‘Learning for resilience': Developing community capital through flood action groups in urban flood risk settings with lower social capital

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Abstract

The role of civil agency in preparing and adapting to changing risk is an increasingly critical element within devolved local flood risk management. However, effective civil agency for flood resilience needs to draw on, and if necessary develop, community capital. Community Action Groups form one model for local resilience building for flood risk, and one actively supported by some governments. This research evaluates the participatory model of flood group development involving horizontal support rather than top-down or bottom-up generation. The process involved nascent groups working with an NGO facilitator in the implementation of a set of processes framed in the context of ‘learning for resilience’ that supported flood group development in a situation of challenged social capital (lower socio-economic status; health issues, lack of previous flood experience) in the UK. The methodology involved repeat semi-structured interviews with flood group members and flood risk management (FRM) agencies who worked with them through the process, as well as observation of flood group meetings. Results outline how groups emerge from transient and disconnected communities, the value of local knowledge, evolving communication skills and agency, normalisation of group members within participatory processes, frustrations within these processes, group sustainability and FRM agency perspectives. Discussion then critiques the co-working/partnership model and assesses its implications for social ‘learning for resilience’ within challenged flood groups with variable social capital. The authors propose a framework (‘The 6Ss’) for anticipating concerns or barriers within such participatory processes as a guide to future local urban DRR practice.

Keywords civil agency, flood group, activism, flood risk management, participatory processes, resilience, social learning

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1. Introduction

Floods have immediate and longer-term socio-economic impacts, scaling up from individual household to community (Werg et al. 2013; Lamond et al. 2015; Alfieri et al. 2016). However, even when individuals do perceive risk, evidence suggests they may not behave rationally to protect themselves against future flooding (Baker 2007)[1]. Similarly, in considering public flood risk awareness from behaviour change and 'reasoned action' perspectives, Clark and Priest (2008) challenge assumptions of a straight-forward information transfer from government agencies to the public. More recent community-based approaches to resilience-building contrast by focusing on development of collective capital and knowledge networks, integration of scientific and local knowledge (Landström et al. 2011), and value of social learning (Benson et al. 2016), with its links to development of 'actionable knowledge' for resilience. These approaches recognise challenges in framing 'community' as the unit of analysis (Pelling 2007; McEwen et al. 2016), and the contested nature of the term 'community resilience' (Whittle *et al*. 2010).

Important roles of civil society in disaster risk reduction (DRR) are increasingly acknowledged (Gaillard and Mercer 2012). In practice during disasters, local people are frequently 'first to respond, last to leave' (Vallance and Carlton 2015). This raises important questions about civil agency[2] within *all* phases of DRR, but particularly in preparation and adaptation (Royal Society 2014; Cretney 2015; UNWCDRR's 2015 *Sendai Framework for Disaster Risk Reduction 2015-2030*). Challenges for local or community-focused, participatory disaster risk assessment (PDRA) include degrees of empowerment, types of knowledge generated and transferability of processes (Pelling, 2007).

> 'Participation is not a panacea, but it does offer a range of opportunities for progressive policy making. Users, subjects and audiences must be clear about what PDRA is if its benefits are to be realised.' (Pelling 2007, p377)

Such debates around Civil Society and PDRA reflect an emerging 'risk society' (Beck 2000), with socio-political decisions about public versus private responsibility. For flooding, most acknowledge that adaptive approaches are needed, prioritising 'preparation for quicker recovery' within 'the Extreme Weather Adaptation Cycle' (EWAC; Figure 1). Implicit is increasing expectation from government that Civil Society will play more prominent roles

requiring effective 'civic agency'. Indeed, within the UK, community participation is envisaged politically as having a key role in social change (e.g. Localism Act 2011; *Big Society*[3] agendas).

Extreme UK floods have been recurrent causes of emergency events, affecting urban, rural and coastal communities, and accompanied by serious impacts on human security and wellbeing, mobility, economies and livelihoods. A paradigm shift in the mid-1990s from '*flood defence'* to '*flood risk management*' (FRM) (Tunstall et al. 2004) has resulted in UK flood governance responsibilities becoming more distributed - a pattern mirrored in other countries. While direct responses to disasters and moments of crisis are planned for, and managed by, regional government Civil Contingency Units (CCUs), local preparation is undertaken by specific groups (e.g. multi-agency Local Resilience Forums) operating at local or regional levels. The *Pitt Review* (Cabinet Office 2008), after the UK 2007 floods, emphasised need to recognise value in local knowledge held by volunteers (26.18, 28.12), while the UK *Flood and Water Management Act* (2010) involves a 'duty to consult' the public. Civil Society organizations and networks now fulfil roles and responsibilities across temporal and spatial elements of wider risk management (Civil Contingencies Act 2004). The UK's National Flood Forum (NFF), a national charity supporting flood-affected people, has taken on important roles in capacity building of local flood action groups, promoting a particular participatory model of multi-agency co-working (Section 2.1).

Ability of different 'Civil Societies' to manage extreme flooding is, however, dependent upon the geography of economic, socio-cultural and demographic characteristics. Deprivation and social capital are not necessarily completely inversely related. The nature, character and diversity of those who are exposed and vulnerable vary greatly at the hyper-local, opening up potential for risk management to impact positively or negatively on issues of social and environmental justice. This requires reflection about inclusivity in grass roots activism and volunteering in 'community flood groups', and the social learning and community capital (Cutter et al. 2010) that needs sharing in effective community-led adaptation. Underpinning this are important questions about how such flood groups 'learn for resilience' and what 'resilient knowledge, skills, attitudes' might mean here. This framing integrates with new understandings of social learning (Benson et al. 2016) and collaborative governance (Challies et al. 2016) in FRM, as well as notions of flood, water and wider ecological citizenship (cf. Nye et al. 2011; '*Towards Hydrocitizenship'* project[4]).

In this paper, we aim to evaluate the effectiveness of a participatory co-working model (the NFF approach) for building empowered, effective community flood action groups in

'underserved' settings, in terms of building community capital and 'learning for resilience'. The context is a challenged urban flood risk setting in the UK, independently evaluated as part of a government-funded, community, flood resilience pilot project. We start by framing what social learning for resilience and community agency in FRM might mean in this context. We consider participatory models for developing community capital, including characteristics and implementation of the NFF model in this case-study. Having presented results, we then discuss implications of this participatory model in practice of developing action groups in more challenged settings – both for communities and organisations with FRM responsibilities (e.g. environmental regulator; local government; NGOs; hereafter FRM agencies). Finally, we propose a framework for anticipating concerns or barriers within participatory processes of group development in such settings.

2. Framing social 'learning for resilience'

2.1 Social learning for resilience

Reed et al. (2010) argue that varied conceptual understandings of 'social learning' exist in the literature, proposing that processes:

> 'must (1) demonstrate that a change in understanding has taken place in the individuals involved; (2) demonstrate that this change goes beyond the individual and becomes situated in wider social units or communities of practice; and (3) occur through social interactions and processes between actors within a social network.' (p1)

Extensive literature already discusses individual knowledge, skills, attitudes and values required in Education for Sustainable Development (ESD; e.g. UNESCO, 2014). These include critical and holistic thinking, ability to imagine future scenarios and make collaborative decisions. Within DRR, skills for resilience like agency, power and ability to participate are already being explored (see Pelling 2007; Mercer et al. 2010; Twigg and Bottomley 2011). However, less considered are different knowledges (expert, lay, vernacular, intergenerational, hobbyist, citizen science) and dispositions (affective domain) needed in 'learning for resilience'; indeed, what 'resilient capabilities' and skills ('knowledge as practice') might look like as individual or group attributes. This requires reconciled thinking around learning for sustainability and resilience (cf. Sterling 2010). What is clear, however, is that managing for resilience requires ongoing social learning to increase adaptive capabilities.

‘Learning for resilience’ through formal or social learning (McEwen 2011) can be considered through different adaptive frames (e.g. social and emotional/psychological, economic, institutional, infrastructural, environmental resilience and community capital; cf. Cutter et al. 2010). Dufty (2012), in Australia, notes increasing adaptive capacity as a key element in community flood education. Also relevant is the concept of the resilient adult learner (Hoult 2013), equally applicable in social learning contexts. Importantly, reflection on ‘learning for resilience’ also needs to consider actual learning processes (e.g. role of participation and experience), and what might be ‘significant learning’ (cf. Fink, 2003). Mezirow and Taylor (2011) in framing transformative learning, or ‘learning that promotes change’, emphasise key relationships between learner, teacher and learning settings. For example, communicative learning involves understanding meanings of what others communicate – values, feelings and concepts like commitment, autonomy, democracy rather than solely ‘learning to do’ (Mezirow 1990). Other learning theory is relevant. Promotion of ‘double loop learning’ (DLL; Argyris 1976) encourages people to think more deeply and critically about their own assumptions and beliefs in determining goals in decision-making. Thomson et al. (2014, p1184) argue from literature evidence that to promote DLL requires FRM (and its stakeholders) ‘to be proactive, seek new knowledge, be creative, question, and be holistic when making future based decisions’.

