiple cognitions’ and, through a process of social learning, lead to a collective understanding of problems and mutually-agreed action (*ibid.*). But precise agreement on what constitutes social learning is unclear. Researchers have adopted different typologies and propositions, meaning that there is ‘a lack of conceptual clarity’ (Reed *et al.*, 2010: 2) and reduced capacity to compare between case studies prevalent in this literature.

To determine some common conceptualisations to guide comparative analysis, some of these arguments are re-synthesised by Reed *et al.* (2010). In their detailed review, they find that social learning might involve:

‘... a change in understanding that goes beyond the individual to become situated within wider social units or communities of practice through social interactions between actors within social networks ...’ (*ibid.*: 1).

They further argue that if social learning has occurred then it must meet two criteria. First ‘it must demonstrate that a change in understanding has taken place in the individuals involved’, either superficially in terms of new knowledge gained or via deeper attitudinal, ontological or epistemological change (*ibid.*). Second, learning must move beyond individual change ‘to become situated within wider social units or communities of practice’ through social interactions ‘between actors within a social network’ (*ibid.*).

Recent research has consequently sought to reconcile individual with more collective learning, suggesting a need for more integrated, multi-level analysis. Koontz (2014: 1574), for example, examines ‘individual-level cognitive gain as well as group-level emergent processes’ within watershed planning in the USA and Germany. Here, several indicators are employed to comparatively gauge both levels of learning. For Koontz, individual learning involves the transfer of information at an ‘instrumental’ level, in the form of knowledge about resources, and ‘communicative’ via knowledge about other stakeholder preferences, politically feasible solutions and planning processes (*ibid.*). Such individual cognition is contrasted with group learning which ‘encompasses relational elements of interacting... including trust-building among participants, network connections, and the development of group agreement’ (*ibid.*).

Rather than situating our evaluation in the individual or organizational schools, we therefore apply this multi-level ‘individual-community interaction’ perspective to evaluate both the individual learning of RFCC participants and also the effectiveness of the process as a means of group learning. These perspectives can be synthesised in the context of UK floods governance by drawing on several established normative indicators (Reed *et al.* 2010; Muro and Jeffrey 2012; Koontz 2014) to produce a composite analytical-theoretical framework (Table 1). Here, social learning is seen at an *individual* level where ‘surface’ (Reed *et al.* 2010) change is visible in participants. Drawing on Muro and Jeffrey (2008; 2012) and Koontz (2014), indicators such as individuals acquiring new knowledge on regional flood issues can be employed. ‘Deeper level’ (Reed *et al.* 2010) or transformative learning is detectable where attitudinal change occurs on the wider nature of flooding and its management. *Community interaction* learning can, drawing upon Koontz (2014) and others, be understood to be occurring where group interactions develop trust within the group, enhanced networking, and a degree of shared agreement on flood management decision-making, i.e. a collective cognition. However, we argue that, in relation to UK flood risk management, these group level indicators underplay the importance of actual outcomes in terms of accommodating local stakeholder participants preferences; seemingly a critical indicator of group learning, as the RFCCs were established specifically for this purpose. Without the incorporation of such preferences, social learning, and hence the ability of the Committee process to enable them, it could be considered ineffectual (see Table 1).

Table 1: an ‘individual-community interaction’ analytical-theoretical framework for evaluating social learning in UK floods governance (adapted from Reed *et al.* 2010; Muro and Jeffrey 2008, 2012; Koontz 2014).

Social learning type	Key indicators of multi-level social learning
<i>Individual learning</i>	<ul style="list-style-type: none"> • <i>Acquisition of new knowledge</i> about local flood management • <i>Deeper change</i> in understanding of wider flood and environmental issues
<i>Community interaction learning</i>	<ul style="list-style-type: none"> • <i>Development of trust</i> in community flood management decision-making • Development of community <i>network connections</i> • <i>Collective agreement</i> on flood management decision-making • <i>Integration of local community preferences</i> in flood management decisions

3. Regional flood risk management: the RFCCs

In the UK, regional flood risk management committees were originally established in the 1990s¹ and reformed in 2011 as RFCCs to provide greater local level collaboration in FRM (Lorenzoni *et al.* 2015). In response to devastating national-scale flooding in 2007, the Government commissioned the Pitt Review (Pitt 2008) to provide recommendations for reforming national flood risk management. Amongst its demands, the Review recommended increasing local level input to flood defence decision-making, something largely hitherto determined by central government agencies. New legislation followed via the Flood and Water Management Act 2010 (UK Government 2010), which aimed at implementing the Pitt Review findings by harmonising coastal and inland flood management with the needs of communities, the economy and the environment. Partnership arrangements were also specified between the ‘Lead Local Flood Authority’ and other relevant authorities, but the Act did not detail what they should look like. Local authorities were consequently given

¹ Prior to 2011, they were called the Regional Flood Defence Committees (RFDCs).

increased statutory powers, under the Localism Act 2011, to collaborate with government agencies and other bodies in flood defence provision. The national Environment Agency (EA) retained overall responsibility for managing risks from fluvial and coastal flooding alongside a central coordinating remit for all flooding. However, the RFCCs have now become key mechanisms for ensuring this collaboration.