2.2 Community action for flood risk reduction

Participatory disaster risk reduction is an evolving endeavour (Pelling 2007). Community involvement in local FRM is not new in the UK (or internationally) although national differences occur relating to culture and governance histories (e.g. Flood Action Groups ‘on rise in UK but nowhere to be seen in Netherlands’; Forrest 2015 np). Historically in the UK, approaches to public capacity building involved top-down, information transfer from agencies to individuals. In contrast, participatory models of risk reduction now focus on building capacity and capital of local groups or communities. Such models vary as to whether impetus for learning and knowledge mobilisation is bottom-up or horizontally exchanged and facilitated. Environmental action groups, including flood groups, have also recently increased (Geaves and Penning Rowsell 2015; Twigger-Ross et al. 2015). For example, since 2000, numbers of community flood groups in England and Wales have built exponentially to >200, triggered by increased incidence of high profile, impactful extreme floods (e.g. UK Summer 2007; Morpeth 2008; Calderdale 2012; winter 2013/2014 on Thames/Somerset Levels). Groups tend to combine geographical communities of interest around particular environmental problems (e.g. campaigning for local flood mitigation or effectiveness of water

infrastructure), with ‘care of place’ (McEwen and Jones, 2012). Roles of specific citizen sub-groups, like older people[5], in volunteering, activism, advocacy and nurturing for ‘care of place’ are important (e.g. Wiles and Jayasinha 2013, New Zealand). Understanding socio-economic and neighbourhood-related determinants of participation in particular settings is critical (Ziersch et al. 2011).

Models of community groups (flood, environment, health) based on primary drivers and operation vary (Table 1). Flood group goals are wide-ranging, including production of community flood plans or campaigning to FRM agencies for flood mitigation. In some models, flooding is sole focus of resilience planning; in others, it is integrated with other local risk or ‘care of place’ issues (e.g. extreme weather, transport), or piggybacked on activities of community planning groups (e.g. UK Parish Councils - lowest governmental tier). Initiators and timelines for flood group development are also critical; with groups, as associations or nuclei of people (Hemming 2011), frequently mobilised by ‘champions’ during or immediately after extreme floods. In England, the autumn 2000 floods on the River Severn triggered development of the NFF, drawing composition from pre-existing flood groups. Originally set-up by flood affected individuals to support and represent individuals and communities at flood risk, NFF’s role has evolved to supporting people in flood preparation and mitigation. NFF’s ethos is that the best way to progress local FRM is by communities working together with locally responsible agencies, including local government, environmental regulator and water companies, referred to as a ‘multi-agency’ approach (MAM). NFF’s facilitators are skilled in working *with* community groups to increase their ability to work effectively with these agencies in local flood mitigation. This approach to flood group development comprises three stages (Figure 2).

Other framing about community and multi-agency capacity-building through building of participatory groups includes concepts of ‘bridging’ and ‘bonding’ social capital in community health group development (e.g. Kirkby-Geddes et al. 2013), and *Learning and Action Alliances* (Ashley et al. 2012), which act as a vehicle for innovation and collective active learning on how to enhance community-based (flood) risk management (see *Blue-Green Cities project*). In practice, while different participatory models exist for developing community action groups, their strengths and limitations, and factors which lead to successful groups in different settings, are under-researched.

Flood groups have variable longevity. Anecdotal evidence suggests they can have persistence over many years in settings with repeat flood exposure. Flood memory and associated lay knowledge act as important catalysts for activism within communities

(McEwen et al. 2016). Active remembering with rehearsal and reinforcement of flood memory occurs through a group's on-going campaigning activities to secure official inputs to their flood protection. These shared 'revisited' memories are important in sustaining cohesion, focus, and commitment in flood groups. However, other groups can be more driven by shorter-term goals leading to disbanding, while group dynamics can also cause schisms, dissipating impact for local resilience building. 'Fading memories' of floods and associated community cohesion may also impact on group longevity. If recent flood experience is a principal motivator for collective grassroots action, this poses critical questions about how civic agency can be mobilised in 'at risk' settings without recent flood experience, and/or which have limited community capital and resources. Importantly, how can 'learning for resilience' develop or be developed within such communities, and what are their different needs?

3. Methodology

The case-study area was originally selected by the project as it combined a suburb of a large city subject to significant complex flood risk, with areas with severe inundation during the UK Summer 2007 floods (Hannaford and Marsh, 2007), and vulnerable 'at risk' residents with variable flood risk awareness - as perceived by FRM agencies. The area contains five LSOAs[6] within the 10% of most deprived areas in England (using Multiple Index of Deprivation[7]; also *Climate Just*[8]). Here two new flood groups, differing in terms of prior capital, were set-up in 2014 using the NFF model. The first group (hereafter Group A) was centred in an area of high deprivation without recent flood experience. Area A contained wards with high unemployment levels and the city's highest levels of youth unemployment. Life expectancy was below the city's average and educational attainment of children was low. Group members were defined as 'vulnerable' because of interactions of risk factors such as low educational attainment, limited income, mental illness, physical illness, or other inadequate psychological, social, or cognitive resources (Horowitz et al., 2002). Group B was established in a less deprived area that experienced severe flood impacts in July 2007. Area B was characterised by lower levels of unemployment below the city's average. Census data (2011) indicated significant proportions of households in Area B contained older families and pensioners, both with average and lower incomes.

Research involved observations at flood group meetings, focus groups and individual in-depth, semi-structured interviews (*ca.* 1 hour duration) with flood group members and the NFF facilitator (hereafter 'facilitator'). All flood group members were approached for

involvement; availability and willingness then determined selection, with interviews proving effective ways of allowing less vocal group members to be heard. Observations were carried out three times throughout the project (Table 2), and used to evaluate changes in perceptions and behaviour of group members as NFF processes moved from stage to stage. Interviews explored strengths, weaknesses, opportunities and threats to group development in context of 'learning for resilience'. Themes included perceptions about status of 'community', local knowledge, flood experience and flood risk knowledge, motivations for joining the flood group, group dynamics, personal skill development and reflections on the participatory process. Interviews and observation notes were transcribed and coded within QSR-Nvivo software (see Figure 3A/B). From initial in-text (or in-vivo) coding, transcripts were analysed using a grounded approach (cf. Strauss and Corbin 1998) to identify emergent themes and alternative views, then re-evaluated independently by two researchers to avoid cognitive bias. Grounded theory is well-suited to studying local interactions and meanings related to social contexts in which they occur (Willig 2001); with QSR-NVivo allowing nodes and relationships to be presented diagrammatically to aid theory development (Hutchinson et al. 2010). Theoretical sampling (cf. Charmaz 2000) involved returning to data collection after completion of observations and interviews to ask individuals more focused questions about their experiences and opinions, and for information that could help elaborate categories and conditions, and limits of their applicability. Later interviews with group members encouraged their critical reflection on the success of multi-agency meeting (MAM) processes (Figure 2), with flood group leads re-interviewed in May 2016. Ethical clearance for the research process was obtained through the host university, with attention to participant consent and anonymization, with pseudonyms used.

In order to understand processes from the NFF perspective, the facilitator was interviewed and her role observed as part of flood group meetings. Six members of FRM agencies involved in MAM processes were also interviewed to capture their reflections on the flood groups' development from different organisational perspectives. This allowed exploration of longer-term sustainability of flood groups - working with local FRM agencies - when the facilitator had withdrawn.

4. Results

Results are presented in relation to emergence and establishment, development and efficacy (skills and agency), and sustainability of groups, with indicative quotations.

4.1 How groups emerge from transient and disconnected communities

The facilitator described initial work in group development as 'difficult' and 'intense', particularly in relation to Group A. Incipient group members similarly saw themselves as part of 'a struggle' against local, socio-economic hardships, and ambivalent or apathetic neighbours.

> *'There are pockets of community around here…but the idea of a neighbourhood community is vanishing.' (Tim, 41-65, Group A)*

> *'The [City's] problems are a microcosm of the rest of the country. There are no facilities for young people, high unemployment….. Put the two together…general apathy and general disillusionment. There is apathy of community spreading throughout this country.' (Harry, 66+, Group A)*

Members of both groups linked transience of population and limited sense of place to problems of apathy as significant threat to development of a functioning flood group.