There are 12 RFCCs, organised across eight EA regions in England and Wales, namely: the Anglian (Northern, Central and Eastern); the Midlands (English Severn and Wye; Trent); the North West; Thames; South East; South West; Wessex; Yorkshire and North East; and the Welsh Flood Management Committee. Although each Committee comprises the same actor types, including an independent chair, EA members, expert appointees and local authority representatives, composition varies slightly between regions, something that might mask clear collaborative objectives (Lorenzoni *et al.* 2015). Environment Agency actors organize and attend meetings, providing information and data to support decision-making. They also appoint local experts via a public recruitment process, including conservation, farming and landowning interests, to the Committees. Local authority representatives participate in Committee discussions and are the sole voting members on the funds each local authority may choose to allocate to flood management.

Government funding, or Flood Defence Grant in Aid (FDGiA), is made available in support of capital flood defence projects. Project funding is then allocated, by the Committees, according to both Government priorities, based on criteria contained in an ‘outcome measures’ (OM) scoring system², and local priorities. Where projects enjoy local support but cannot demonstrate requisite strong OM funding eligibility, they may still be financed through higher levels of local government contributions and partnership arrangements. Additionally, local authorities can employ a locally raised levy to supplement FDGiA funding for projects, which must be approved by the RFCC. However, the degree of local stakeholder participation varies and may be questioned (Lorenzoni *et al.* 2015).

² A critical factor in terms of current central government priorities for funding under the calculation formula is whether projects show significant benefits versus costs and protect housing (Outcome Measures 1, 2 and 3). Another factor is where projects additionally help meet statutory environmental requirements, for example under the EU Habitats or Water Framework Directive (Outcome Measure 4).

4. Methods

The South West and the Anglian (Eastern) regions were selected as case studies in order to assess social learning in UK flood risk management. In-depth case study approaches enable contextualised investigation of the elements that are the focus of such research (see Flyvbjerg 2006). These cases were chosen as they represent two leading examples of RFCC processes; hence comparative analysis of social learning within them would give an indicator of practices nationally. The South West region, which includes Cornwall and Devon, is prone to high rainfall and storm surges making coastal and river flood risks particularly significant, as demonstrated locally by the storms of early 2014. East Anglia, which includes most of the counties of Norfolk, Suffolk and Essex, generally receives lower precipitation but is highly susceptible to coastal erosion and coastal flooding (e.g. resulting from the December 2013 tidal surge; EA 2013).

The research employed an ‘elite’ interviewing qualitative research design, comprised of several inter-linked stages that were employed to structure data collection and analysis. According to Richards (2001: 199), an elite ‘implies a group of individuals, who hold, or have held, a privileged position in society and...are likely to have had more influence on political outcomes’. As such, the ‘elite’, in this case RFCC members, can potentially provide the researcher with data unavailable from other sources and a unique insight into decision-making. In conducting the research, the investigators firstly attended Committee meetings as observers and to collect membership contact details. Secondly, a semi-structured interview protocol was developed to elicit responses on individual and community interaction social learning. These questions were linked to the normative indicators in Table 1. Questions referred to what actors perceived that they had learned from, and their perceptions of, the Committee process at individual and group levels. Thirdly, the researchers then contacted individual Committee members to arrange interviews. A snowballing technique, based on individual recommendations of Committee members, was utilised to arrange further interviews. Fourthly, interviews were conducted across the case study regions between spring and autumn 2014. In total, seventeen 30-60 minute interviews were conducted with a diversity of actors, including local authority councillors and members and other experts (for example, EA appointees and representatives). Respondents were invited to talk freely around the questions posed. Finally, interviews were recorded, transcribed and analysed.

5. Results and discussion

The interview data were analysed using the framework in Table 1. Two reviewers were used to analyse these data in order to address issues of inter-reviewer reliability. The analyses focused on detecting individual and wider community-interaction social learning.