> *'[City] is a transit camp. They [the population] came here for work and now there's no work.' (Paul, 41-65, Group B)*

> *'It is a transient community – people don't get involved as long as things are ok. A lot of people have come here 10, 15, 20 years ago. They've got no idea of what was here before or the history of how it was built…Older people have lived through harder times. Their attitude is, you just have to deal with it.' (Alice, 41-65, Group B)*

Even when the groups became more established, members still pointed to disinterest from neighbours, despite acknowledged similar flood risk. Internal apathy was also cited as a potential threat to Group A's longer-term future. However, in response, interviewees generally reflected on their own willingness to do groundwork, positioning themselves as 'fighters' who stand out from 'their defeated community':

> *'We did originally ask other people to join [the flood group] but the trouble is a lot of people are apathetic about things like that. They think it will never happen again. It's the groundwork – putting your wellies on and your mac and going out and getting dirty – that's what is needed now. You need people who are prepared to go out into the community and physically do something.' (Kate, 41-65, Group A)*

In trying to find people willing to join Group A and due to the incipient group's fragility, the facilitator would often drive members to meetings and, outside of work time, meet for refreshments. Members were described (by the facilitator) as '*not who you would typically expect to be in a flood group*', and not used to being heard or having their opinion sought.

> '*I suppose I felt that I had to do what was necessary to support them to carry on as a group. At the time that felt like an appropriate thing to do. It was me showing them that they are important and that they can do it.'* (Facilitator)

4.2 The value of local agency and knowledge

Some members of Group A expressed motivation for being involved was often less about flood risk, and more to be part of 'something'. In explaining 'why they joined', interviewees described their will to talk to people, or to 'get involved'. During interviews, flood issues were often side-stepped or avoided, replaced instead by an impetus to counter local apathy by 'doing something' and that 'voices needed to be heard'.

> *'I like to get in with the community. I talk to people. I go out and I find out a few things. That's what it needs – people out talking to people and you will find out what they think.'* (Betty, 66+, Group A)

They perceived these engagement skills as unique and unobtainable to people outside their sphere of influence.

> *'Because Don and I walk about with the dog around all the areas in [city] – in our area anyway – this is how we got our knowledge of where the floodplains are. So [facilitator's name] liked that.'* (Kate, 41-65, Group A)

Interviews revealed some group members' depth of local knowledge. For example, the secretary and chair roles in Group B were occupied by local people with very different, but extensive, lay knowledge of place. The Secretary, Alice, was born in the area and described parts of the city before development as 'fields that would always flood.' The Chair, Martin, had been repeatedly flooded, subsequently investing considerable time in understanding

flood issues, emerging as a trusted 'citizen scientist' and 'lay expert'. Martin's technical expertise was widely acknowledged, particularly his local river knowledge, understanding of flooding triggers and willingness to engage with FRM agencies.

> *'Martin is invaluable because he'd be the first one to come around and say there is a risk of flooding. He measures it all the time.'*
>
> *'I've got more confidence in Martin knowing than what they [the agencies] do.'* (Mike, 66+, Group B)

Prior agency is evidenced in previous efforts to communicate this knowledge to FRM agencies but in ways often resulting in confrontation and animosity.

> *'When I met with Martin (Group B) for the first time, he explained how he got frustrated in talking to the EA, felt the EA was lying to him, and felt they were getting nowhere except by going through their MP and pressurising agencies. Martin's wife also said how much of Martin's life these means were taking up.*' (Facilitator)

The facilitator indicated other group members had similar histories of conflict with FRM agencies.

> '*When I was with [Group B] I had to say to them, you can't do the finger-pointing, you can't [be] contentious. [Group B] were used to doing it very politically, using people of power to get where they wanted to get but they never truly got themselves heard.'* (Facilitator)

When Group B later had its MAM, members felt completely confident that with Martin's expert knowledge, they had local river/rainfall 'facts on their side', and so their concerns needed to be taken seriously.

> *'We can show river and rainfall levels going back a number of years. The Environment Agency checked their records against Martin's records and they found hardly any difference so they have to talk to us. They can't fob us off because they know that we know about the river [name], [name] stream and the water storage area.'* (Paul, 41-65, Group B)

During MAMs, Martin's data and photographs enabled the group to question the environmental regulator's 'expert knowledge':

> *'When Martin showed the Environment Agency representative a photo of the storage system having been topped, the look on the representative's face, he was shocked. We are not just talking - Martin can produce photographs. Martin talks in facts.'* (Alice, 41-65, Group B)

4.3 Evolving communication skills and agency

Individual members, particularly in Group A, quickly recognised they could offer valuable communication channels with local people to meet broader needs of addressing 'disconnected communities'. With Group B, it was clear that communication skills and effectiveness of engagement developed with the NFF process, with increasing senses of strategy and agency evident. This developed into more nuanced acknowledgement of the group's potential communication role in effective bridging between FRM agencies, and also between these agencies and communities. However, effective patterns of communication were still being established in Group A as Group B began more effective engagement with agencies.

As demonstrated below, the groups provided fora for necessary dialogue but also impetus to work collectively in problem resolution. Historically, there was a long-standing concern among Group B members that the town was facing flood risk problems because of lack of 'joined up thinking' in water management:

> '*There doesn't seem to be joined up action in [the city] to see what action building in [reservoir name] is going to have 3 or 4 miles away in [our area]. Until someone takes a helicopter view of [the city], we won't get anywhere.'* (Paul, 41-65, Group B)

Group B members therefore saw their own roles in the participatory processes as more integral than simply exchanging knowledge and argument with agencies. Rather they conceived themselves as 'a conduit' – an enabling mechanism through which agencies could finally come together for dialogue. Group B members clearly demonstrated a greater sense of strategy and agency, acknowledging effects that NFF processes had had on agencies as much as they had had on them.

'We are almost a conduit, pulling information from each agency and then turning to the other agency and saying, 'this is what so and so says, what are we going to do about it?' That's the way I see it going for the next 6 months or so.' (Paul, 41-65, Group B)

'They [the agencies] are talking to each other as well, which we found at the last couple of meetings. At the initial one, they didn't have a lot to say to each other but now they realise that they are all interconnected and it's all their responsibility in the end the day.' (Alice, 41-65, Group B)

4.4 The normalisation of group members within the participatory process

Reflecting on the NFF's participatory process in the latter stages, interviewees from both groups described how 'hot-headedness' had been removed from group meetings, describing an atmosphere where less-vocal members could speak freely and where agency representatives were not harangued. This was partially due to the facilitator's initiative; when asked about group dynamics, she described how she had needed to adapt the NFF model to accommodate new circumstances, with much greater investment in facilitation time.

'The [Group A] area was so different that you had to build up a relationship with them in order for them to go out and do other things for their community and themselves. To get them involved in the project, I had to do it in a different way. Some groups just run with it. You say, set-up a flood group and get some people who want to be involved. That could work in some areas that have flooded – it has worked in other places I have worked like Hampshire – but here, it just didn't work.' (Facilitator)

The NFF approach emphasises measured exchange and information sharing in an ethic of constructive dialogue. While some members appeared to have started the process with attitudes of antipathy and even antagonism, when interviewees had completed early stages of the NFF process, clear evidence existed that these behaviours had been moderated. Even the more 'hot-headed' members had come to show restraint, and interviewees generally expressed a willingness to consider contrary viewpoints. For example, at the outset of one MAM, a Group B member tried to reassure the facilitator, telling her 'not to worry' as there would be 'no fights.' During subsequent interviews, it became clear several

group members had troubled histories of 'repeatedly complaining' to agencies, and what they saw as failures to progress local flood alleviation measures.

Interviews showed that flood group members in both groups had adapted in response to the NFF process. One Group A member explicitly praised ways of working that had removed emotion from meetings while retaining skills:

> *'To some extent the model is working. It is probably the most rational approach. It reins in any potential hot-heads; because our potential hot-heads also have useful skills.'* (Tim, 41-65, Group A)

> *'We are calm now. The group allows everyone to have their point of view – no one takes over.'* (Alice, 41-65, Group B)

> *'It's drilled down, fair enough. It's put in a polite way, fair enough. To jaw-jaw is better than to war-war, as Churchill once said.'* (Harry, 66+, Group A)

One Group B member also alluded to the facilitator's ability to keep the group calm, indicating that this had made the difference in the group's ability to work with FRM agencies.

> *'It's like the lady from the Flood Forum said, you've got to show them that you're not their enemy; you only want the best for the area. You want to work with them to find a solution to the problems.'* (Mike, 66+, Group B)

The facilitator perceived that early stages of the process, although fraught, were cathartic for group members. Progress may have seemed slow but this release was seen as essential.

> *'If you keep having the meetings people will be able to work together on something. That's the only thing that we provide, I suppose, the reassurance to the people that they've got to keep going. Normally it takes three or four multi agency meetings until things start to happen because you've got to build up the relationships. Then you have to get through all the detail, like with Martin in Group B, you had to really talk about his [suggestions], and the EA have really got to talk about theirs. But when you get to the third or fourth meeting then you can really start to push things forward. That could take like six months.*
> (Facilitator)

4.5 Frustrations within the NFF process

Group A members were able to list several positive outcomes which had been realised since the process began. However, at times, they still found restraints of the participatory process, which had improved their communication with agencies, difficult to adapt to.

> *'The Forum seems to be going round and around the same thing. There's nothing been done on the flood group, as far as I can see, except, they've built up a few people that want things done*.' (Bill, 66+, Group A)

> *'The group is demoralised; just needs a pat on the back and to feel they've achieved something. It's like you've done your revision for a major exam but you haven't got anywhere.'* (Kate, 41-65, Group A)

Group A contained six people who were also members of other local groups, including neighbourhood watch, education groups and medical support. These members in particular described frustration at the negotiation and rehearsal of their collective responses. For example, Bill (Group A) was very clear about the rationale for his involvement:

> *'People like me want to see an improvement in our living standards and to have a living standard, you've got to have dry land to stand on.'* (Bill, 66+, Group A)

However, Bill's drive was tested by the perceived slow pace of the process which sometimes jarred with his need to help his neighbours:

> *'We've got a meeting coming up and I'll see what is happening there. Otherwise I'm going to have to say, 'sorry but we are doing it ourselves'.' (*Bill, 66+, Group A)

Another Group A member, Harry, was concerned about the group's power, and whether they could push for the changes he felt were needed.

> *'Nothing [is] achievable, if the National Flood Forum doesn't have any teeth or muscle. If it is just there to nod like a dog in the back of a car, then no is the honest answer to that.'* (Harry, 66+, Group A)

As Group A members became more confident within NFF's participatory process (by second MAM meeting), there were conversely emerging tensions.

> *'When I'm not at the meetings, I'll think it over and I think of what needs doing and I'll write it down. It's not worth it though, cos I'll give it to them [agencies] and they'll say, 'I'll do this, I'll give it to the council at the next meeting. But they don't bring it up.'* (Betty, 66+, Group A)

> '*The message from the National Flood Forum people, who come down from a national level to help organise, is that you've got to be careful not to upset the local authority otherwise they won't cooperate with you. Hell, if the local authority aren't doing what we think is good for the locality - considering we live here and pay council taxes, etc.- then, to put it quite mildly, ***** to not upsetting them. That's what they're there for*.' (Harry, 66+, Group A)

These responses illustrate tensions between 'agency' in co-operative mode, and 'legitimacy', partly stemming from the NFF's involvement. Yet this legitimacy also brought expectations of a 'certain way of doing business', which for some members undermined agency. In the responses, tensions between co-working and activism can be seen, with individuals differing in view about where balance should be achieved. If lack of action by statutory agencies starts to erode perceived efficacy of the group, co-operative modes can give way to greater scrutiny and holding to account of officials[9].

Within the research process, the importance of the timeline for flood group development was identified, demonstrating how altered attitudes of group members could be at different stages in the process. Through several interviews, group members had varying optimism about their group's future without always a clear trajectory of progress. Having become frustrated with the latter stages of the NFF process, Martin (Group B) was uncertain about the group's future, displaying tensions between co-working and activism:

> *'I'm being lied to by politicians but because we are doing things the flood forum way, I am not accusing them to their face of lying because that will embarrass them. I think in May next year I will be looking to see if this Flood Forum is working or do we take it to the hustings?'* (Martin, 41-65, Group B)

Martin's change in tone coincided with the beginning of the facilitator's withdrawal and his doubts about the flood group's efficacy following two MAMs. When interviewed again two months later Martin nevertheless had a renewed optimism.

> *'I feel positive that I am being listened to…but it is a rollercoaster ride. If you ask me next month I might not be.'* (Martin, 41-65, Group B)

Results of working in this context-appropriate way can clearly at times seem messy and unproductive. The facilitator acknowledged the need to persevere through inevitable difficult periods.

> *'I don't suggest an alternative or wave a magic wand. It's more just facilitating them to keep working together and keep pushing through.'* (Facilitator)

Overall, the facilitator's ability to 'keep pushing through' appeared to work better when she was more immersed within communities. It could be argued that as a young woman working with mostly older people, the facilitator was less threatening and therefore people responded better, as in previous research. Punch (2001) described how, as a 'young female alone…many older women wanted to look after me' (p.168). Potential issues with such methods include difficulties in creating a smooth exit when facilitated processes inevitably wind down.

4.5 Group sustainability and longevity

Although the NFF has several different ways to prepare flood groups for interactions with agencies, traditionally this support has been less intensive than with Group A. Part of the reason given was the group's vulnerability.

> '*With other groups you would just facilitate what they have already got and just point them in the right direction. With [Group B] they knew what they wanted and you just had to help them get there.*' (Facilitator)

> *'I don't think I'll get another group like [Group A]. I don't think I'm ever going to have to support a group that much but there will be other ones like [Group B]. [Group B] is like the norm. They've been fobbed off by agencies and don't feel like they've been listened to but they have got ideas.'* (Facilitator)

As a result of methods that fostered closer personal relationships between facilitator and group, positive results could be seen. This was illustrated by Betty (Group A) who described the facilitator in very emotive terms; her role can be viewed as going beyond 'flood group mentor' and more towards friendship:

> *'I love her to death because I can talk to her and she will understand how I feel and what I'm saying. I can phone [Facilitator's name] and say this is happening, that is happening.'* (Betty, 66+, Group A)

For Betty and other members of Group A, it can be argued the facilitator's mentorship played to the citizen's emotions – their broader concerns of loss of community, detachment and loneliness. Betty had lived in the area for 51 years; however, over the last 5-10 years she felt her neighbourhood had deteriorated from a personal security perspective, affecting her confidence:

> *'You can't go out. You are frightened to go out because you get all the druggies at the shopping centre. You are frightened to pass them. I've been mugged three times. People go to collect their pension and we are told, 'put it in your pocket otherwise you'll get mugged when you go out.'*

In gaining trust in this way, the facilitator simultaneously created a bond which would ultimately need to be broken as her facilitating role wound up. When interviewed, she elaborated:

> *'When I spoke to [Group A] they said that they really want to carry on [with the flood group] but they feel that they don't have the skills to do it so I have had to carry on that intense relationship. Like sometimes, [Betty] will phone me just to tell me about the latest flooding or to tell me the group gossip. It's not ideal because you want them to carry on on their own but then if that is what the group needs to continue then maybe you should support them because every group is different. [Group A]…they've got an underlying thing of really wanting to do something… I think for some of them, this group has given them a way to do that.'* (Facilitator).

Although the facilitator's role as a highly involved 'mentor' ensured she was trusted and could achieve results with Group A, it also meant on withdrawal that she was perceived as

'external' and from 'a different world'. This was amplified in Group A, as illustrated by Don towards the end of formal processes:

> *'Because she's leaving in March, she's lost all the interest, I feel. Whatever goes on she's not bothered what happens or doesn't happen.'* (Don, 41-65, Group A)

Towards the end of the participatory process, the facilitator described trying to ease her way out of intense relationships with group members by reducing contact outside meetings.

> *'I think [Group A] will always need remote support. With them I had to do [the break up] bit by bit just because it was so intense to begin with. Small things, like today I am not picking them up [in the car], so it's like right how are they going to deal with that. I didn't just want to cut them off and treat them like I treat [Group B], where they organise their own meetings and do their own minutes. [Group A] would never be able to do that so it would be unfair to expect them to do the same thing. That's because they are different people with different abilities.'* (Facilitator)

4.6 The NFF process – a Flood Risk Management agency perspective

When interviewed at the end of the process, FRM agencies appeared more optimistic about what NFF processes had achieved and could achieve in the future. For example, one agency actor pointed out that just 'opening a communication channel' between local people in flood risk areas and agencies was a major achievement, given the prior chequered history of engagement.

> *'I think the very fact that they've opened communication channels with the right people is a good and useful thing.'* (Environmental regulator)

However, although NFF processes had fostered open communication channels, it took some time before parties, especially Group B, felt there was adequate reciprocity. The environmental regulator also acknowledged value in the role of flood groups in broadening public understanding about roles and responsibilities of different organisations:

> *'[We] get to explain, from an EA point of view, the issues that the residents are worried about and it is encouraging when residents understand what we are explaining to them because there is also the issue of misconception about which authority has the responsibility for doing different aspects of flood work. It has been*

beneficial to let them know the remit of the EA as well as that of other authorities.' (Environmental regulator)

The environmental regulator also recognised that the flood groups presented opportunities to reinforce community-led adaptation planning for resilience and distributed responsibilities for dealing with residual flood risk. Echoing the *Pitt Review* (Cabinet Office, 2008, p34) that in a flood situation, 'authorities are overwhelmed and people have little choice other than to help themselves', the FRM agencies sought to get their message across:

'The role of the [environmental regulator] was to be able to influence the flood groups and the communities to make them (and other authorities) see that it is their responsibility to manage their own flood risk issues. Communities understand that they have a role to play when it comes to flood risk management and are not just relying on external authorities to do the work for them.' (Environmental regulator)

While the NFF process was designed to tackle polarised positions (community-agency) through gradual trust building, this was tested, especially in the early MAMs. Here the environmental regulator's stated aim of 'explaining levels of risk' to residents clashed with local knowledge and the group's deep mistrust of authority.