5.1 Individual learning

When considering individual ‘surface’ level learning, specific criteria were employed (Table 1). Interviews suggest that individual Committee members were generally positive about the knowledge and understanding they had gained on local flood issues from participating in the Committees, albeit with some qualifications. Many actors interviewed, such as local authority councillors and local experts, felt that they had learnt something new about flood issues within the region, implying individual forms of learning had taken place: what Muro and Jeffrey (2012: 3) refer to as personal ‘cognitive change’. Local councillors generally expressed this view, with one district council representative stating that participating in the regional Committee provided “the knowledge and the connections to make sure that I’ve got all the facts” (Respondent 5, local councillor) about coastal and water issues in their ward. This positive response was shared by other actors. For example, a local wildlife expert talked enthusiastically about the additional knowledge gained from the Committee process, in particular technical aspects of flood risk management:

“... I’ve really enjoyed ... understanding more about ... how we deal with the flow, peak flows – where they are, what monitors do what and ... again I suppose a better understanding of the Agency itself ...” (Respondent 14, conservation expert)

And similarly, an EA appointee indicated:

“Yes, hugely – because my knowledge was much more based on coastal management and less on flood issues although I knew a bit about flooding from my planning background [...] so yes I’ve learnt a lot more.” (Respondent 17, planning expert)

For another respondent, a Committee Chair, the more technical aspects of the EA’s flood defence work had been revealing. Here, Committee participation had led to a realisation that:

“There is an awful lot of work on an incredibly small scale that affects ... or protects ten, twelve, fifteen houses on a location and I never actually knew how much work goes into that.” (Respondent 1, Committee Chair)

Not all respondents shared these views, suggesting they had learned less than expected from the process due to its technicalities or, conversely, familiarity with these technicalities. Although only attending one meeting, a local councillor talked of the Committee process as providing a “broader aspect of what’s going on” (Respondent 11, local councillor) but felt rather lost by its technical nature. An EA interviewee (Respondent 6), in contrast, talked about “one or two things” that were learnt by attending, including about programme management and flood risks, although they qualified this view stating that they had worked in the area for over two decades, suggesting high levels of pre-existing knowledge. Another EA actor talked about how participating had helped in refining organisational communication strategies and presentation of information to the Committee - but no other aspects.

Such observations raise questions for the Reed *et al.* (2010) framework conceptualisation of ‘surface level’ individual learning and other similar arguments, since they do not readily provide sensitivity to different actor types, nor their learning capacities or propensities. In all interviews, respondents expressed the view that participating in the Committees led to them acquiring new information, which positively supports individual and social learning. But variable degrees of superficial learning were evident, with local councillors – many political appointees - exhibiting greater knowledge acquisition than dedicated experts. This ‘learning gap’ warrants further investigation since the results suggest that individual cognition is pre-conditioned by the existing knowledge base of participants.

On examining ‘deeper’ forms of individual learning, responses were difficult to gauge entirely. For some, a broader understanding of flood risk management issues, adaptation and climate change were enhanced. Some interviewees talked enthusiastically about their improved understanding of the wider RFCC process and practice. A few gained new knowledge of the national flood situation and even climate adaptation generally. For example, Respondent 4 (county councillor) referred to how his perception of flood management, which was “initially protective, defensive” against large-scale flood defence

projects had changed due to enhanced knowledge of their wider regional benefits. But whether this learning represents attitudinal or ontological change is difficult to establish; perhaps unsurprisingly since the presumption is that most actors had some prior concern over broader environmental issues and their management. In consequence, ‘technical actors’ such as those representing conservation bodies and the EA talked much less about deeper forms of knowledge acquisition. Upon application of the theoretical framework, it is suggested that, while deeper social learning had occurred with some individuals, in others the path dependency of pre-existing understandings constrained further transformational change.

5.2 Community interaction learning

The interviews provide some evidence of community social learning but with variation between stakeholder participants. Firstly, interviewees were asked about the overall working relationship within the Committees, to gauge levels of trust. Again, interviewees were generally highly positive about the Committee process in enabling trusting relations to develop. As a conservation expert (Respondent 10) indicated:

“... you’ve got a lot of people round the table and [...] it’s a sort of long term building relationships and [...] it’s professional in terms of the quality of discussion, it’s well managed by the chairman and it’s respectful ...it’s also honest...”