'Normally when groups come together, they'll be pushing to get something done for their area. It all comes down to funding and, when funding is limited, we have to spend on the areas that are at most risk, which is not necessarily in the areas that a community is proposing. So some of the challenges have been to explain to the flood groups that their level of risk is not as high as somewhere else. I think that's one of the challenges that the [environmental regulator] is facing and is, in fact, a big factor with the [Group B] area.' (Environmental regulator)

The benefits of the participatory development process were clearer for the environmental regulator with a formalisation and streamlining of residents' complaints that potentially lessened workload for the local teams.

'Flood groups avoid the issue of repetitive complaints. If they're working as a group and one person brings a complaint forward and somebody else has a similar complaint in mind, then that would have already been addressed, so it reduces the issue of repetitiveness.' (Environmental regulator)

This power was something which the facilitator had tried to emphasise to flood group members, especially Group B:

> *'[Group B] wants things sooner… [but] it doesn't work if you have two people banging on. You've got to have a group because that's what the agencies like to work with, because you're actually representing the community. So that has had a lot more oomph.'* (Facilitator)

Working with groups rather than engaging with single residents was also very attractive to the environmental regulator when it was working through 25% cuts to its annual flood defence budgets and extensive structural changes (*Guardian*, 2014). Towards the end of the facilitation, participation was conversely pressing on available staff resources:

> *'The agencies did say the process was getting a bit resource intensive because some sit on the steering group as well so I what I have done is I put them on the same day.'* (Facilitator)

During interviews, agency members spoke of 'budgetary implications' of their participation and that organisational benefits were not clear cut if group development processes were to be expanded to other groups and flood risk areas. In one situation, flood group agency incurred a financial impact for regulators. At a meeting Group B, with its high levels of local river knowledge and newly acquired discipline in engagement, was able to counter the environmental regulator's claims regarding flood risk in a local river to such an extent that the regulator acquiesced and agreed to run modelling scenarios to prove or disprove Group B's theory. As the facilitator herself reflected on the group's developing agency, 'the [environmental regulator] did five model runs for [Martin] and they don't just do that for anyone so that was quite an achievement.'

5. Critiquing the co-working/partnership model

5.1. Key considerations in the participatory process

Here we critique strengths and limitations of a co-working, partnership model in 'learning for resilience' to build social capital in development of effective flood groups in more deprived suburban settings. This synthesis is structured around key concerns in four different stages

of the process - start-up (building relationships), maintenance, withdrawal, and sustainability of flood groups.

In ‘Start-up’, our research evidenced two new flood groups in settings with different levels of deprivation but with members sharing similar concerns about their local socio-economic context. Residents in both groups, frustrated by local apathy among their local population and disappearing local knowledge, were keen to participate in the flood groups, initially driven by frustration. Both groups shared a general mistrust of FRM agencies, especially in the flood-affected Group B. In response to what they saw as inertia and disinterest from local government, a few trusted local ‘flood gurus’ had come to be seen as key trusted sources of local knowledge. In Group A, interviewees described their neighbourhoods as ‘badly hit’ by recession, with an accompanying sense of abandonment. From these different drivers, participation in both groups offered a means for people to coalesce, channelling enthusiasm and determination for local change and ‘care of place’.

At the outset for the facilitator, the groups offered different challenges. Issues of mistrust, particularly in Group B, were more familiar to the facilitator as she sought to expunge the ‘finger-pointing’ and ‘hot-headedness’ of some group members so that they could engage dispassionately and effectively with local FRM agencies. Such was the success of this evolving process that Group B came to understand roles and responsibilities in UK FRM, and cast themselves more as facilitators, perceiving that they enabled disparate FRM agencies to speak to each other and understand their respective responsibilities for the first time. Although it is not possible to escape from, or mitigate, emotive qualities that characterise human encounter (Kobayashi 2001) in the construction of Group A, in response to issues of vulnerability and trust, the facilitator’s role was uniquely, more actively involved than usual.

In ‘Maintenance’, as the process progressed, another challenge faced by the facilitator was frustration within the groups regarding the same participatory process which had brought initial group success in terms of dispassionate dialogue with agencies. This was particularly apparent in Group A where the same enthusiasts who would proactively manually unblock local drains in times of flooding in order ‘to get things done’ showed signs of discord after several MAM meetings where it was perceived that ‘nothing gets done.’ The facilitator attempted to counter this and address potential fragmentation of Group A by adapting the NFF model. This involved an increasingly intensive nurturing relationship with members of Group A, responding to its members’ vulnerability.

During ‘withdrawal’, such were levels of trust which the facilitator had created in the group and genuine affection for that individual, that when group development entered its final funded stages, the ‘letting-go’ process was as intense as the relationship building which had preceded it. In many ways this illustrated importance of stable staffing in a project, and ‘scaffolding’ where this does not exist. It also highlighted disadvantages of externality that could emerge when a young facilitator is working with a cluster of older group members. Observations of earlier group meetings showed advantages of externality - from a different area, demographic and profession bringing new capital and training. However, when relationships were drawn back, this turned into perceptions of facilitator as ‘outsider’, who could not possibly understand plights of residents. As noted in Sherry (2013), ‘experience of being an insider or trusted part of the community or programme complicates the letting go process’ (p.286).

When observing different stages of the NFF process and the emotional responses of Group A members, we can draw comparisons with Tuckman and Jensen’s (1977) model of four stage group development, often referred to as ‘forming’, ‘storming’, ‘norming’ and ‘performing’ (Luke et al. 2014, p.45). The storming stage is similar to the NFF *Formation* stage, where potential for conflict is higher as clarification of values and goals is sought. In the final stage of Tuckman and Jensen’s model, the group becomes a high performing team that is able to work at collective goals, issues and difficulties with increased loyalty, support, cohesion, synergy and high morale. For both Group A and B, learning to deal with emotion effectively was an important part of social learning for resilience, particularly in formative stages of group establishment. In Group A, however, emotion was an important factor that jeopardised group cohesion; one that affected development throughout all process stages.

From perspectives of FRM agencies, participatory processes offered several advantages. The new flood groups were perceived as opportunities to educate and inform local people at flood risk, and to impart better the environmental regulator’s ‘expert’ scientific knowledge to residents. The flood groups ostensibly also offered the agencies, post *Pitt Review* (Cabinet Office, 2008), another way to support people in flood risk areas to become more resilient and self-sufficient. By opening up communication channels to a well-honed, well-drilled group, the environmental regulator, for example, had means to deal collectively with formalised complaints and avoid repetitious phone calls of disenchanted flood ‘victims’. The continued functioning of Group B[10] provides example of the beneficial effect of stable environmental regulator staffing on flood group sustainability.

5.2 Building sustainable flood groups in settings with lower social capital

Flood group development generally works better in areas where *both* initial capital and capabilities *and* flood experience exist. We found several factors impacted on sustainability of flood groups when one or both of these are low. Critical for success of the process was an understanding of the complex of different motivations for on-going participation. In setting B with flood experience, shared local flood memories acted as a fundamental constituent of the group - the 'grit' and 'glue' that kept people working together. Important in group set-up and functioning was not just the individuals involved (their capital, personalities, health and wellbeing), but their connections to each other bonded by shared memories as sufficient motivation to keep them working together. Settings without shared flood memories tend to provide greater challenges in mobilisation in social learning for resilience (McEwen et al. 2016).

An important success factor was management of an evolving sense of agency and empowerment in the groups that comes with social learning. For Group A, learning skills needed to gain employment was one key driver for participation. For both groups, people feeling that they have been successful in delivering on co-owned goals increased likelihood of group longevity. This requires conscious acknowledgement and repeat reinforcement to staged and owned goals by all actors (members, facilitator, FRM agencies) that their efforts have been valued.

This model of a facilitator working intensively with a flood group to build capacity had strengths and challenges. Kirkby-Geddes et al. (2013) emphasise importance of skilled group leadership when building social capital. In a more typical group setting comprising individuals who had flood experience, represented here by Group B, the facilitator could inject enthusiasm into jaded individuals who had previously campaigned as individuals. The aim here was, as described by Luke et al. (2014, p45), 'to turn festering social and environmental issues into a citizen demand for change…more appropriate for society as a whole.' The deep level of facilitator involvement with Group A ensured that a fragile group was first formed and then held together, using methods which could be described as ethnographic. For example, the facilitator sought to find ways to understand the world views and ways of life of actual people from the inside, in the contexts of their everyday lived experiences (Cook 1998; Parr 2001).