Secondly, networking between individuals and groups was evident both within and between RFCCs. For Koontz (2014: 1574), such networking constitutes ‘the links that are newly established or strengthened as a result of group interactions’. In the context of the Committees, their recent formation would infer that networking would initially be limited but interviews suggested that dialogues were already forming at both individual and organisational levels. Some local councillors had built alliances with colleagues from other authorities but, interestingly, alliances could be party politicised (Respondent 10, local councillor). There was also evidence of inter-Committee networking, knowledge exchange and hence learning. For Committee Chairs, this occurred through a national-level network organised by the EA to facilitate discussion on RFCC best practice. Other Committee members, including experts, local councillors and EA officers, were networking with colleagues at regional and local scales through other committees they attended.

Thirdly, collective agreements were evident too, with decisions largely taken in a consensual manner (see Benson *et al.* 2015). Despite some divergence in opinions, there was evidence of ‘collective cognition’. For example, one Committee Chair talked about how consensus was gained between local authority actors and the Environment Agency, suggesting that this process was “sometimes political” but on the whole members worked constructively with each other (Respondent 1, Committee Chair). The point was also made that relationships were necessarily still evolving. This view was supported to an extent by ‘expert’ actors, who, as non-voting members of the Committee, sometimes felt side-lined by local authority representative interests (Respondent 2, wildlife expert). Here, according to the interviewee, although the process did not “strike me as being... dysfunctional” and presenting “a good working relationship between people”, they added that “there are always local politics at play” (*ibid.*). In the context of both Committees, this ‘politics’ naturally revolved around elected representatives and localised interests in agenda setting, often set against centralised EA funding objectives. That said, the opinion generally expressed by interviewees was that any disagreements were handled constructively, with Committee Chairs providing a strong steer on the collaborative process. Indeed, many participants commented on the important role played by Chairs in bringing individual viewpoints into the decision-making. The RFCCs also require establishment of working relationships with Environment Agency staff to facilitate the Committee processes. Participants interviewed all commented on the professionalism of Agency staff in undertaking this task.

Finally, most local stakeholders perceived their interests were incorporated into decisions, although some actors felt their input was constrained, for two reasons. Firstly, for non-voting NGO or expert appointees, influencing decision-making sometimes proved problematic since local authority and Environment Agency agenda setting is structured into funding decision-making. Some felt that decisions were often agreed in advance of funding meetings, thereby reducing opportunities for influencing. Secondly, local authority actors also expressed the view that the OM scoring mechanism often gave priority to meeting central government objectives and higher profile flooding issues, thereby pre-determining outcomes. The requirement for match funding projects also deterred some financially hard-pressed local authorities from prioritising locally significant flood management projects not considered eligible for direct funding. One local councillor (Respondent 10) explained how integrating local values could be difficult as “each district has got its own problems... so it’s down to

whether a local issue and the local council... would attract funding”, the inference being that the RFCC prioritised more strategic projects.

5.3 Social learning: an overall assessment

Returning to the analytical framework (Table 1) enables overall assessment on the extent of social learning that occurred, based on interviews undertaken. In *individual change* terms, almost all Committee members experienced surface or instrumental learning in terms new knowledge acquisition, although (as discussed above) there was variance. Individual interest and capacity to learn from participation in the Committee process exerted some influence in this respect. *Deeper change* individual learning appeared less evident, suggesting that this indicator is more appropriate for collaborative participatory processes where differing actor groups are brought together for participatory environmental management. One reason why individuals may not have undergone deeper change is almost certainly the high levels of understanding of flood issues and environmental risks that Committee members already possessed. This observation also challenges conventional theory on social learning, since stakeholder participation can still be considered ‘effective’ even where individual learning change is seemingly superficial. *Community interaction* learning, on the basis of stated responses, was also variable. Levels of trust, networking and collective agreement were high but some evident constraints existed to group learning in terms of localised preferences being incorporated into decision-making as undertaken by the Committees. These were primarily related to the institutional structure of decision-making.

5.4 Factors inhibiting social learning

Several factors may be inhibiting social learning that could relate to top-down structures and governance culture. Previous research points to cultural, social and ecological facilitators to social learning in water management (Mostert *et al.* 2007; Pahl-Wostl *et al.* 2008) but little discussion exists on how institutional structures constrain learning. In this respect, while individual forms of learning in terms of establishing new relationships and acquiring new knowledge were largely facilitated by Committee processes, top-down rule-based institutions - such as the government’s OM scoring system - has placed constraints on group learning. Thus, while central government has sought to promote participation in funding decision-

making at the regional scale, it has retained a strong steer on the scope of this input through prioritising specific objectives. Problematically, these funding objectives sometimes do not coincide with local preferences, thereby restricting the options for group decision-making. Such institutional constraints may also reflect deeper ontological factors. Enserink *et al.* (2007) show how national cultural styles with regards to public engagement in water management may influence social learning. A paternalistic ‘agency culture’ has historically existed in UK water governance, whereby stakeholder participation has been interpreted in more narrow, centrally controlled ways (Benson *et al.* 2013; see also Woods 2008): something reflected in the Committee engagement approaches.

5.5 Opportunities for reflexive change – bottom up solutions

Despite the constraints imposed on wider community interaction by top-down institutional structures, our interviews nonetheless revealed both an appetite for change amongst participants and opportunities for reflexive adjustment. Organizational forms of social learning suggest that actors reflect on management processes in light of experience and incrementally adjust them to improve practice (Argyris and Schön 1978; Pahl-Wostl 2009), i.e. ‘single loop’ learning. Within RFCCs, actors were to a degree already undertaking such ‘management as learning’ (Huntjens *et al.* 2012: 67). In increasing their technical knowledge of FRM issues and the funding mechanisms, some actors were networking beyond their own Committees by establishing horizontal links with other regions, local coastal resilience groups and EA-sponsored community flood forums. Committee members were evidently eager for information on their regions and other localities to better their work (Benson *et al.* 2015); site visits were valued mechanisms for examining directly some of the issues discussed in the Committees as well as opportunities to network further with the Committee members. Horizontal networking learning could therefore be undertaken on a more formalised footing, through sharing best practice via inter-regional exchanges and greater knowledge transfer, for example through Committee websites. Committee members also identified the need for more training in understanding the OM scoring system and how programmes of work were designed, as their complexities did present a barrier for some actors to fully engaging with the process (*ibid.*). Actors in the South West Committee had also reacted to a perceived input deficit within investment decision-making by incorporating local environmental values through a dedicated sub-committee. As several interviewees

pointed out, local environmental concerns were sometimes marginalised *vis-à-vis* property protection priorities by the OM system. By ensuring these concerns were discussed in an adequately structured and composed sub-committee prior to main funding meetings, the argument presented was that they could be better integrated into final decision-making. Here, participants had reflected back on a specific problem, reframed their perceptions and changed the decision-making in response - a cognitive process that organizational theorists would recognise as 'experiential learning' (Kolb 1984).

6. Conclusions

In setting out this paper, we asked to what extent is learning occurring in the Committees? Although there are various approaches to measuring social learning, our analysis was guided by an adapted multi-level framework that focused on individual and wider community learning. Interviews conducted show that while individual 'surface change' was widespread amongst Committee members, 'deeper' ontological changes were less evident. From a 'community interaction' perspective, these actors also engaged in group learning through collective decision-making based on trusting relations and development of networked relations. However, translating some local values and preferences into decision-making was somewhat constrained. While the effectiveness of the Committees could be questioned using these social learning indicators, the findings should be contextualised. Stakeholder participation, in this case, has been in part constrained by the requirement for the Committees to include local government actors in decision-making, which has resulted in only limited engagement with local communities and their preferences. However, there are opportunities for moving beyond the 'agency culture' to a more inclusive approach through the promotion of learning and reflexive change. Our research notes the development of mechanisms such as the environmental sub-committee, in addition to knowledge exchanges between RFCCs and local scale networks such as EA-sponsored flood forums and coastal resilience groups.

We therefore detect five areas of future research. Firstly, more information is required on how wider learning can be promoted through mechanisms such as sub-committees, training and networking, in order to better incorporate multiple interests into funding decisions. Secondly, more research is required into how top-down structures shape stakeholder

participation and social learning, and indeed other measures of ‘effectiveness’. We highlight constraints imposed on lower level FRM decision-making through centrally-imposed institutions but more data are required on how UK central policy makers are constructing flood and coastal issues in Committee mandates and processes. Thirdly, further theoretical work is needed in developing a more sophisticated framework of individual and community learning, that, tested empirically, would encapsulate the multiplicity of learning detected in our research. Fourthly, repeat interviewing with respondents could elucidate whether learning is occurring over time. Finally, the UK’s experience of flood risk management and, more specifically, funding flood protection should not be seen in isolation. Many countries face concerns over national climate adaptation strategies, providing significant scope for cross-national comparison and ‘lesson-drawing’ (Benson and Jordan 2011) on FRM effectiveness. Testing an ‘individual-community interaction’ type framework in comparative national contexts (for example, Koontz 2014) could provide one potential approach in overcoming the conceptual ‘travelling’ problem. Such research could then develop internationally comparable, policy-relevant recommendations for sustainable floods governance, which will assume ever greater significance if the predicted future impacts of climate change become manifest.

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