Learning to deal with emotion and affect was also important in social learning for effective functioning of flood groups, particularly in formative stages. Building of increased emotional/ psychological resilience was also important in flood group cohesion and its facilitated development. The facilitator needs to have emotional intelligence, beyond that of dealing with 'flood victims' in flood aftermath, to facilitate the participatory process. Withdrawal from vulnerable groups needs time or can be very damaging with anger persisting.

5.3 Implications for social 'learning for resilience' within challenged flood groups

So what could '*Learning for resilience*' - what attributes or capabilities - comprise in settings for flood group development with or without flood experience and with medium to low socio-economic status? Table 3 draws together the knowledges, skills, attitudes and values that were evidenced as important in successful group development. This includes extent that community capital was mobilised or developed, and how learning for resilience was facilitated through co-working, partnership processes. For example, critical here was the importance of drawing on, and valuing in practice, existing lay knowledges, held even in more vulnerable settings. Social learning within such challenged communities of practice needs some auditing and rethinking to establish what can be learnt: from each other (depending on community capital; prior flood experience etc.), from the facilitator, through any community networks, and through exchange and co-working with FRM agencies**.**

Attention to supporting emotional or affective domains is critical, anticipating and recognising the 'highs and lows' in group development timeline. Group B was able to learn to manage emotion, remove animosity and anger and achieve results. In contrast, Group A was not able to achieve this within the project lifespan. Within research, regular engagement with participants is needed as perceptions about extent of 'group success' could fluctuate dramatically, depending on current stresses within and outside group development.

Potential exists in linking social learning in all flood groups to wider 'citizenship' or 'stewardship', and observation and 'care of place' - strong in both groups. In learning processes, importance of longitudinal engagement and sustainability of facilitation and resourcing was highlighted. In evaluating implications for local FRM, active involvement of local agencies during and beyond formal processes of group development was also critical. This sits alongside flexibility of group development processes to match community timescales.

5.4 Implications for local FRM practice

While co-productive, partnership models of flood group development have worked well in settings with existing capital, our research suggests that developments of the model are needed in more challenged, deprived contexts, where issues such as health can ratchet down capital within groups in large steps, and local knowledge as capital can be more dynamic. Potential danger exists that support organisations like NFF might opt for the easy, less resource intensive options to support flood group development (e.g. rural parishes over inner city wards) when funding and human capital is limited and needs prioritisation. Equally danger exists that funding agencies expect results in limited timescales, because these tie in with funding and business plan requirements, when in reality much longer-term approaches may be needed.

Key properties of participatory processes that increase likelihood of a group having success and longevity need acknowledging. As learning from our research, we offer a framework for important considerations in flood group development in 'challenged' settings ('The 6*S*s'[11]). These are: *Scoping* (early base-lining), *Situating* (linking to the local), *Solidarity* (connecting developing resilience groups), *Sustainability* (planning for 'what happens afterwards'); *Scaffolding* (facilitation over different timescales) and *Sensitive supporting* (facilitator's role as critical). Table 4 identifies concerns and questions by theme, providing additional resources and points for reflection. For example, involving links with school flood groups in these participatory processes could provide new opportunities for early engagement and intergenerational learning for resilience when building community capital from a low base. Networks of flood groups offer real opportunities for peer-to-peer support and learning. However, this is often made impossible by funding timescales and funders' focus on performance metrics. This framework goes beyond thinking about the 'participation spectrum' (building from Arnstein 1969), and augments or nests with other 'participation frameworks' (concerned with context, process, and outputs, outcomes and impacts; Hassenforder et al. 2015). The focus of 'The 6Ss' is on participatory group-building processes in more deprived settings, with intimacy and hyperlocal focus in its scale. In this, it bears some similarities to ways of thinking about participatory health partnerships (e.g. Christopher 2008). 'The 6Ss' can be construed as a 'living framework' and stimulus for discussion which is now offered up for evaluation of its utility in DRR and FRM beyond this case-study example.

6. Conclusions

It is possible to construct a functioning flood group in settings with less social capital and without flood experience but the participatory processes, within more generic stages in group development, are more intensive and issues for group sustainability, complex. In these groups, local knowledge is still latent and valuable for co-production if accessed, but scaffolding of relationships (emotions) and knowledge connections is essential. These requirements impact on the desired role and skillset of the facilitator of the participatory process, beyond what might be needed in settings with more capital and flood experience. As such, participatory models of flood group development need adapting to value different types of knowledge, anticipate scaffolding needs, reinforce success, provide longer-timespans for support and development, and build different relationships with FRM agencies to achieve functioning and sustainable flood groups.

Social 'learning for resilience' requires unpicking for its enhancement in DRR within more challenged flood risk settings (in UK and potentially beyond) to establish the knowledges, skills, dispositions, values and willingness to act needed not just among group members but also of facilitators and FRM agencies. This includes recognising value in different and dynamic knowledges, and how these might act as evidence bases for local decision-making. Finally, all stakeholders, including communities themselves, need to be aware of factors that impact positively and negatively on the sustainability of new flood groups, and their evolving sense of agency and empowerment in settings which bear other social-economic challenges. This paper proposes 'The 6Ss' as a framework for reflecting on 'fitness for purpose' of participatory processes. FRM agencies and stronger flood groups in proximal areas, as key potential agents in local 'scaffolding', need to be supported in adapting their practices to co-work with more challenged groups, so ensuring greater collective resilience at local and catchment levels.

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7. References

Alfieri L, Feyen L, Salamon P, Thielen J, Bianchi A, Dottori F and Burek, P (2016) Modelling the socio-economic impact of river floods in Europe. Natural Hazards and Earth System Sciences 16:1401-1411

Argyris C (1976) Increasing leadership effectiveness. Wiley, New York

Arnstein, SR (1969) A ladder of citizen participation. Journal of the American Institute of Planners. 35 (4):216-224

Ashley RM, Blanksby J, Newman R, Gersonius B, Poole A, Lindley G, Smith S, Ogden S and Nowell R (2012) Learning and Action Alliances to build capacity for flood resilience. Journal of Flood Risk Management 5(1):14-22

Bajracharya B, Hastings P, Childs I, and McNamee P (2012) Public-private partnership in disaster management: A case study of the Gold Coast. The Australian Journal of Disaster Management 27(3):27-33

Baker V (2007) Flood hazard science, policy, and values: A pragmatist stance. Technology in Society 29(2):161–16

Beck, U (2000) Risk Society revisited: theory, politics and research programmes. In: Adam, B., U. Beck & J. Van Loon (eds.) *The Risk Society and Beyond*. Sage, London

Benson D, Lorenzoni I and Cook H (2016) Evaluating social learning in England flood risk management: An 'individual-community interaction' perspective. Environmental Science & Policy 55(2):326-334

Blue-Green Cities project (2013) www.bluegreencities.ac.uk Accessed 27 September 2016

Bradford RA, O'Sullivan JJ, van der Craats IM, Krywkow J, Rotko P, Aaltonen J, Bonaiuto M, De Dominicis S, Waylen K and Schelfaut K (2012) Risk perception – issues for flood management in Europe. Natural Hazards and Earth System Science 12(7):2299–2309

Cabinet Office (2008) The Pitt review: lessons learned from the 2007 floods http://www.cabinetoffice.gov.uk/thepittreview.aspx. Accessed 1 May 2013

Challies E, Newig J, Thaler T, Kochskämper E, Levin-Keitel M (2016) Participatory and collaborative governance for sustainable flood risk management: An emerging research agenda. Environmental Science and Policy 55(2):275-280

Charmaz K (2000) Grounded theory: Objectivist and constructivist methods. In: Denzin N and Lincoln YS (eds) Handbook of qualitative research, 2nd edn, Sage, Thousand Oaks, California, pp 509-536

Christopher S, Watts V, McCormick AKHG, Young S (2008) Building and maintaining trust in a community-based participatory research partnership. American Journal of Public Health 98(8):1398-1406

Civil Contingencies Act 2004 [online]. http://www.legislation.gov.uk/ukpga/2004/36/contents [Accessed 4 April 2015]

Clark MJ and Priest SJ (2008) Public awareness of flood risk: the role of the Environment Agency flood map. Award Report RES-000-22-1710. ESRC, Swindon

Climate Just http://www.climatejust.org.uk Accessed 10th October 2016

Cohen O, Geva D, Lahad M, Bolotin A, Leykin D, Goldberg A, et al. (2016) Community Resilience throughout the Lifespan – The Potential Contribution of Healthy Elders. PLoS ONE 11(2): e0148125.

Cook I (1998) Participant observation. In: Flowerdew R and Martin D (eds) Methods in human geography. Longman, London, pp 127-150.

Cretney RM (2016) Local responses to disaster: The value of community led post disaster response action within a resilience framework. Disaster Prevention and Management 25(1):27-40

Cutter SL, Burton CG and Emrich CT (2010) Disaster Resilience Indicators for Benchmarking Baseline Conditions. Journal of Homeland Security and Emergency Management 7(1):1-22

Dufty N (2008) A new approach to flood education. The Australian Journal of Emergency Management 23(2):4-8

Fink, LD (2003) Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses. San Francisco, Jossey Bass Higher and Adult Education Series.

Gaillard, J and Mercer, J (2013) From Knowledge to Action: Bridging Gaps in Disaster Risk Reduction. Progress in Human Geography, 37(1):93-114

Geaves LH and Penning-Rowsell EC (2015) 'Contractual' and 'cooperative' civic engagement: the emergence and roles of flood action groups in England and Wales. Ambio 44(5):440-451

Guardian (2014) Lord Smith: flooding budget cuts put UK at the mercy of extreme weather Available online: https://www.theguardian.com/environment/2014/jun/26/lord-smith-flooding-budget-cuts-climate-change-extreme-weather 21st October 2017

Hassenforder E, Smajgl A and Ward J (2015) Towards understanding participatory processes: Framework, application and results, Journal of Environmental Management 157: 84-95

Hemming H (2011) Together: how small groups achieve big things. John Murray, London

Hobson K, Hamilton J and Mayne R (2016) Monitoring and evaluation in UK low-carbon community groups: benefits, barriers and the politics of the local. Local Environment 21(1):124-136

Horowitz JA, Ladden, MD, Moriarty, HJ (2002) Methodological challenges in research with vulnerable families. Journal of Family Nursing 8(4):315-333

Hoult, R. C. (2013) Resilience in Adult Learners: some pedagogical implications. Journal of Pedagogic Development 3(1) Available at: https://www.beds.ac.uk/jpd/volume-3-issue-1/resilience-in-adult-learners-some-pedagogical-implications. Accessed 21st October 2017.

Hutchison AJ, Halley Johnston L and Breckon JD (2010) Using QSR-NVivo to facilitate the development of a grounded theory project: an account of a worked example. International Journal of Social Research Methodology 13(4):283–302

Kirkby-Geddes E, King, N and Bravington A (2013) Social capital and community group participation: examining 'bridging' and 'bonding' in the context of a healthy living centre in the UK. Journal of Community Applied Social Psychology 23(4):271-285

Kobayashi A (2001) Negotiating the personal and the political in critical qualitative research. In: Limb M and Dwyer C (eds) Qualitative Methodologies for Geographers: Issues and Debates. Arnold, London, pp 55-70

Lamond JE, Joseph, RD and Proverbs, DG (2015) An exploration of factors affecting the long term psychological impact and deterioration of mental health in flooded households. Environmental Research 140:325-334

Landström C, Whatmore S J, Lane S N, Odoni N A, Ward N and Bradley S (2011) Co-producing flood risk knowledge: redistributing expertise in critical 'participatory modelling' *Environment and Planning* A 43:1617-1633

Lavery, S H, Smith, M L, Esparza, A A, Hrushow A, Moore, M and Reed, D F (2005) The Community Action Model: A Community-Driven Model Designed to Address Disparities in Health American Journal of Public Health 95(4):611-616|

Luke H, Lloyd D, Boyd W and den Exter K (2014) Improving conservation community group effectiveness using mind mapping and action research. Conservation and Society 12(1):43-53

Marsh TJ and Hannaford J (2007) The summer 2007 floods in England and Wales – a hydrological appraisal. Centre for Ecology and Hydrology. Wallingford, UK

McEwen LJ (2011) Approaches to community flood science engagement: the lower river Severn catchment, UK as case-study. International Journal of Science in Society 2(4):159-179

McEwen LJ, Krause F, Jones O, Garde-Hansen J (2012) Sustainable flood memories, informal knowledges and the development of community resilience to future flood risk. In: Proverbs D, Mambretti S, Brebbia CA and de Wrachien D (eds) Flood Recovery, Innovation and Response, 3rd edn. WIT Press, Ashurst UK, pp 253-264

McEwen, L J, Garde-Hansen J, Holmes A, Jones O and Krause F (2016) Sustainable Flood Memories, Lay knowledges and the Development of Community Resilience to Future Flood Risk. Transactions of the Institute of British Geographers 42(1):14-28

Mercer J, Kelman I, Taranis L and Suchet-Pearson S (2010) Framework for integrating indigenous and scientific knowledge for disaster risk reduction. *Disasters,* 34(1):214−239

Mezirow, J (1991) Fostering critical reflection in adulthood. Jossey-Bass, San Francisco

Mezirow J, Taylor, E and Armstrong, S (2009) Transformative learning in practice: insights from community, workplace and higher education. John Wiley and Sons, San Francisco

Nye M, Tapsell S and Twigger-Ross C (2011) New social directions in UK flood risk management: moving towards flood risk citizenship? Journal of Flood Risk Management 4(4):288–297

Office of National Statistics GB (2011) Census data Available at: https://www.ons.gov.uk/census/2011census Accessed 21st October 2017

Parr H (2001) Negotiating different ethnographic contexts and building geographical knowledges: empirical examples from mental-health research. In: Limb M and Dwyer C (eds) Qualitative Methodologies for Geographers: Issues and Debates. Arnold, London, pp 181-195

Pelling M (2007) Learning from others: the scope and challenges for participatory disaster risk assessment. Disasters 31(4):373–385

Punch S (2001) Multiple Methods and Research Relations with Young People in Rural Bolivia, in Limb, M. and Dwyer, C. (eds) ,Qualitative Methodologies for Geographers. Arnold, London pp.165-180.

Reed MS, Evely AC, Cundill G, Fazey I, Glass J et al. (2010) What is social learning? Ecology & Society 15(4):r1

Royal Society (2014) *Resilience to extreme weather*. Available online: https://royalsociety.org/policy/projects/resilience-extreme-weather/ [Accessed 4 April 2015].

Sherry E (2013) The vulnerable researcher: facing the challenges of sensitive research. Qualitative Research Journal 13(3):278-288

Sterling S (2010) Learning for resilience, or the resilient learner? Towards a necessary reconciliation in a paradigm of sustainable education. Environmental Education Research 16(5):511-528

Strauss A and Corbin J (1998) Basics of qualitative research techniques and procedures for developing grounded theory (2nd edition). Sage Publications, London

The Guardian newspaper (2014) http://www.theguardian.com/environment/2014/jun/26/lord-smith-flooding-budget-cuts-climate-change-extreme-weather Accessed 26 September 2016

Thomson C, Mickovski S and Orr C (2014) Promoting double loop learning in flood risk management in the Scottish context. Proceedings 30th Annual Association of Researchers in Construction Management Conference, ARCOM 2014:1185-94

Towards Hydrocitizenship project (2014) www.hydrocitizenship.com. Accessed 27 September 2016

Tunstall SM, Johnson CL, Penning-Rowsell EC (2004) Flood hazard management in England and Wales: from land drainage to flood risk management. Proceedings - World Congress on Natural Disaster Mitigation, Institution of Engineers (India) (2):447-454

Tuckman, BW and Jensen, MAC (1977) Stages of small-group development revisited. Group and Organization Management 2(4):419-427

Twigg J, Kett M, Bottomley H,Tan LT and Nasreddin H (2011) Disability and public shelter in emergencies. Environmental Hazards 10(3-4):248-261.

Twigger-Ross C, Kashefi E, Weldon S, Brooks K, Deeming H, Forrest S, Fielding J, Gomersall A, Harries T, McCarthy S, Orr P, Parker D, Tapsell S (2014) Flood Resilience Community Pathfinder Evaluation: Rapid Evidence Assessment. Defra, London

UK Flood and Water Management Act 2010 www.legislation.gov.uk/ukpga/2010/29/contents Accessed 2 August 2014

UK Localism Act 2011 www.legislation.gov.uk/ukpga/2011/20/contents/enacted. Accessed 10 September 2014

United Nations Educational, Scientific and Cultural Organization (2014) UNESCO Roadmap for Implementing the Global Action Programme on Education for Sustainable Development. UNESCO, Paris

UN World Conference on Disaster Risk Reduction (UNWCDRR; 2015). Sendai Framework for Disaster Risk Reduction 2015-2030. Available online: http://www.wcdrr.org/uploads/Sendai_Framework_for_Disaster_Risk_Reduction_2015-2030.pdf [Accessed 20 March 2015].

Vallance S and Carlton S (2015) First to respond, last to leave: Communities' roles and resilience across the '4Rs'. International Journal of Disaster Risk Reduction 14(1):27-36

Werg J, Grothmann, T and Schmidt, P (2013) Assessing social capacity and vulnerability of private households to natural hazards – integrating psychological and governance factors. Natural Hazards and Earth System Sciences 13(6):1613-1628

Wiles JL and Jayasinha R (2013) Care for place: The contributions older people make to their communities. Journal of Aging Studies 27(2):93-101

Whittle R, Medd W, Deeming H, Kashefi E, Mort M, Twigger Ross C, Walker G and Watson, N (2010) After the Rain - learning the lessons from flood recovery in Hull. Final project report

for Flood, Vulnerability and Urban Resilience: a real-time study of local recovery following the floods of June 2007 in Hull. Lancaster University, Lancaster, UK

Willig C (2001) Introducing qualitative research in psychology. Open University Press, Buckingham, Philadelphia

Ziersch A, Osborne K and Baum F (2011) Local community group participation: who participates and what aspects of neighbourhood matter? Urban Policy and Research 29(4):381-399

Table 1: Models of community flood, environmental or health groups based on primary drivers and operation

Model	*Primary driver(s)*	*Operation*	*Reference*
Community driven health model	Address health disparities through mobilisation	Identification of forces that create health/social disparities in a community; five-step community-driven model	Lavery et al. (2005)
Sole-risk focused group	Flood risk mitigation	Task-based and focused	Hemming (2011)
Issue focused	Conservation/ sustainable environmental management (e.g. low-carbon community groups LCCGs)	Examination of systematic social interactions	Luke et al. (2016); Hobson et al. (2016)
Multi-issue focused group (flood groups as additional arm)	Local environmental stresses (e.g. conservation groups); civil protection (e.g. 'Neighbourhood Watch'); community development	Nested; 'Layering recovery work over their core business' p27	Bajracharya et al. (2012); Vallance and Carlton (2015)

Table 2: Timeline for interviews against NFF group development process

Group	*Name*	*Interviewee age*	*Observations*	*Interviews*		
A	Kate	41-65	06/14; 11/14	02/14	11/14	
A	Don	41-65			11/14	05/16
A	Betty	66+		07/14		
A	Tim	41-65			12/14	
A	Harry	66+		07/14		
A	Bill	66+		07/14		
B	Martin	41-65	06/14; 09/14; 11/14	12/14		
B	Alice	41-65		03/14	11/14	05/16
B	Paul	31-65		03/14	11/14	
B	Mike	66+		11/14		

Table 3: A taxonomy of significant learning[12] for resilience within participatory flood group development

Significant learning	*Capabilities or capacities*	*Types of resilience*				
		*Social **	*Economic **	*Institutional **	*Infrastructural **	*Community capital**
Knowledge for resilience	• Local/lay experiential knowledge					x
	• Observational science (e.g. different types of flood risk; impacts of urban development on flooding; nature and impacts of river maintenance on flood levels; differentiating routine versus extreme floods)					x
	• Mitigation options for resistance and resilience of buildings				x	
	• Knowledge of local community characteristics vulnerabilities					x
	• Knowledge of roles/ responsibilities of FRM agencies			x		
	• Funding sources		x			
Skills for resilience	• Skills in catchment and watershed thinking					x
	• Skills for effective (water) citizenship	x				x
	• Skills for effective co-working	x		x		x
	• Negotiation skills			x		x
	• Listening skills	x				
	• Ability to participate and co-work to agreed shared targets			x		
	• Ability to use and share local/lay knowledge effectively drawing on networks and connections	x				x
	• Development as an autonomous learner – accessing resources effectively through different media	x				x
	• Development as a reflective experiential learner (learning from flood experience – self/others)	x				x
	• Adaptive competencies	x				x
	• Team working			x		x
Attitudes for resilience	• Confidence	x				x
	• Empowerment to act					x
	• Sense of responsibility			x		
	• Proactivity and initiative					x
	• Measured and reflective in engagement			x		
	• Non-combative; non-contentious			x		
	• Enthusiasm for knowledge exchange	x				x
	• Willingness to adapt and change	x		x		x
Values for resilience	• Valuing of different types of knowledge and knowledge systems	x		x		x
	• Care of (concern for) place	x				
	• Care of others/community	x				x
Learning about self	• What knowledge, skills, attitudes? What areas of strength and challenge?	x				
	• Learning how you as an individual learns; learning how to learn	x				
Learning about others	• What knowledge, skills attitudes? What areas of strength and challenge?	x				
	• How others in a group learn and be learnt from; co-learning	x				x

Table 4: 'The 6Ss' Framework for participatory group building processes in more challenged settings

Concern	*Questions*	*Additional information*
SCOPING: Importance of early-baselining of flood risk groups to identify prior flood experience and existing local capital.	• What and where is community capital within group or neighbourhood? • What is the ability of group to prepare and recover? • Who are the vulnerable people and groups? • What are information sources to scope vulnerability and capital (e.g. any small area/ neighbourhood statistics?)	(for the UK) UK Neighbourhood statistics https://neighbourhood.statistics.gov.uk/dissemination/ to help understand demographics of an area to target engagement. *Climate Just* - a mapping tool to identify vulnerability to climate change
SITUATING: Early attention to development of 'local' facilitators, with attention to 'making things happen', building networks, maintaining connections, and ensuring progression.	• Who are local facilitators? • Who are the local 'hub' people who are better networked? • How can processes be co-designed?	This is not necessarily a 'flood' role; it could be about wider resilience, and community cohesion, or it could be about another sector or issue. Essential is finding quick routes in to people who have community respect, networks and social skills to use them, and time and a willingness to use it.
SOLIDARITY: Potential to connect developing groups with less and more capital; with or without flood experience.	• Is there potential to connect developing groups with less and more capital? • Is there potential to connect developing groups with and without flood experience?	One model found to work well is to link flood groups for mutual support and liaison with FRM agencies within a catchment or region (e.g. West Sussex flood groups, UK) Another is to provide ongoing office based support - but with funding implications[13].
SUSTAINABILITY: Early planning for continuance of participatory processes and 'what happens afterwards'.	• How can sustainability be factored in at outset of participatory processes? • How can sustainability be built into process of developing relationships between different actors (members, FRM agencies)? • Is there potential to link school flood groups with adult flood groups for succession planning and inter-generational learning for increased resilience?	Nature of process of building relationships and then specific individuals withdrawing from them is critical. This needs to include scaffolding (see below) as strategy at key points in participatory processes to keep group building its momentum and trajectory.
SCAFFOLDING: Recognition that shifts from external to internal facilitation may not be achievable in medium or even longer-term with some groups.	• Who are the agencies that will be working in local FRM after facilitator retreats? • How can longer-term relationships with local FRM agencies (ideally with one as a lead) be built? • (How) can longer-term relationships with other local resilience groups be built?	Critical here is identification of agencies working longer-term in local flood risk management who are prepared to act in this role.

SENSITIVE SUPPORTING: The facilitator's role is critical. In 'facilitated process for developing agency', facilitator needs to be able to judge what support is required in formative stages, where 'mantle of facilitation' is later vested, and how and when initial facilitator withdraws.	• What are the knowledge, skill and attitudes of facilitator, and how 'fit for purpose'? • How can development of above attributes be supported? • How can facilitator recognise knowledge/skills gaps in flood group, and deliver training to meet these? • How can facilitator recognise when a group is self-sufficient and has required momentum and agency to continue to engage less or unsupported?	In contrast to other settings for flood group development, facilitator role can be therapeutic and levels of dependency on strong relationships can be higher. This may require extended skillset over that used in 'routine' flood group development. See also facilitation/leadership needs in other group development settings (e.g. Kirby-Geddes et al., 2013 - skilled group leadership key to strengthening bridging capital in community health group participation)

1

[1] It is well established that individual action to mitigate flood impacts is linked to personal flood experience and perception of future risk (Bradford et al. 2012).

[2] Civil agency is defined as a level of self-organisation in mobilising 'capital' of civil society agents or groups for particular purpose or effect.

[3] 'Big Society' is a concept whereby significant amounts of responsibility are devolved to local communities and volunteers.

[4] See www.hydrocitizenship.com

[5] It is recognised that in managing risk and community resilience throughout the lifespan, a perceptual dichotomy exists between considering between older people as vulnerable or healthy elders and a valuable resource for citizen action (Cohen et al. 2016)

[6] Lower layer Super Output Areas (LSOA)

[7] Index of Multiple Deprivation (IMD 2010) is an overall measure of multiple deprivation experienced by people living in an area, calculated for each of 32,482 LSOAs in England

[8] *Climate Just* provides spatial data on differential vulnerabilities to climate change.

[9] In practical terms, where a blockage exists, NFF can often work around it by liaising with national representatives of bodies that can influence functioning of local FRM agencies.

[10] As of September 2016

[11] This mnemonic aligns with others in DRR (e.g. the 4Rs - Reduction, readiness, response and recovery; New Zealand integrated approach to civil defence emergency management) to promote multi-stakeholder remembering and use.

[12] cf. Fink's (2003) 'Taxonomy of significant learning'

[13] NFF provide bi-monthly bulletins and phone key group contacts approximately twice-yearly to maintain contact with groups. If needed, NFF also offer occasional physical support; however, this is unfunded. NFF's ideal model would be to have a funded person in each UK region to "manage" and support these relationships.

List of Figures